Citizen Science and Everyday Politics:
Exploring Post-Fukushima Local Activism

A Dissertation

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Natalia NOVIKOVA

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Notes on Style and Translation

Japanese words, except people, organizations and place names, are italicized and appear throughout the text followed by the explanations in English given in brackets.

Macrons appear over long vowels (ū and ō) except for well-known terms and principal cities as Tokyo and Osaka.

Japanese personal names are given in the East Asian order, being surname first, followed by the given name.

The interviews for this research as well as all related documents including weblogs' content were collected in Japanese. Within the text, there are quotations from various sources wherein the original was in Japanese and the translation is in English. The interviews were transcribed verbatim (for details refer to Chapter 4). The analysis of the text was performed on the original Japanese text. The English translation of these texts has been done by the author.

I rely on the pseudonyms for the majority of people interviewed in this research. However, names of experts, politicians and media representatives are actual unless otherwise noted.

This research makes no attempt to evaluate the Japanese government's effort to manage the situation unfolding after the Fukushima Nuclear Power Plant accident. The research seeks to explore the perspectives of people involved in the situation without trying to include the evaluation of the accuracy of informant understanding of the situation.

Acknowledgements

Chapter 1: Introduction

1.1 Introduction

How long have scientific uncertainties been neglected by experts and policy-makers? How many accidents have been caused by those uncertainties resulting in death, injuries and severe health harm? The Fukushima Daiichi Nuclear Power Plant accident on March 11, 2011, might be listed as one of those examples when facts about the power plant's safety were disregarded or were not taken into consideration by nuclear experts, thus leading to the accident. The Fukushima accident also became the source of numerous uncertainties and controversies. One of them was the issue of radiation contamination and its health effects.

Irwin (1995) argues that "science is typically open to major doubt and uncertainty" (p.28). Yet, soon after the accident, by downplaying existing technical risks about the biological impact of radiation—low-dose radiation in particular—and insisting on the one side of the controversy that ascertained no significant health outcomes, state authorities evoked the feeling of anxiety. It culminated in the birth of a civil activism in the form of small-scale local initiatives and mass demonstrations in major metropolitan areas around Japan. The purpose of this research is to explain how people become engaged with uncertainties and what identities and relationship appeared as a result.

1.2 Research Questions and Scope

This research analyses the Tōkatsu region, Chiba Prefecture as a case study. Chiba Prefecture's 500km coastline suffered from a devastating tsunami on March 11, 2011;

about 70,000 households were damaged.[1] Due to the wind direction and rain, shortly after

the Fukushima Daiichi Nuclear Power Plant accident, spots of relatively intense radiation

contamination were discovered in seven cities in the Tōkatsu region of Chiba Prefecture

and were designated as "Intensive Contamination Survey Areas"[2] by the central

government.

Figure 1-1 Map of the Contaminated Area

As seen from Figure 1-1, the contamination level in most areas is lower than 20

mSv/year meaning that health risks posed by contamination were considered to be less

than expected. On the other hand, Petryna (2013) argues that the history of nuclear

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[1] https://www.pref.chiba.lg.jp/bousaik/jishin/kirokusi/kirokusi.html Retrieved on January 8, 2017.
[2] In December 2011, the Act on Special Measures Concerning the Handling of Environmental Pollution by Radioactive Materials Discharged by the Nuclear Power Station Accident Associated with the Tōhoku District-Off the Pacific Ocean Earthquake That Occurred on March 11, 2011 was passed. Two types of decontamination zones were determined. The first, the "Special Decontamination Areas", comprised the areas were the annual cumulative dose of airborne radiation was over 20 mSv/year (areas colored orange on Figure 1-1). The decontamination of these zones was implemented by the national government. The second type, called "Intensive Contamination Survey Areas", included areas where radiation doses were over 1 mSv/year (areas colored yellow on Figure 1-1). The decontamination process of these areas was realized by municipalities, supported by national government and instructed by prefectural government. http://josen.env.go.jp/en/framework/pdf/decontamination_guidelines_2nd.pdf Retrieved on November 15, 2016.

accidents that the humankind has experienced up to now does not allow to establish solid knowledge about the radiation exposure influence on human body. The Hiroshima and Nagasaki radioactive bomb explosions in 1945 were intensive, highdose and shortlived, while in Chernobyl in 1986, the reactor core had been exploding for some time leading to the radioactive particles propagating for months in the air, water and soil. Thus, Pertyna summarizes that "[e]xtrapolating risks from high-dose, short-lived whole-body exposures to low-dose, long-lived internal ones is a completely uncertain enterprise" (p. xxvi). Therefore, low-dose radiation effects remained in a "black box" (Petryna, 2013, p.17), making it difficult for experts after the Fukushima accident to provide the government and affected citizens with precise cautionary recommendations (Hirakawa and Shirabe, 2015).

These uncertainties about long-term low-dose radiation effects caused controversy between scientists and authorities who were insisting on an "everything-is-safe" narrative and those activists and scientists who questioned this narrative. The latter were presented as irrational and hysteric (Kimura, 2016). The controversy culminated in the appearance of small groups that locally tried to cope with their anxieties and fears regarding the low-dose radiation exposure risks. Simultaneously, they were trying to assert their right to question the authority of science by establishing themselves as knowledgeable and active citizens who were responsible for their communities and families' future, and who could become effective players in the knowledge co-production process.

Consequently, the first set of research questions concerns how Tōkatsu region activists establish themselves as expert citizens—people who can speak in the language of science. Specifically, how did local citizens become active participants in the construction of scientific knowledge about low-dose radiation contamination? What social relationships and identities appeared as a result?

The second set of research questions examines knowledge networks, seeking to identify

which types of information were most relevant to a debate in radiation risk; what actors were involved in the issue; how they associated with each other and formed networks; as well as examine how radiation-related information was distributed and acquired via these networks. Since knowledge production is a dialogue, these questions seek to reveal the role of weblogs in facilitating the process of this dialogue.

Höijer et al. (2006) argues that the paradox of contemporary society lies in the idea that meaning of risk is now less associated with "danger and insecurity" and is more related to "decision making and reflexivity". There is no more "institutional support" in the form of codified norms or pronounced knowledge that would guide people in making decisions, on the contrary, "nation-states have outsourced" some of their functions making individuals take stands and make decisions while denying the option to ignore choices (Höijer et al., 2006, p. 351). This may be one of the reasons why individuals do not want to make choices these days while others prefer to ignore risks and difficult choices related to them. Various researchers have been alarmed by public indifference that is framed as the decline of engagement and participation (Norris, 2004). As a result, numerous projects that work on how to engage people making them active have been launched (Bonson et. al., 2015; Boulianne, 2015; Kraut et al., 2012, Kaigo, 2017).

Drawing on a case study of Tōkatsu region, Chiba Prefecture, this research argues that the contemporary definitions of civic participation and engagement lack integrity, making it difficult to assess if civic participation is actually declining. Furthermore, the analysis of the Tōkatsu case demonstrates that public participation in risk- and environment-related issues should be analyzed in categories of "co-production" rather than "engagement". This research demonstrates that nowadays science-related risks lead to the emergence of autonomous individuals – expert citizens – who eagerly take responsibility for their lives and become effective actors in the knowledge production cycle. These individuals who

have developed their expertise over years of fact-collecting, studying and advocating certain issues have, as Takao (2016) argues, a "potential to play an intermediary role between lay people and experts" (p.1114) thus emerging as new channel of environmental governance.

Furthermore, the atmosphere of post-accident uncertainty made Japanese people, who originally felt discomfort when needed to get online (Kaigo, 2017a), extensively use the internet to reach across boundaries of official channels for information not otherwise available (Endo, 2012), albeit creating new sites where information can be accessed and debated; forming new networks and formulating new strategies (Slater et al., 2012; Tamura, 2015). Accordingly, the analysis of groups' online activities, particularly weblogs' content, can demonstrate how communities engaged with risks and scientific uncertainties, thus arguing that the post-Fukushima blogosphere became the issue space where various actors—activists, experts, and authorities—have been assembling and co-producing knowledge related to the radiation contamination of local community.
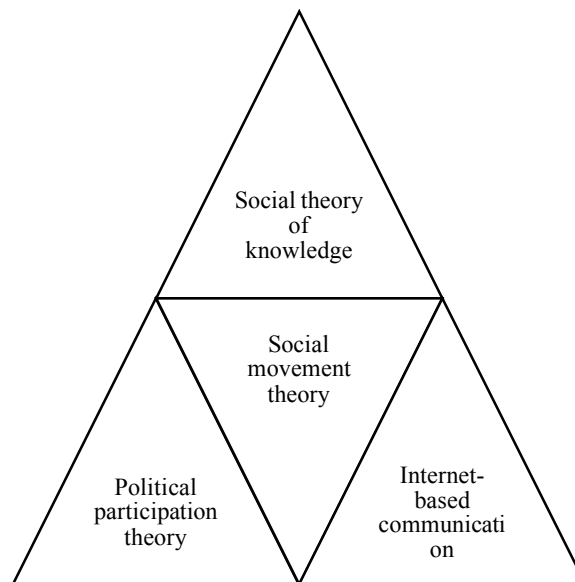
Figure 1-2 Theoretical Framework

Accordingly, the theoretical framework for this study discusses social movements and political participation through the social theory of knowledge and internet-based

communication studies. Until recently, these four fields remained largely unconnected. This study aims to bring these fields together describing the post-Fukushima parents' activism (Figure 1-2).

1.3 Case Choice Rationale

One of the most remarkable aspects of nuclear power and its usage in Japan is the diversity of players who have participated in the creation of the image of nuclear power. Among them, there are not only electric power companies, nuclear experts, governmental offices, mass media, and local communities, but it also encompasses a strong antinuclear activist movement along with various types of alternative media (Hara, 2013).

Novikova (2016) divides the research on environmental activism in post-Fukushima Japan into three types depending on the geographical focus and type of activism it describes. The first type embraces research on local movements occurring in municipalities that surround the crippled Fukushima nuclear plant. Members from farming families, particularly mothers, made up a significant proportion of these activist groups. These families live on the land they have nurtured for centuries and their livelihoods heavily depend on the land's productivity, which had been considerably influenced by the earthquake, tsunami, and radiation contamination, as well as the *fohyohigai* (harmful rumors) that followed the 2011 accident. These rural communities have a long history, strong local ties and complicated system of vertical and horizontal community relations that do not allow to speak up freely triggering pressure from families, friends and other community members (Slater et al., 2014).

Research on risk perception of nuclear power suggests that people living in a close proximity to nuclear power plants tend to have significantly more positive attitudes toward nuclear power than those living farther away because they receive greater economic

benefits from hosting nuclear power plants and that "they experience greater cognitive dissonance" (Covello, 1983, p. 290; Rankin et al., 1977) when something happens. Thus, as Slater et al. (2014) argues, people living in the close vicinity to the crippled Fukushima nuclear plant were struggling to support the economic recovery promoted by the government and secure stable livelihoods, while at the same time trying to protect the health of their families and children. The need to choose between two priorities (economic recovery and physical safety) has determined the approaches to the accident and action strategies taken by the Fukushima local activists making them different from those who live further away from the crippled Fukushima nuclear plant. Although this research has consulted materials about the Fukushima local activists, consideration of those "rural activists" is considered beyond the scope of this research.

The second type of movement is what can be termed the "metropolitan movement" (Satoh, 2012), consisting of women activists (Holdgrün & Holthus, 2014), young workers, students, senior citizens, *sarariman* (ordinary working people) (Morioka, 2014), and famous intellectuals (Manabe, 2015; Samuels, 2013; Tamura & Tamura, 2016). Starting in the summer of 2011, rallies were held weekly in front of the Prime Minister's Residence in Tokyo and other metropolitan areas of Japan (Slater et al., 2012). Such rallies were attended by people who advocated for closing Japan's nuclear power plants and *saikadō hantai* (the prevention of nuclear plants' restart) (Machimura & Satoh, 2016). Their approach focused efforts on taking on the *genshiryokumura* (nuclear village), the power consortium of utility companies, government and experts. Consequently, their goals transcended issues of health and safety becoming more related to broader problems of nuclear proliferation, political and economic centralization, and technological elitism.

Novikova (2016) further argues that the third "self-help" (Avenell, 2010) type of activism which has taken place in the urban areas of Japan was underrepresented in the

research that discusses the post-Fukushima reality. The most prominent features of this movement is that it took place in urban areas that did not sustain direct damage by the earthquake and tsunami. Yet, they were contaminated by the radioactive fallout shortly after the Fukushima Daiichi Nuclear Power Plant Accident (Takahashi, 2015). Affected localities included Tochigi, Ibaraki, Chiba and Saitama prefectures. Local governments and nuclear experts failed to provide information about food, air, water and soil contamination and to take immediate precautionary action, such as evacuation. Yet, the scope of the damage was considered large enough to cause panic among local residents — usually parents—who started organizing locally in order to pursue their own strategies to reduce the risk of radiation damage while negotiating and sometimes collaborating with municipal officials.

This case study is meant to examine the third type of activism, exploring the construction of expertise by lay public and the process of knowledge diffusion and co-production. The problem of "legitimation of different forms of knowledge" (Jovchelovitch, 2007, p.122), particularly experts ignoring or dismissing lay knowledge has been widely discussed in literature that has focused mainly on the assumption that the public has its own indigenous knowledge related to the specific place defined by "material boundaries and everyday activities" (Mihaylov & Perkins, 2015, p. 129). By residing on a certain area people form attachment and this attachment to a certain place "yields an intimate ecological knowledge, the authority of which is based upon repeated use and observation of the environment recorded in an oral tradition that spans generations" (Larsen, 2008, p.176).

Wynne (1992) analyzed sheep farmers in Cumbria, a mountain area in north-west England, who were not allowed to sell their sheep due to the radioactive contamination caused by fallout from the Chernobyl nuclear power plant accident in 1986. The major

problem was that while conducting experiments scientists ignored farmers' informal knowledge and expertise, which led to the unrealistic results, from farmers' perspective. Specialists ignored local environmental conditions and sheep behavior particularities, thus approaching several farms or fields with one measurement or value. In this regards, the case of Tōkatsu region is particularly revealing as it involves a recently established urban area or "bedroom town" with a relatively new population of newcomers who do not possess indigenous or historical knowledge about the immediate area. The analysis of the Tōkatsu case might explain how knowledge about local community has been constructed and later articulated and used in the environmental debate.

1.4 Community Profile

This research examines the Tōkatsu region in Chiba Prefecture. Chiba Prefecture is situated on the eastern side of the Tokyo metropolitan area, and occupies a peninsula that faces the Pacific Ocean from the southeast, while its western side faces Tokyo Bay. According to the Chiba Prefecture website[3], it is one of the major agricultural prefectures in Japan which was ranked fourth nationwide in 2012. On the other hand, in the 1950s the prefecture actively attracted big enterprises in the heavy and chemical industries, becoming a part of the Keiyō Industrial Belt (Masumi, 1995).

The Tōkatsu region or Higashi-Katsushika, is located in the north-western part of the Chiba Prefecture and includes six cities—Matsudo, Noda, Kashiwa, Nagareyama, Abiko, and Kamagaya. It adjoins the Tokyo Metropolitan Area and Saitama Prefecture to the west, and Ibaraki Prefecture to the north. Occupying a territory of 379.35 kilometers, which is about 7.4% of the total area of Chiba Prefecture, it has a population of about 1.45 million

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[3] https://www.pref.chiba.lg.jp/kc-toukatsu/gaiyou.html Retrieved: October 29, 2017.

people, which is 23.4% of the total population of Chiba Prefecture, and urbanization in this region is constantly progressing.

Historically there were several villages and small towns that merged together due to the rapid development of the region that started in the 1950s. Region socioeconomic structure changed dramatically with the arrival of large firms and enterprises. The regional development included the construction of large-scale housing complexes. By meeting the need for affordable housing for regular employees who commuted to jobs outside the prefecture and transferees from outside the prefecture the region became a "bedroom community" in the suburbs of the Tokyo metropolitan area.

While being adjacent to the capital city, the region has a lot of green space as farmlands and parks, various historical attractions and nature-rich waterfront spaces including the Tone and Edogawa rivers and Teganuma lake. Furthermore, the proximity to large consuming areas allowed the agricultural sector of the region to develop, thus reaching the top-class production volume nationwide.

Due to the construction of rail networks and new railway lines, Joban line in particular, for industry and commuting residents, the region has developed a convenient local public transport system which influenced economic and population growth. The region is expected to attract more residents in the future by developing the area along the Tsukuba Express line, the Joban line, and by improving the Tokyo Outer Ring Road and the North Chiba Road. Ohtani et al. (2017) explain that the community structure of the Tōkatsu region as a recently established "bedroom town" determined the character of the Tōkatsu activism. More specifically, the authorities of the Tōkatsu region cities were interested in increasing cities' population, particularly attracting young families, and were willing to cooperate with citizens supporting activists' initiatives.

1.5 Research Method

This research is qualitative in nature since it aims at observing, describing, interpreting and analyzing the multilayered reality of contemporary participation. It focuses on the Tōkatsu network case and is based on the qualitative methods (ethnographical study and interviews). The analysis also incorporates unobtrusive methods by exploring Tōkatsu weblog content and includes examination of hyperlinks and documents that were produced by groups and made available online. The unobtrusive method allows researchers to analyze data without influencing or affecting its course or flow (Berg, 2001). On the other hand, by interpreting and affixing meaning to the online data, researcher risks biasing the results. Therefore, the data was complemented by obtrusive methods including interviews and participant observation.

In order to support the hypothesis, the researcher followed the principles of data triangulation (Yin, 2008) by analyzing multiple sources of evidence in order to corroborate the same fact or phenomenon. The main analysis uses documents produced by Tōkatsu activists and direct observation of group meetings as well as data from 12 semi-structured and open-ended interviews with Tōkatsu groups' representatives conducted from 2013 until 2017.

To embrace the full complexity of movement development, the structure of the issue networks and the process of radiation-related knowledge accumulation the content analysis of six weblogs created by Tōkatsu area activist groups and their online networks was undertaken. By exploring connected websites and weblogs a picture of mutual interaction and relations was generated. Chapter 4 further explains the process of data collection and analysis while elaborating on decisions that were made and obstacles that I faced with when studying the Tōkatsu case.

1.6 Definitions

This research examines the emergence of new identity of citizens - expert citizens - in response to radiation contamination of local community and their role as mediators between experts and lay public. Accordingly, the definitions of scientists and lay public are needed in order to understand further discussion. McCormick (2009) defines scientists as people who "possess a certain kind of authority, have a unique training and set of credentials, and control a body of supposedly objective and value-neutral findings that can be leveraged by other social actors" (p.29). The author, by drawing on Bell's (1999) understanding of expert knowledge as "an objectively known intellectual property that is an investment by society and is subject to market judgments", argues that experts are those who are "paid for their expertise and who possess a certain kind of training that provides them the legitimacy … to generate new bodies of data as well as effectively evaluate existing expertise" (p.30). Accordingly, behind the definition of expert lies the idea of training and obtaining some sort of qualifications while on the same time it entails the affiliation with established research institutions and the association with the scientific community. Furthermore, the definition of expertise emphasizes the notion of objectivity. Consequently, lay public is understood as possessing subjective knowledge or practical experience about the reality, i.e. lay knowledge, that is not codified and usually "marginalized in markets" (McCormick, 2009, p. 30). Further discussion about experts and lay public relationship and types of expertise will be continued in Chapter 2.

1.7 Implications

The case of the Tōkatsu region is particularly relevant for several reasons. First, the Tōkatsu region activists have formed a relatively large-scale citizen network related to the most pressing issue of risk management and citizen science, disaster relief and health

effects of nuclear hazards. Second, they performed various forms of contention on local and national levels expanding their networks and changing their organizational forms and boundaries throughout the time. Lastly, digital media were leveraged by Tōkatsu activists not only as a tool that helps to reduce communication and coordination costs but also as a network-building space and a forum for knowledge construction and co-production.

The character of contemporary political participation is changing, giving people more ways to engage in the life of their community. The analysis of the Tōkatsu region activists demonstrates that in an emergency situation, when established institutions fail to address community problems (Slater et al, 2014), reflexive and concerned individuals can gather to perform concrete actions taking charge of their own lives and future of their families. During the course of their action these concerned individuals can develop their expertise thus eliminating the bipolar dichotomy between lay public and experts and becoming expert citizens – new players in the knowledge co-production process.

In such a context, digital media can create a space for networking, problem articulation, experience organizing, and knowledge assembling, thus representing an opposition to governmental practices of information control. Furthermore, in a post-nuclear disaster situation, the internet can provide resources for participatory monitoring while eliminating the boundaries between lay public and experts.

1.8 Chapter Organization

Following this brief introduction, in Chapter 2 I discuss the major theoretical approaches to the study of participation and knowledge co-production. The theoretical framework for this research draws on Bang's (2004) study of the nature of contemporary participation and Collins's (2014) framework of expertise types. By drawing on the Eyerman and Jamison's (1991) definition of social movements as "a cognitive territory, a

new conceptual space" (p. 54) and their idea of movement intellectuals, I argue that concerned citizens nowadays are involved in the production and co-production of knowledge which might be seen as an alternative to "engagement" or "participation". The idea of co-production assumes that more voices are given to various actors, and concerned individuals are no more subjects of the research but expert citizens who can participate in the scientific debates becoming mediators between lay public and experts.

Furthermore, by discussing connectivity of contemporary social action I argue that the dynamics of information sharing afforded by digital media offers various routes to public engagement while facilitating knowledge production and co-production. I conclude with the debate of the Internet's capacity to influence the knowledge production process arguing that even though knowledge is produced in a dialogue and the Internet, weblogs in particular, has the capacity to enhance the dialogue between various actors, expertise that allows them to contribute to science might be obtained only through practice and communication with experts within the scientific community.

While this research adopts a social constructivist approach, in Chapter 3 I discuss structural factors that explain the conditions under which local activists have been operating. By tracing the history of Japanese environmental activism, I demonstrate gender division of environmental risks and conclude that even though victim oriented idea of Japanese environmentalism and the Japanese political structure did not allow environmental activists influence national policy-making process, contemporary local and self-help activism has potential to enact social changes in Japan.

In Chapter 4, I discuss the methodological approach. In order to answer the research questions and to develop comprehensive understanding of the case, I followed the principles of data triangulation (Yin, 2008). More specifically, I took multisite approaches by supplementing the analysis of interviews and online weblogs' content with accounts of

field sites, groups' reports, petitions and other print materials produced by local activists. The first part of the analysis addresses the first set of research questions that concerns how local citizens tried to establish themselves as people who can speak in the language of science. The first part of the analysis was based on 12 semi-structured, face-to-face and group interviews with Tōkatsu groups' representatives, documents produced by Tōkatsu activists from March 11, 2011 until January 1, 2015, and direct observation of group meetings.

The second part of the analysis reveals a full complexity of movement development, the structure of the issue networks and the process of radiation related knowledge accumulation. The second part relied on the content analysis of six weblogs created by Tōkatsu area activists and hyperlinks analysis. Exploring connected websites and weblogs I generated a map of mutual interactions and relations. Furthermore, an examination of event-related materials such as forthcoming lectures' announcements and reports about study meetings was conducted to illustrate various opportunities for risk articulation and knowledge co-production available for Japanese local activists at the time.

In Chapter 5, I present the results of the interviews, fieldwork and weblog analyses. Finally, in the discussion (Chapter 6), I provide a broad theoretical context for the research questions and discuss the implications of this research. Although limited to a case study in Japan after the Fukushima accident, it is hoped that this research will provide theoretical insights that can help to understand broader dynamic surrounding citizen science, citizen engagement and the role of the internet in risk articulation and knowledge production.

Chapter 2: From Participation to Co-Production

2.1 Introduction

This research was done at the junction of four fields of study: studies of political participation and engagement, social movement theory, social theory of knowledge and Internet-based communication studies. By starting from the assumption that the Tōkatsu region case study represents a type of civic engagement which at first glance, conflicts with traditional logic of collective action, this research discusses the debate surrounding declining levels of participation and engagement in contemporary politics and society. Assuming that traditional indicators of political participation are not applicable to this case, this chapter refers to social movement studies by exploring collective forms of civic engagement. By tracing the history of social movement studies, this chapter explores how the structuralist approach to collective action has been altered by the constructivist view. Constructivists tried to explain the work of meaning-making done by social movements, and paid considerable attention to the cultural and historical dimensions of social movements. Consequently, the idea that movements produce new ideas and change discourses led to the discussion of knowledge production done by social movements.

The second part of the chapter focuses on the relationship between lay public and science following the debate of public understanding of science and risks, and the role of the public in policy-making and knowledge construction. It shows that, rather than making a distinction between lay public and experts, we should consider a more complex picture of social and technical interactions that operate in local contexts and various types of expertise and knowledge that people posses or acquire through the process of their action. The chapter further argues that in situations when numerous actors and interests come into conflict, new identities of expert citizens emerge, subsequently assisting action, producing

new meanings and new knowledge, and bridging conflicting sides in environmental controversies.

The last part of the chapter discusses the role of the Internet in the knowledge production process. The early research about the Internet theorized it as a tool that could reinvigorate democracy by allowing various actors to communicate with each other, to participate in political debates, and to mobilize the wider public and resources in order to attain political goals. Yet, the ubiquity of the Internet shifted this paradigm, leading to the discussion of the Internet as a "public space" rather than a tool. Furthermore, the idea that the Internet and its online world is less real than offline, and that there is a gap between digital and physical has been challenged (Tufekci, 2017). Nathan Jurgenson (2011) calls it "digital dualism," instead proposing the idea of augmented reality. He argues that "our reality is both technological and organic, both digital and physical, all at once. We are not crossing in and out of separate digital and physical realities, … but instead live in one reality, one that is augmented by atoms and bits"[4]. Thus, all actions performed on the Internet, including information exchange via hyperlinks, should be considered as extensions of activists' reality.

The chapter concludes with a discussion of the Internet's capacity to influence the knowledge production process. By allowing easy access to an enormous amount of free open-source data, it has a potential to create a false sense that one can become an expert in a respected science simply by extensive reading of Internet sources and literature. This was what happened with the anti-vaccination movement when the opinions of scientific experts were no longer trusted. This chapter, in contrast, discusses that even though knowledge is produced in a dialogue and the Internet has the capacity to enhance dialogue

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[4] https://thesocietypages.org/cyborgology/2011/02/24/digital-dualism-versus-augmented-reality/
Retrieved: October 21, 2017.

between various actors, expertise that allows them to contribute to science might be obtained only through practice and communication with experts within the scientific community.

2.2 Theorizing Political Participation

When discussing political participation, it is important to mention the groundbreaking analysis that Putnam (2001) conducted in the U.S. arguing that political participation was declining and mentioning numerous factors that influenced this process. However, his study did not extend to explicitly define the term of civic engagement. Within the academic discussion of political participation and civic engagement there have been different opinions about ideal forms of participation and possible obstacles in assessing it. Norris (2002) emphasizes that, while considering the level of participation, we have to be aware of "multiple potential traps" (p. xi). Firstly, Norris warns not to romanticize the "Golden Age when all the town hall meetings were packed, all the voting booths were overflowing, and all the citizens were above average. It is all too easy to equate change with decline" (p.xi). The reality is changing and citizens have to adapt to this, abandoning some practices and accepting new ones.

Secondly, Norris emphasizes ethnocentrism as another potential trap in assessing political participation. She argues that the research on engagement and political participation originated in the U.S. and some expect that patterns found in one historical and social setting will be the same everywhere. On the contrary, "[t]he individualistic values and particular constitutional structures created at the founding of the United States set a specific cultural milieu" (p.xi) therefore frameworks and parameters that have been proved efficient and useful in research about the United States might be difficult to apply in other cultural, historical, social and geographical environments.

A third potential trap that affects our understanding of contemporary civic engagement is the plurality of perspectives among different schools of thoughts, various disciplines and studies. "[R]esearch on older mainstream channels of participation, such as elections and political parties, often fails to be integrated into work on new social movements and transnational policy networks. Students of political behavior decry eroding party membership, while elsewhere international relations scholars celebrate the flowering of a cosmopolitan civic society. Psephologists mourn half-empty ballot boxes, while communications scholars herald the rise of Internet activism" (p. xii). Berger (2009) also argues that sociologists, when talking about participation and engagement mean "*social* or *moral* engagement, people's attention and energies invested in social groups and networks or focused on moral reasoning and follow-through". On the other hand, the author emphasizes that political theorists and political scientists focus on "*political* engagement, people's attention to and activity in political issues and processes" (p. 336, italics in original). Thus, this luck of consensus between different disciplines leads to contradictory assessments of the same phenomenon.

Norris concludes that what we are witnessing is not the death of civic engagement but the evolution and transformation of it. Furthermore, Adler and Goggin (2005) emphasize that civic engagement comprises different dimensions and aspects. They provide a relatively broad definition of civil engagement as something that "describes how an active citizen participates in the life of a community in order to improve conditions for others or to help shape a community's future" (Adler and Goggin, 2005, p. 241). Thus, having this broad definition in mind, the authors also come to the conclusion that fears of civic participation decline are exaggerated.

Furthermore, Norris points out at "outdated theoretical frameworks as another barrier" (p.xii), arguing that the nature of political participation is changing (Marsh and Akram,

2015), thus, the approach to its analysis requires new categories and new frames. For example, Bennett et al. (2011) has introduced actualizing activism, discussing a "generational shift away from taking cues as members of groups or out of regard for public authorities (opinion leaders, public officials, and journalists), and toward looser personal engagement with peer networks that pool (crowd source) information and organize civic action using social technologies that maximize individual expression" (2011, p. 839).

Ekman and Amna (2012) suggest a new typology of political participation, distinguishing between latent forms of engagement, or "the kind of engagement that may be regarded [as] "pre-political" or on "stand-by"" (p. 287) and manifest forms. Furthermore, they make a distinction between individual and collective forms of political behavior, constructing a matrix of political behavior (Table 2-1).

Table 2-1 Typology of Civic Engagement Based on Ekman and Amna, 2012.

	Non-Participation (disengagement)		Civil Participation (latent-political)		Political participation (manifest)		
	Active forms (antipolitical)	Passive forms (apolitical)	Social involvement (attention)	Civic engagement (action)	Formal political participation	Activism (extra-parliamentary political participation)	
						Legal/extra parliamentary protests or actions	Illegal protests or actions
Individual forms	Non-voting Actively avoiding reading newspapers or watching TV when it comes to political issues Avoid talking about politics Perceiving politics as disgusting Political disaffection	Non-voting Perceiving politics as uninteresting and unimportant Political passivity	Taking interest in politics and society Perceiving politics as important	Writing to an editor Giving money to charity Discussing politics and societal issues, with friends or on the Internet Reading newspapers and watching TV when it comes to political issues Recycling	Voting in elections and referenda Deliberate acts of non-voting or blank voting Contacting political representatives or civil servants Running for or holding public office Donating money to political parties or organizations	Boycotting and political consumption Signing petitions Handing out political leaflets	Civil disobedience Politically motivated attacks on property
Collective forms	Deliberate non-political lifestyles, e.g. hedonism, consumerism In extreme cases: random acts od non – political violence (riots), reflecting frustration, alienation or social exclusion	"Non-reflected" non-political lifestyles	Belonging to a group with societal focus Identifying with a certain ideology and/or part Life-style related involvement: music, group identity, clothes, et cetera For example: veganism, right-wing Skinhead scene, or left-wing anarcho-punk scene	Volunteering in social work, e.g. to support women's shelter or to help homeless people Charity work or faith-based community work Activity within community based organizations	Being a member of a political party, an organization, or a trade union Activity within a party, an organization or a trade union (voluntary work or attend meetings)	Involvement in new social movements or forums Demonstrating, participating in strikes, protests and other actions (e.g. street festivals with a distinct political agenda)	Civil disobedience actions Sabotaging or obstructing roads and railways Squatting buildings Participating in violent demonstrations or animal rights actions Violence confrontations with political opponents or the police

When explaining manifest forms of political participation, the authors refer to "formal types such as voting or being a member of a political party, as well as more protest oriented or "new" forms of political participation like taking part in demonstrations, engaging in extra-parliamentary political protests, or boycotting and political consumption" (p. 291). According to Ekman and Amna's typology civic or latent political participation refers to activities undertaken "by ordinary citizens that are intended to influence circumstances in society that [are] of relevance to others, outside their own family and circle of close friends". More precisely, the authors refer to the latent political participation when discussing that people "follow political issues, write to editors, donate money, and recycle for environmental reasons", when people do voluntary work or organize "to solve local problems or to improve conditions for certain groups in society" (p.291). Having this matrix, the Tōkatsu case can be understood as a collective form of civic engagement that implies action taken collectively in order to influence society.

2.3 Collective Action Approach

Until the 1960s, collective behaviorists in the United States (Weber, 1978) conceptualized collective action as something that poses a threat to the societal order. Consequently, social movements were theorized as dangerous crowds and masses that urge extreme emotions, making people do things they otherwise would not do. Scholars in the 1950s who analyzed the Nazis described them as people deceived by their charismatic leaders. This approach changed in the 1960s when sociologists started explaining social groups in the categories of class, race, or gender.

In the 1970th John McCarthy and Mayer Zald developed an economic vision of protest, pointing out that social movement organizations (SMOs) behave as firms, mobilizing resources, hiring staff and disseminating their ideas, sometimes competing with one

another. The resource mobilization approach saw protesters as concerned and rational individuals who had to employ non-institutionalized methods to achieve political influence, which in turn increased the cost of their participation. Group mobilization of resources (funds, talent, contacts, and etc.) are seen as a key explanatory mechanism of the origins of social movement (Davis, 2002; Olson, 1971).

Around the same time, the political dimensions of social movements were recognized being theorized as "political process" theory or the political opportunity approach. Researchers studied social movements in terms of conflicts of interest and explained the appearance, success or failure of a particular social movement "on the basis of changes in the institutional structure or informal power relations of a given national political system" (McAdam et al., 1996). This approach emphasized the critical role of grassroots organizations (work, neighborhood, churches) and expanding political opportunities in promoting and structuring collective action. Thus, time was an important variable, since there were "Big Opportunity" times (wars, international economic crises) in which the entire state system was sensitive to changes (Goldstone, 1980). However, there has been sharp criticism of resource mobilization and political opportunity theories due to their emphasis on economical and political factors and failure to include cultural and symbolic processes in description of collective action.

In the late 1980s another approach was formulated. It criticized positivist and structuralist orientations in social movement studies and appreciated cultural dimensions of social movement, focusing on the construction of symbolic meanings, specifically culture (Johnston and Klandermans, 1995), identity (Melucci, 1996), narratives (Davis et al., 2002) and framing (Benford and Snow, 2000). Scholars paid attention to concepts which were previously considered "irrational," including emotions, feelings and identity, criticizing the tendency to fit into "*a priori* models, categories, and frameworks such as

"political opportunities" or "resource mobilization" that would obscure "the meaning-making and cultural aspects of social movements" (Casas-Cortes et al., 2008, p. 24, italics in original). This "cultural turn" in the study of social movements influenced the methodology of research that used to be conducted by distanced and neutral researchers who were looking for "generalizable mechanisms and laws" (p.23). Instead, researchers were encouraged to use ethnographic tools and methods of analysis that focus on the construction of meaning and cultural practices of activist groups (Casas-Cortes et al., 2008).

The recognition of human agency and culture led to the concept of the new social movement. The typical actors in new social movements are citizens of modern societies. Among them there are women, youth, gender and ethnic minorities who have been discriminated against and whose identities have been questioned in some way. New social movements deal with a wide variety of issues, particularly associated with urban spaces such as neighborhoods or cities, ethnic and cultural identities and aspects of individuals' life such as body, health and sexual identity (Offe, 1985).

Chesters (2012) argues that, despite the fact that new social movements shaped various academic disciplines like women's studies, peace studies, post-colonial studies, etc., they were rarely recognized as knowledge producers, remaining "objects of knowledge for researchers and academics, rather than as knowledge producers in their own right" (p.153). Casa-Cortes et al. (2008), points out that those theorists who emphasized the importance of cultural and discursive interpretation of social movements in fact brought us closer to the idea of social movements as knowledge producers. Thus, during the final decades of the 20th century the issue of knowledge production has become associated with social movements (Cox and Fominaya, 2009) triggering considerable interest among social and political scientists.

2.4 Public Participation in Science

Eyerman and Jamison (1991) claim that social movements are engaged in a constant process of counter-expertise production. Authors highlight that scientific knowledge is directly dependent on social movements since, over the course of history, numerous scientific disciplines emerged as a result of various social controversies raised by social movements. Consequently, they define social movement as "a cognitive territory, a new conceptual space that is filled by a dynamic interaction between different groups and organizations" (1991, p. 54). The authors consider "cognitive praxis" as a major activity of a social movement, explaining social movements as forces that create "a public space for interest articulation" (p. 60).

In the mid-1980s, Ulrich Beck was the first to argue that we are witnessing a transformation from an industrial society to a risk society in which one of the central struggles is related to the distribution of risk and environmental justice. Beck (1992) addressed the theory of reflexive modernity and discussed the consequences of scientific and industrial development that led to risks and hazards that humankind had never faced before. Those risks, including nuclear contamination, imply "projected dangers of the future" (p. 34) that cannot be limited in time and will affect future generations. Beck emphasizes that modernization must become reflexive in response to these increasingly complex risks, assuming knowledge about modern risks and scientific expertise.

Science experts play a significant role in risk articulation and evaluation; risks "not recognized scientifically do not exist – at least not legally, medically, technologically, or socially, and they are thus not prevented, treated or compensated for" (Beck, 1992, p.71). This leads to a conflict between experts and lay public since there is an assumption that experts consider nuclear waste repositories, pesticides, synthetic chemicals, and other hazardous activities and technologies as relatively safe while lay people insist on their

dangerous nature. A group of researchers led by Paul Slovic that studied risk perceptions proved that experts and lay people employ different kinds of rationality while making estimates about different risks (Neil et al., 1994; Slovic et al., 1981; Slovic, 1987). Researchers argued that lay people were aware of what is risky, however when making judgments they also employed their values, previous experience with risks, beliefs about future generations and contexts of their local communities (Fessenden-Raden et al., 1987).

However, Rolf Lidskog (2008) claims that "the capacity of science to deliver trustworthy knowledge is currently contested" (p. 73) and activists around the world started challenging the authority and the objectivity of scientific experts arguing that the lay public's rationality should be taken into consideration when making decisions regarding potentially risky technologies. As a result, a new field of research known as science and technology studies emerged to investigate the place of science and technology in society (Jasanoff, 2004).

Irwin (1995, p.14) concludes that in the twentieth century, the problematic relationship between science and the public was considered as resulting from public ignorance or irrationality. Therefore, it was suggested to educate the public in regard to scientific and technical information. In order to overcome public scientific illiteracy and promote interest in science, numerous initiatives were adopted, ranging from conducting "open house" days at museums and research institutes to science festivals and training courses in scientific journalism (Bucchi and Neresini, 2008). The assumption that public is illiterate was called "deficit model" of public understanding of science (Wynne, 1991). This model, while sharing the belief that better informed citizens can play a significant role in scientific development, accepted the reactive role of citizens. "The 'enlightenment' approach - would argue that the provision of scientific information to public groups will in itself be beneficial – if only in allowing a better appreciation of the scientific changes which are

influencing society and in clarifying citizen['s] choices" (Irwin, 1995, p 15). Hence, new science and technological inventions were needed to be accepted, rather than criticized or questioned.

However, soon it became obvious that lay knowledge and scientific knowledge were qualitatively different because they did not share key assumptions and practices on which scientific enterprise was based (Bucchi & Neresini, 2008). Callon (1999) argues that the paternalistic version of public understanding of science shifted from "the education of a scientifically illiterate public" (p.89) to the right of the public to participate in the scientific discussion. He calls it the public debate model, explaining that, according to this model, lay people have enough competence and knowledge to enhance the knowledge of scientists. In this model, scientific knowledge was considered to be incomplete and deficient, since it was based upon conditions produced in controlled environments of laboratories which could not completely replicate the complexity of the real world. B. Wynne's (1989, 1992) study of the interaction between shepherds living in a close vicinity to a nuclear reprocessing plant in the north-west of England presented this model, demonstrating that the real lives of local residents are more complex and dynamic, than originally thought, and that scientific approaches and methods can not be fully applicable.

In 1994, Gibbons and his colleagues claimed that we are now witnessing a new form of knowledge production. The traditional form, which they called Mode 1 science, was characterized by the "hegemony of theoretical" or experimental science and its closed nature that allowed only a limited number of scientists and their host institutions the right to formulate and solve scientific problems (Gibbons et al., 1994). Mode 2 knowledge, instead, is "socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities" (Nowotny et al., 2003, p.179). By developing this idea in their follow-up study Nowotny et al. (2001) claimed that a shift in knowledge production was

predetermined by the wider social changes that included, among others, the proliferation of higher education. Easy access to higher education increased the number of knowledgeable actors leading to the emergence of a knowledge society. Those actors were now located not only in traditional academia but also in numerous knowledge centers such as research institutes, state agencies, and think-tanks. By cooperating with each other they can produce more open and accessible knowledge making systems.

Ligskog (2008) concludes that nowadays "to become socially robust, it is not enough for science to ponder about reliability and validity. Instead it must also reflect on its implications (including unintended consequences)", thus moving "from being a culture of autonomy to a culture of accountability" (p.85). Ligskog further theorizes that this implies that trusted knowledge can be created only "through consultations, discussions, negotiations, contestations, mediations, and deliberations in the agora. The agora is, however, not an inclusive place for all citizens, but rather a public space populated by highly articulate, well-educated people – a category of people created by the mass higher education of contemporary society" (p.75).

Meanwhile, all aforementioned models share the same assumption that lay people without good education and training still did not possess "any competence for participating in the production of the only knowledge of any value: that warrants the term 'scientific'" (Callon, 1999, p. 89). Some authors even argued that due to the public deficit of trust in experts and science, the public was purposely engaged in scientific projects to "deactivate skepticism and opposition to new technologies". However, lay opinions and perspectives were still excluded from the decision-making process (Delgado et al., 2011, p.827). As a result, Callon distinguishes a third model of knowledge co-production (1999) which allows the public to actively create knowledge.

The idea of co-production "presumes that knowledge and its material embodiments are products of social work and, at the same time, constitutive of forms of social life" (Jasanoff, 2004, p.274). Jasanoff further theorizes that co-productionist analysis shifts our attention from *fact*-making to *sense*-making, "with scientific sense-making as a particular, if highly significant, category. It brings society's collective habits of interpreting and ordering experience within the perimeter of scholarly inquiry" (p.276, italics in original). As Callon et al. (2009) describe, in the beginning, specialists are convinced that they have clearly defined the parameters of the question to be dealt with, proposed suitable solutions, established sound knowledge about the issue and have clearly identified the groups concerned. Yet, Frickel et al. (2010) theorize that there are always some "areas of research that are left unfunded, incomplete, or generally ignored" (p. 2) due to complicated power relations existing among various stakeholders, their interests and related to them funding priorities. The authors call these areas of research "undone science" further arguing that these areas can have "potentially broad social benefit" and need to be addressed (p. 2).

When "disconcerting event" happen, for example, when radioactive contamination was unexpectedly discovered in the Tōkatsu region, new actors interested in or affected by the situation suddenly appear—in this case, Tōkatsu groups concerned with low-dose radiation contamination. It leads to the "second inventory: an inventory of the possible connections between the problems under discussion and other problems with which some committed groups strive to establish links" (Callon et al., 2009, p.29). Thus, the "controversy enriches the meaning of a situation" allowing "an inventory to be made of the different dimensions of what is at stake" (p.30). Höijer et al. (2006) theorize the idea of controversy, calling it a dilemma and arguing that the acknowledgement of "dilemmas in terms of uncertainty, contradictions and ambivalence,…opens up spaces for

participation, deliberation and action" thus allowing various actors to provide input (p.364).

   This model explains the transformation of the relationship between science and society in two significant ways (Rabeharisoa & Callon, 2004, p.142). The first transformation implies "the expanding list of actors who participate in scientific and technical debates and activities", which leads to the emergence of collective action and makes possible new identity construction. The second transformation "relates to the shaping of objects of shared interest that could not have emerged without this collective action" (p.142). This means that certain concerned groups try to address scientific arguments and gaps that were either unknown or ignored. The most illustrative example of this model is the area of medical research presented by associations of patients who managed to produce new knowledge and know-how about their diseases, construct new institutions, new scientific practices, new facts and beliefs (Barbot, 2006; Epstein, 1995; McCormick, 2009; Rabeharisoa & Callon, 2004, Pols, 2014).

2.5 Identity in the Process of Co-Production

   Jasanoff (2004) underlines that "identity is particularly germane to co-productionist accounts because, whether human or non-human, individual or collective, it is one of the most potent resources with which people restore sense out of disorder. When the world one knows is in disarray, redefining identities is a way of putting things back into familiar places" (p.39). Therefore, the formation of identities, particularly the identity of the expert, is widely theorized in science and technology studies. Callon et al. (2009) argue that any controversy separates specialists and non-specialists by "an almost unbridgeable gulf" when specialists think that "they are faced with an ignorant or even obtuse public" (p.33).

Tesh (1999) argues that all research about risk perceptions and public understanding of science presumes that there is expert-citizen dichotomy. By making this distinction, the literature ignores organized groups through which members of the public actually communicate their ideas to policy-makers and the wider public, confusing "'citizen' with 'individual'" (p. 42). Tesh argues that when analyzing controversies related to environmental risks, "we are not seeing a conflict between citizens and experts but between two groups of experts." The author theorizes that by using the individual citizen as the unit of analysis instead of the group, "risk scholars ignore the activities and the composition of the organizations through which activist citizens acquire information about environmental hazards" (Tesh, 1999, p.43). These organized groups are referred to in literature as "expert citizens" (Bang, 2004), "counter-experts" (Eden, 1996) or "citizen experts".

Expert citizens are defined as "independent, voluntary professionals who are able to build cooperative networks in their individual or collective capacity between citizens and experts and pragmatically deal with policy problems in elite policy networks" (Takao, 2016, p. 1101). Takao, drawing on Bang's (2004) definition of expert citizens, argues that they play an "intermediary role," bridging "otherwise unconnected actors (i.e. policy and scientific experts and lay people) in a way that co-produces environmental policy" (p.1101). They initiate negotiation and dialog between experts and lay public, filling the gap between "scientific/expert knowledge production and local daily-life knowledge production for adaptive governance of local communities" (p.1101).

Bang (2004) argues that everyday makers appear in response to expert citizens. Both types of citizens are project oriented and do not oppose the state or ideologies, but rather aim at creating networks and reflexive communities that would respond to concrete issues on a full-time (expert citizen) or part-time (everyday maker) basis. Everyday makers have

no interest in party politics and are more concerned with being involved in activities which are outside of the limits of their social roles. They prefer individualized participation that is based on everyday activities and employs creative forms of action and various types of media, such as writing weblogs, purchasing organic food, running festivals or organizing workshops. They are not intent on shifting grand narratives, seeking instead to cause small changes through their daily interactions and direct, rather than ideological, actions. However, they are willing to cooperate with the system, including making partnerships with voluntary organizations and politicians to achieve their goals.

Bang is not the only author to point out the increased personalization of contemporary politics (Bayat, 2013; Dalton, 2008; Giddens, 2013; Morris-Suzuki, 2014; Vinken et al., 2010). Many authors attribute this to the growth of neoliberalism, which has been characterized as the world "where everything that used to be natural (or traditional) now has in some sense to be chosen or decided about" (Giddens, 2013, p. 91) and where "[t]he politics of choice appears to be replacing the politics of loyalties" (Norris, 2002, p.4). However, some authors suggest that this tendency leads to the appearance of self-interested consumers who are reluctant to contribute to the state. In contrast, Bang argues that everyday makers are those reflexive individuals who cooperate with others "for the explicit purpose of making a difference in the solving of common concerns" (2004, p. 3).

A number of qualitative studies have been performed to explain the development of emerging personalized forms of engagement. Yet, most studies describe only Western societies, leaving non-Western contexts underrepresented. *Civic Engagement in Contemporary Japan* (Vinken, et al., 2010) is one the few works that discusses contemporary forms of engagement in Japanese context. Morris-Suzuki (2014) also continues this discussion by defining increased personalization of citizen engagement as "everyday politics". She discusses the case of emergent concerned groups that formed

citizens' radioactivity measuring stations all over Japan after the Fukushima nuclear accident (Morris-Suzuki, 2014; 2015). Another example of emergent concerned groups is the case of Safecast, an independent citizen science project aiming at producing open air monitoring data (Morita et al., 2013; Kera et al., 2013). These groups appeared in response to public mistrust in the techno-scientific practices of the Japanese government and media, and tried to restore the sense of public control amid the situation that was unfolding after the Fukushima Daiichi accident. A more detailed discussion regarding the history and character of Japanese environmental movements and civil society will be presented in Chapter 3.

2.6 Digital Technologies and Media in Knowledge Co-Production

As a result, this research argues that some groups of laypersons, after being involved in an action and interaction with experts, are able to reach a certain level of expertise, thus becoming expert citizens. While discussing the nature of expertise and experience, Collins (2014) describes three kinds of expertise – ubiquitous expertise, specialist expertise and meta-expertise. While meta-expertise is not relevant for the present research, two other types of expertise will be explained in further detail (see Table 2-2).

Table 2-2 Table of Expertises (Partially Reproduced from Collins, 2014)

Ubiquitous expertise					
Specialist expertise	**Ubiquitous Tacit Knowledge**			**Specialist Tacit Knowledge**	
	Beer-mat knowledge	Popular Understanding	Primary source knowledge	Interactional expertise	Contributory expertise

Collins (2014) defines ubiquitous expertise as the expertise "we all acquire from growing up in our society" (p. 63) that comprises the skills that we develop during the process of socialization in a particular society, including the ability to communicate in our native

language and understanding etiquette norms, the skills needed to survive in a city, to use electric appliances and devices, etc.

Specialist expertise is divided into ubiquitous tacit knowledge and specialist tacit knowledge. The major difference between them is that ubiquitous tacit knowledge is gained from reading while specialist tacit knowledge is gained from apprenticeship. More specifically, Collins divides ubiquitous tacit knowledge into "beer-mat knowledge", "popular understanding" and "primary source knowledge". Beer-mat knowledge "is based on the few lines of writing that might be found on the back of a beer mat or coaster" (p. 66), meaning very limited information that results into relatively tenuous familiarity with the issue. Another category of knowledge is "popular understanding" that "can be acquired from popular science books, or television shows" (p.67). These books and shows are created "with the layperson in mind" and, while being informative, do not result in the level of expertise sufficient enough to make judgments and contribute to the process of policy-making about the issue. The last category is primary source knowledge that is obtained by reading professional journals or highly technical material on the Internet. While being based on primary sources, this knowledge can not be considered specialist knowledge and is not enough to contribute to science. The reason lies in the existence of epistemic community. Haas (1992) defines epistemic community as:

> "a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area. Although an epistemic community may consist of professionals from a variety of disciplines and backgrounds, they have (1) a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members; (2) shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy actions and desired outcomes; (3) shared notions of validity - that is, intersubjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and (4) a common policy enterprise - that is, a set of common practices associated with a set

of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence" (p. 3).

This definition emphasizes the existence of shared norms, ethical values and methods among experts both inside and outside of a particular discipline that allow them to make judgments and solve problems in various disciplines. Accordingly, without interaction with scientists and long engagement in the "spoken discourse of an expert community" (Collins, 2014, p.68), one can not "learn sufficient fluency in the talk as to be able to make the same judgments as any other expert" (p. 73). Through the process of communication with experts, one can learn common language shared within a particular scientific community, common norms and values thus acquiring interactional expertise "without participating in the practical activities or deliberately contributing to those activities" (p.68). On the other hand, by working with contributory experts and learning their techniques and skills, one can learn how to create something, thus acquiring contributory expertise. Interactional expertise, together with contributory expertise, forms specialist tacit knowledge. Collins (2014) argue that most project managers and editors of peer-reviewed journals have interactional expertise, thus being able to understand and evaluate ideas while not being able to contribute to the subject in question. Hence, to become an expert and to be able to contribute and to make decisions in scientific-related fields, one has to obtain contributory and interactional expertise.

Collins' idea of interactional expertise resonates with the notion of knowledge hybridity, which assumes that people employ "multiple, and at times conflicting forms of thinking, logics and explanations derived from their socio-cultural and institutional contexts, to make sense of and organize their experience around the same object of knowledge" (Renedo et al., 2017, p. 4). Renedo et al. argue that the assumption that knowledge is hybrid conveys the notion that knowledge is not exclusive to particular groups of people

(scientists or experts) or particular places (laboratories or research institutes). The authors provide the example of biomedical knowledge that derives from a mixture of the patient's and the medical practitioner's knowledge about an illness, as well as "religious and cultural values and 'common sense'" that help to conceptualize ones' illness experiences (p.4). In this regard, Renedo et al. relate Bakhtin's (1981) ideas about dialogue to the process of knowledge production, explaining that people shape knowledge "through their engagement in dialogue with [the] multiple beliefs, values and 'rationalities' that circulate around them". The authors invoke Bakhtin's idea of a polyphony of voices that constitute a dialogue, arguing that knowledge is produced through the polyphony of various other forms of knowledge, and is "a product of the dialogical nature of human beings and social life" (p. 4).

Dialogue 'appropriation' (Bakhtin, 1981) allows to argue that Internet affordance should have enhanced the knowledge production process by allowing various channels for dialogue and involving more actors and voices. Furthermore, Hakanson (2007) has noted that the key factor of knowledge creation is articulation that allows tacit skills and knowledge to become explicit and codified. Thus, the Internet, particularly weblogs, can make the process of articulation and codification easier.

Kuchinskaya (2014) emphasizes that the imperceptibility of radiation by human senses implies that an "individual's experience of it is always highly mediated" (p. 2) physically by things such as measuring equipment and maps, as well as conceptually by narratives. At the same time, the possibility of mediation and articulation depends on the existence of instrumental resources (e.g. meters for internal and external radiation, etc.) along with interactive resources. In contrast with the post-Chernobyl disaster situation in which dialogical opportunities for articulation were limited (Kuchinskaya, 2014), the post-Fukushima situation allowed many opportunities for risk articulation. The Internet made

individuals' narratives, radiation-related concerns and citizens' initiatives salient. It connected dispersed individuals into networks with other similar individuals, allowing dialogue and consequently facilitating the information-sharing and sense-making processes.

Bennett and Segerberg (2013) argue that contemporary activism is highly individualized, consisting of a large number of people experiencing common problems and seeking common solutions. They identify the ideal type of action that involves digital media in contentious politics. Starting from traditional collective action, they classify the other type as connective action. In contrast to "organizationally brokered collective action" that focuses on "resource-intensive mobilization and formalized (leadership-based, professionally organized) relations with followers with the aim of cultivating commonly defined emotional commitments to the cause" (p. 13), the main idea of connective action is that digital media can replace formal hierarchical organizations, allowing activism that is based on personal frames and loosely linked networks. As discussed above, the mechanisms of organizing collective action become more personalized in modern neo-liberal societies, and now people join the action not on the basis of social group identity or ideology but based on their personal lifestyles. "In this connective logic, taking public action or contributing to a common good becomes an act of personal expression and recognition or self-validation, achieved by sharing ideas and actions in trusted relationships. [T]he starting point of connective action assumes contribution: the self-motivated (though not necessarily self-centered) sharing of already internalized or personalized ideas, plans, images, actions, and resources with networks of others" (p. 36). Thus, personalized communication is becoming prominent while facilitating new narratives and discourses.

Another major characteristic of connective action is that it escalates more quickly, causing larger mobilization due to its flexibility or "symbolic inclusiveness" (p. 37) that implies the ability to easily connect various issues together and change political targets. Furthermore, it entails technological openness, meaning a diversity of communication technologies that allows to share personal action frames (Bennett and Segerberg, 2013).

One more aspect of the discussion of the Internet's role in the knowledge co-production process is the social and political implications of geographic information systems (GIS) (Elwood, 2002) and volunteered geographic information (VGI) (Tulloch, 2008). The emerging research on "geoweb" (Elwood, 2010) has contributed to the knowledge co-production paradigm, mobilizing the term "just good enough data" (Gabrys et al., 2016). The authors define the term as "the ways in which data generated through low-tech and low-cost instruments, as well as data that might be observational or experiential (including 'eyes on the ground' data), can be mobilized to create different accounts and different forms of evidence for engaging with environmental problems". While citizen-generated data might "fall outside of the usual practices of legitimation and validation that characterize scientific data," the authors argue that it might be enough to initiate conversation with experts and policy-makers, thus democratizing science (p.2).

Another stream of research discusses the idea of alternative knowledge networks (Sharman, 2014) mapping alternative information pathways (Vicari & Cappai, 2016) and discussing that digital communication contributes to health and environmental activism, not only by enhancing mobilization and lobbying activities but also by allowing activists to confront official decision-makers thus contributing to environmental and health planning and governance (Carton and Ache, 2017). Yet, in the case of anti-vaccination campaigns, when activists are refusing to vaccinate their children, oppositional experts' claims are ignored and assumptions are made based on scientific data and information

from the Internet. Various scientific facts are rejected and interpretations, not facts, are made based on false assumptions (Collins, 2014). This resulted in a decrease in the rate of vaccinations and epidemics of preventable infectious diseases putting at risk numerous generations of children (Dube, 2014).

Thus, this research argues that the Internet promotes ubiquitous tacit knowledge (Collins, 2014) by allowing free and efficient communication and informational flow among various actors. On the other hand, interactional expertise and contributory expertise can be obtained only though direct communication within the scientific community and long practice that includes rigid methodology during the process of data collection and analysis, and data validation based on theories adopted by the scientific community. Thus, the co-production of knowledge process can take place only when various actors have the capacity to contribute to the process of knowledge production by obtaining contributory expertise and, by virtue of their interactional expertise, they have the capacity to communicate in the language of science within the expert community.

Table 2-3 Typology of Engagement, Expertise and Identity Formation

Type of Expertise	Type of Activists	Type of Engagement
Ubiquitous expertise	Lay Public	Non-Participation
Interactional Expertise	Activists +Experts ⬇ Expert Citizens ⬇	Civil Participation ⬇ Political Participation ⬇
Contributory Expertise	Experts	Co-Production

Table 2-3 summarizes Table 2-1 (section 2.2, formulated by Ekman and Amna, 2012) and Table 2-2 summarized by Collins (2014). It explains how the lay public, characterized by ubiquitous expertise and non-participation, are able to gain interactional expertise in the process of action and cooperation with experts and evolve into groups of expert

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citizens. These expert citizens become mediators between lay public and experts while being actively engaged in collective and individual forms of political participation. Those who develop sufficient contributory expertise evolve into experts and become able to participate in the process of co-production.

This classification represents ideal types that will certainly have boundary contradictions, however it brings together the idea of expertise, identity and participation. The results and discussion section will further elaborate on this conceptualization by analyzing post-Fukushima local activism.

2.7 Summary

This research theorizes that people living in modern states are having to take responsibility for the risks that produced by contemporary societies. Thus, more and more citizens are faced with the necessity to make decisions and to engage in some forms of action. In this regard, different definitions of participation and engagement have been discussed and different approaches towards the citizen-scientist dichotomy have been explained. The collective action approach in particular has been reviewed, arguing that since society is changing, the traditional forms of participation also have been changing while introducing more personalized and less ideological types of action. This action, being enabled by digital media, allows for many opportunities for risk articulation, knowledge acquisition and information dissemination. This in turn leads to the appearance of new types of activists such as expert citizens and everyday makers. Through collaboration, they try to influence the decision-making process related to highly scientific controversies, such as radiation contamination, that the lay public find it difficult to access.

Key issues have been clarified by tracing the pattern of research about the participation of the lay public in everyday politics and the role that the Internet has played in it. The

first aspect is the importance of investigating how contemporary local communities deal with issues related to science and how scientific knowledge and expertise comes into being through the interaction and dialogue between the actors concerned with the issue, including experts. In order to answer this question, the controversial and downplayed issue of the risk of low-dose radiation that became salient in Japanese local communities after the Fukushima nuclear power plant accident, is addressed in the following chapters. It reveals actors involved and how they brought attention to this issue and became expert citizens themselves, thus becoming involved in the process of knowledge co-production.

Chapter 3: Issue Background

3.1 Introduction

In order to understand the attitudes of people towards particular environmental issues and risks, we should consider the general processes that have created certain relationships within the community under study. More specifically, we should focus on the history of the forms of opposition to the environmental risks in a given place and time and analyze power relationships in a particular area.

Japan has a long history of industrial pollution and environmental activism. From being known as the world's most "advanced polluted nation" (Avenell, 2012, p. 245) and hazardously "toxic archipelago" (Walker, 2010) it became the most environmentally conscious country (Pierce, 1986) with some of the strictest environmental regulations and norms. This chapter starts from the history of Japanese environmental activism and anti-nuclear activism as a part of the environmental movement. It further examines the gender division of environmental risks, theorizing that science in general, and environmental science in particular, has been largely cast as the domain of men in Japan while local lay knowledge and urban "housewives' epidemiology" (Rocheleau et al., 1996, p. 7) are often referred to in literature in regard to women. This chapter concludes with a discussion of how the Fukushima accident exposed the gender gap existing in Japanese society and led to a conflict of credibility between male-dominated science and mothers' knowledge. By mapping environmental activism, the chapter seeks to provide a background for the controversy of participation and knowledge co-production that has been elaborated on in the second chapter.

3.2 Japanese Environmental Activism

Japanese economic growth that started in the mid-1950s provoked severe environmental crises. As a side effect of the Japan's postwar economic miracle, overpopulation, industrial air and water pollution caused numerous diseases, giving cause to the antidevelopment and antipollution movements. Avenell (2010, 2012) shows that local antipollution movements that addressed cases of newborns' food poisoning caused by arsenic found in powdered infant formula, started in the late 1950s. Further cases of industrial contamination of air, land, rivers, and seas not only fostered large-scale antipollution movements but also gave to the world new diseases. Among them were malfunctions of the central and peripheral nervous systems caused by long-term mercury poisoning—the phenomenon later known as Minamata disease; breathing difficulties that later developed into severe asthma called Yokkaichi asthma which was caused by smog of sulfur oxide; and pain in the spine caused by cadmium contamination led to the appearance of *itai itai* ("it hurts, it hurts") disease (Avenell, 2012).

Funabashi (1992) argues that not only industrial pollution but also public works have caused "environmental disruption" which has led to antidevelopment movements (p. 6). The construction of airports and the introduction of jetliners and bullet express trains triggered concerns of noise and vibration pollution, which culminated in thousands of local mobilizations and numerous lawsuits in the 1960-70s (Funabashi, 1992; Sasaki-Uemura, 2001). Johnson (2009) assumes that more than 60 percent of Japanese citizens' movement organizations existing at the beginning of the 1970s were focused on ecological, particularly pollution-related, issues.

When characterizing environmental movements of that time, numerous authors (Broadbent 1999; Funabashi, 1992; Hasegawa, 2004) point out that the focus of the first environmental movements was local, and oriented toward immediate ecological concerns,

such as air, soil and water pollution (Dreiling et al., 2017; Johnson, 2009) in particular geographic areas. Avenell (2010) characterizes the first environmental movements in categories of "self-help, inclusivity and ideological neutrality" (p.159). He argues that their horizontal organization allowed various members, including experts and established intellectuals, to join the movement providing the space for strategies and idea formulation.

In most of these cases, by slowly attracting national media attention and the support of progressive lawyers and experts, antipollution movements managed to gain legal victories. Avenell (2012) claims that Japanese citizens "embraced the institutions of democracy through protest, litigation, public discussion, and political mobilization". He argues that, like the civil rights movement in the United States, the Japanese antipollution movement formulated "master frames" for the forthcoming collective action, educating people about environmental issues and cultivating "civic engagement and proactive citizenship" (p. 267).

As a result, the Environmental Agency[5] was established in 1971, followed by *Kōgai kenkō higai no hoshōtō nikansuru hōritsu* (the Law for the Compensation of Pollution-Related Health Injury) that the Diet passed in 1973, becoming "the world's first governmental compensation scheme for pollution victims" (Avenell, 2012, p. 251). Yet, Funabashi (1992) argues that these environmental policy improvements, while contributing to slow recovery of the environment, led to the decline of citizens' movements. It might be explained by the fact that by "propagating a discourse of victims' rights" (Avenell, 2012, p. 267) Japanese environmental activism and environmental law became victim compensation oriented (Pierce et al., 1986; Avenell, 2010) thus overlooking questions about the conservation of nature or the preservation of biodiversity

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[5] The Environmental Agency was reorganized and elevated to ministry status in 2001, becoming the Ministry of the Environment.

(Avenell, 2012). Consequently, proactive and preventive movements against radiation or other forms of pollution that appeared after the Three Mile Island and Chernobyl nuclear power plant accidents in the 1980s never achieved the same scope as movements in the 1960s and 1970s. Avenell argues that, since "nuclear power generation in Japan was an industry without fatalities" (Avenell, 2012, p. 268), the absence of injuries or sicknesses related to the production of nuclear power prevented anti-nuclear movements from succeeding.

On the other hand, those who propagate the structuralist approach argue that the corporatist style of Japanese policy that is characterized by relatively strong business-state networks influenced civil society structures (Pekkanen, 2006) locally exerting "soft control" over participation through networks of personal contacts (Broadbent, 1999). It constrained political opportunities for Japanese civil society in general (Schwartz & Pharr, 2003; Pekkanen et al., 2014) and environmental movements in particular by preventing the implementation of progressive policy proposals at the prefectural or state level. Furthermore, the strict regulations imposed on activists' organizations that acquired legal status and the lack of preferential tax treatment (Nakamura, 2006; Pekkanen et al., 2014) prevented the growth of the groups thus narrowing their influence to the local level.

Drawing on Ui Jun, Avenell (2010) finds one more reason for the failure of the environmental prevention movement in the Japanese national character; in its tendency to believe "in the continuity of daily life" and to depend on elites and bureaucracy without questioning them. "[O]nly after local residents discarded the established notion of trusting institutions could the real movement begin" (p.164-165). That is what happened after the Fukushima accident when citizens started questioning the authorities' decisions and official discourse.

3.3 Japanese Antinuclear Activism

When it comes to the antinuclear movement in Japan, it is needless to say that the atomic bombings of Hiroshima and Nagasaki left a legacy of so-called "nuclear allergy" which includes numerous monuments, annual commemoration events, and literary references to radiation fallout and *hibakushya* (surviving victims). As Benjamin Sovacool and Scott Valentine (2012) summarize it, "if there is any nation on earth where there should be widespread aversion for nuclear 'anything', it is Japan" (p. 104). Hasegawa (2004) suggests that Japanese anti-nuclear movement's history can be divided into four stages. The first stage—the anti-nuclear arms movement—started soon after the Second World War and continued up until 1970s. It was characterized as anti-nuclear activism mainly opposing nuclear weapons. The second stage—the pre-Chernobyl stage (1973 - 1986)— took place in rural areas of Japan that were opposing the construction of nuclear power plants in their villages and towns. This type of movement, that can be characterized as a "Not in My Backyard" (NIMBY) movement, involved the long-term blockage of nuclear power plants' construction and usually resulted in construction delays. The third Post-Chernobyl stage or New Wave movement (Avenell, 2016) (1986 – 1992) was described as grassroots activities in metropolitan areas conducted by highly-educated activists, including scientific experts and concerned housewives. Lastly, the anti-plutonium stage (1992-2011), included anti-plutonium activities and campaigns to prevent nuclear proliferation and testing (Hasegawa, 2004).

Thus, the antinuclear movement started soon after the end of American occupation, when Japanese authorities, who realized it would be necessary to meet a greater demand for energy in both the country's residential and industrial markets, started implementing President Eisenhower's calls for the civilian use of atomic energy. The framework of "Atom for Peace" was utilized to separate the idea of nuclear weapons from peaceful uses

of nuclear energy thus allowing a public that was horrified by the nuclear bombings of Hiroshima and Nagasaki to accept the construction of nuclear power plants (Sovacool & Valentine, 2012).

In March 1954, several Japanese fishermen in a boat named Lucky Dragon 5 had been exposed to radioactive fallout from the U. S. Castle Bravo hydrogen bomb test conducted near the Marshall Islands (Sovacool & Valentine, 2012). This incident and the tuna contamination which resulted from it reinforced anti-American feelings. By that time, not only the survivors of Hiroshima and Nagasaki but the entire nation of Japan saw themselves as victimized by a nuclear experiment. To underline the nation's vulnerability Japanese newspapers claimed, "We are not guinea pigs!" (Weart, 1989). This sentiment culminated in the creation of the first antinuclear organizations. By 1955 Japanese housewives concerned about fallout began to circulate petitions against further hydrogen bomb tests and soon collected more than 30 million signatures. The Lucky Dragon accident became an incentive to create the *Genshibaku kinshi nihon kyougikai* (Japan Council against Atomic and Hydrogen Bombs) (Aldrich, 2008; 2010; Kuznick, 2011).

In the atmosphere of the widespread distrust of nuclear power, the government started promoting its development by organizing a nationwide exhibition on "The Peaceful Use of Nuclear Energy" in 1955. Free museums relevant to energy issues, numerous pamphlets and posters and excursions to the facilities emphasized the necessity and safety of nuclear power and divided peaceful use of nuclear power from its usage as a weapon[6] They highlighted the beneficial applications of peaceful nuclear energy, which included electricity generation, cancer treatment, food preservation, insect control and further

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[6] The word *kaku,* which in Japanese means "nuclear", was used every time when referring to nuclear weapon related topics, while *genshi,* that means "atom", was used when referring to the peaceful atom and nuclear energy used for nuclear power plants.

scientific applications (Kuznick, 2011). Later on, on October 26, 1964, the first Nuclear Power Day was established (Aldrich, 2008; 2010).

The first Japanese experimental reactor, the Japan Power Demonstration Reactor, came online in 1963 in the rural village of Tokaimura in Ibaraki Prefecture. In the 1960s, when Japan was entering an era of high economic growth and expecting a rapid increase in the demand for electricity, nine other nuclear utilities announced plans to build large-scale nuclear power reactors. Nuclear power plants found their sites in rural areas that experienced economic and demographic stagnation. Local communities usually decided to accept nuclear power plants in order to obtain workplaces, customers, business opportunities, tax revenues, and subsidies for the region (Aldrich, 2008; Hara, 2013). Susan Pickett (2002) described these years of nuclear fascination as the "time of enthusiasm" (p. 1349). Economic benefits, government affirmation and the absence of major accidents restrained mobilization on the local level convincing people that nuclear power is the best alternative source of energy.

However, the concern regarding nuclear safety became stronger from the late 1960s when in November, 1964, an American nuclear submarine attempted to dock in Japan, at Sasebo port. It resulted in the protest of more than 1500 students and grew into anti-nuclear associations operating at the regional and national levels. Other controversial events such as the lawsuit against the planning approval for construction of the Ikata Nuclear Power Plant (1973), and a minor radiation leak from the Japanese nuclear-powered research ship *Mutsu* (1974), led to the emergence of a strong antinuclear movement (Hara, 2013). Twenty-three anti-nuclear organizations met in Tokyo in 1977 to campaign against nuclear power in the form of seminars, signature campaigns, pamphlets' distribution and meetings with nuclear bomb victims. Activists opposed nuclear power because of its nondemocratic and unsafe nature (Alrdich, 2008).

Further on, two national-level anti-nuclear power groups (the Citizens' Nuclear Information Center and the National Liaison Conference of the Anti-Nuclear Movement) were established to inform the public about dangers of nuclear power by covering accidents related to the exploitation of power plants and government responses to it, providing figures related to nuclear facilities' exploitation and local opposition upheavals. By filing lawsuits and conducting citizen referenda the antinuclear activists in rural areas were able to prevent or sometimes seriously delay the construction of nuclear power facilities, thus increasing construction costs (Aldrich, 2008).

The Three Mile Island accident in the United States, in March 1979, exacerbated the situation and culminated in numerous rallies throughout Japan that gathered hundreds of protesters. Yet, the turning point that predisposed the public against nuclear power was the Chernobyl nuclear power plant accident in April 1986. As a result of the accident a cloud of radioactive dust was released spreading across the northern hemisphere and making the concern regarding radioactive contamination a concrete reality, even for distant Japan. Hasegawa (2004) emphasizes that after the Chernobyl accident "the anti-nuclear movements spread like wildlife, becoming a citizen's movement to protest nuclear energy on a scale never before seen" (p. 136). In 1988, 20,000 anti-nuclear protesters gathered in Tokyo to rally against commercial nuclear power (Aldrich, 2008; Hasegawa, 2004).

This growing anti-nuclear movement combined with economic growth lead to a situation when less people demanded employment and infrastructure while more people were opposed the idea to have nuclear facilities in their backyards (Yuki, 1988). Consequently, more efforts needed to be made by electric power companies in order to convince citizens to accept the construction of new nuclear plants thus making the building process more expensive (Pickett, 2002). In the 1990s nuclear energy-related issues attracted public attention due to the accident at the Monju nuclear reactor in Fukui

Prefecture and the fire at Tokaimura in Ibaraki Prefecture. The growing anti-nuclear sentiments led to the suspension of the fast breeder reactor program and resulted in a new approach undertaken by the Atomic Energy Commission (AEC) to find consensus between nuclear elites and society by making information more transparent and providing educational programs (Aldrich, 2008; 2010).

As was discussed in the first chapter, the anti-nuclear movement entered new era after the Fukushima Daiichi Nuclear Power Plant accident in 2011. However, as the literature and interviews clearly showed, the anti-nuclear rallies and the Tōkatsu local activism would not have been possible without scientific experts who had inspired antinuclear protests since the 1970s by "translating highly technical ideas about nuclear power into understandable language; vociferously challenging nuclear officials' claims about safety, efficiency and necessity" thus stimulating public skepticism about the nuclear industry (Avenell, 2016, p. 3). Avenell states that some of them were professional scientists working in universities and research institutes while others were freelance writers who often became leaders of civil society organizations. One of the most famous anti-nuclear activists was the nuclear chemist Takagi Jinzaburō. He was one of the founders of the Citizens' Nuclear Information Center (CNIC) that advocated public education on all aspects of nuclear power. Established in 1975, it was one of the earliest independent anti-nuclear public interest organizations in Japan. Another famous activist is the freelance writer Hirose Takashi who first became known in 1981, with the publication of his book titled *Tokyo ni genpatsu o! Shinjuku ichigōro kensetsu keikaku* (A Nuclear Power Plant for Tokyo! Blueprint for the Shinjuku No. 1 Reactor). The book criticized the gap between rural regions, which produced energy but received all the negative effects of hosting nuclear power plants, and urban areas that enjoyed only benefits of the nuclear industry by consuming this energy (Avenell, 2016, p.14). The fifth chapter will further discuss how

ideas formulated by anti-nuclear activists in the 1970s and 1980s got attention after the Fukushima Daiichi Nuclear Power accident and were reflected in the ideas of Tōkatsu activists.

3.4 Gender activism in Japan

Many researchers have pointed out the gendered perception of the environment and gendered interests in resource management (Rocheleau et al., 1996). West and Blumberg (1990) argued that potentially life-threatening issues, such as nuclear and chemical hazards, have historically attracted women to activism. Numerous studies have proved that women tend to judge environmental risks as bigger and more problematic than men do (Slovic, 1997). A number of approaches have been developed to explain this difference. One approach emphasizes biological factors and social experiences focusing on women's nurturing and protective attitude towards nature and the environment (Steger & Witt, 1989; Gilligan, 1993). Another approach suggests that these differences are caused by women's lack of knowledge, and lack of familiarity with science. This might be explained by the fact that women are discouraged from studying science and underrepresented among scientists and engineers (Alper, 1993; Kimura, 2016). Paul Slovic (1997) suggests a sociopolitical explanation, describing that women and non-white men tend to perceive greater risks because they have less control over community-related issues and their own lives, and thus benefit less from various technologies and institutions.

Enarson et al. (2007) argue that "gender as a primary organizing principle of societies" must be addressed when discussing risks and environmental knowledge (p.130). The authors discuss various approaches that consider gender to be an important variable. Among them, there is the social vulnerability approach, which believes that "disasters are fundamentally human constructs that reflect the global distribution of power" and

"vulnerability to disaster is a social dynamic rooted in gender, class, race, culture, nationality, age, and other power relationships" (p.130). The authors further refer to the sociopolitical ecology perspective that conceptualizes community as an "ecological network of interacting social systems" (p.131). According to this perspective, social systems are constantly undergoing processes of interaction and conflict and therefore are neither race nor gender neutral.

Morioka (2015) analyzes the construction of masculinity in Japanese culture, arguing that the role of fathers as breadwinners in Japan lies in the core of their masculinity. LeBlanc (2012) adds that *salarimen* (company workers), "have often been referred to as *kigyō no senshi* (corporate warriors), and that reference is intended to imply not only service to company but also, because corporate "warriors" are assumed to be in the business of making Japan economically powerful, service to nation" (p. 863).

On the other hand, motherhood in Japan was also linked to the building of the nation, conceptualizing mothers as caretakers. Historically, due to the postwar economic demand for full-time employees who could devote significant part of their time and energy to their jobs the Japanese government emphasized the role of mothers as the primary caregivers for children. By creating women's image as "professional housewives", businesses and government officials hoped to ensure that men would not be disturbed by household responsibilities, and women would comprise a stock of part-time workers who could be hired and dismissed as needed depending on business conditions (Allison, 2013, Gordon, 1997; Holloway, 2010). "The professional housewife", *sengyōshufu*, of the 1960s and 70s was expected to be deeply and exclusively involved in every aspect of her child's life. Therefore, the increasingly demanding standards for being a mother in Japan made it difficult for women to combine parenting with employment (Holloway, 2010).

The status of housewives and the fact that the majority of women work part-time having low-level temporary positions made the cost of political participation for women expensive, making Japanese women "to exert their influence on politics through collective activities that bypass the established political channels" (Martin, 2011, p.117) thus allowing various possibilities for participation in community life. As a result, women organized numerous "women-centric networks" (Martin, 2011), that Mikiko Eto (2008) further divided into three types: "the elite-initiated movement of feminists, the second wave participatory feminist movement, and participatory non-feminist movement" (Eto, 2008, p. 121).

One of the most successful types of participation was in the form of *seikatsu clubs* (literally "daily-life club", but the Japanese phrase refers to consumer cooperatives). The Seikatsu Club Consumers' Cooperative Union was formed in 1965 starting as a "community-based voluntary group of 200 Tokyo housewives whose aim was to buy better-quality milk at lower prices" (Leung et al., 2013, p. 427). Very soon, this *seikatsu club* developed into "one of the most successful social enterprises in Japan" that "introduced an innovative purchasing system that traded directly with producers" (Eto, 2005, p. 317). Moreover, members of consumer clubs established the Seikatsusha Network, a grassroots political group which elected women representatives to local governments (Leung et al., 2013; Eto, 2005).

Consequently, after the Fukushima accident, mothers' roles as caretakers came into conflict with fathers' roles as breadwinners. Being loyal meant that fathers had to trust the government, accepting official narratives that the situation was under control (Morioka, 2015). As a result, most fathers were disinterested in the issue of radiation contamination and ignorant of mothers' concerns.

Even though this research does not focus on gender while characterizing post-Fukushima activism, it could not ignore the "biographical availability" of certain groups of people that influenced their activity, since gender might be a key factor in environment, risk and disaster-related issues influencing not only intimate relationships on a family and community level but also "national responses to disasters with far-reaching and unintended consequences" (Morioka, 2015, p.7).

3.5 Summary

This chapter concludes that Japan has a long history of environmental and anti-nuclear activism that was the result of rapid economic growth in the 1950s and 1960s and its consequences. Yet, this activism was victim-oriented and focused mainly on immediate ecological concerns rather than on issues such as protection of biodiversity or environmental conservation. On the other hand, opportunities for environmental movements to influence the policy-making process were restrained by a strong alliance between the government and business elites, known as the "Nuclear Village." These factors can help to explain why Tōkatsu groups' activities were local in nature and why, even while closely cooperating with local governments, Tōkatsu groups' activists could not achieve influence at the state level.

Furthermore, Kuchinskaya (2014) argued that "demographic factors alone do not determine one's belief, but they do put people in a particular position from which to seek information and evaluate evidence" (p. 41). In Japan, when media and local authorities delayed information provision regarding the scope of the Fukushima accident consequences, Kanto region activists, primarily mothers, initiated numerous projects in various cities across Japan while leveraging their networks and their experience. Further

chapters will discuss the nature of this participation and spaces where parents' concerns and worries were diverged into knowledge.

Accordingly, studies in Japan discussing environmental movements mainly focused on measuring the political impact these movements brought and strategies they used. On the other hand, Nakano (2004), while exploring community volunteers in Japan, argues that social actions may not result in immediate, direct "quantifiable political change" (p.13). Yet, everyday actions taken by volunteers may indirectly shape state programs, influencing national policies and agendas. Furthermore, Nakano emphasizes that while discussing neoliberal rhetoric of the state that manipulates women by outsourcing some community and disaster management work to them, we ignore the meanings that this activity has to activists themselves. Thus, the forthcoming chapters (Chapter 5 and 6) do not explore how various institutionalized actors cooperated with local activists, instead focusing more on how Tōkatsu activists themselves approached the issue of contamination in their local community, eventually becoming involved in action and creating the forum where new initiatives and new knowledge emerged, reshaping local communities and society in general.

Chapter 4: Methodology

4.1 Introduction

In the introductory chapter of this dissertation, I outlined certain factors that fostered civil initiatives soon after the Fukushima nuclear power plant accident, arguing that contemporary activism related to scientific issues should be analyzed in categories of co-production rather than participation. In the second chapter I provided an overview of the theoretical and empirical approaches used to date to understand how contemporary activists are engaged in the knowledge co-production process and the role of the internet in their activities. In the third chapter, I introduced the history of environmental activism in Japan and how gender relates to this movement. Accordingly, the purpose of this chapter is to elaborate on the mixed methodological procedure (interviews, field work, digital methods) used in this study to explain how Tōkatsu activists emerged as people who can speak the language of science and produce knowledge, and what opportunities for risk articulation and knowledge co-production were available for local activists in the Tōkatsu region at the time of the accident.

This chapter is divided into five main sections. In the first section, I define the case study approach as a methodology for research. I outline the steps and procedures involved in its application. In the second section of this chapter, I provide details concerning the qualitative methodology; interviews that were conducted from 2013 to 2017. I complement the analysis with field notes to uncover various perspectives on the issue of radioactive contamination in local communities.

The third section examines weblogs and their role in collective action. This chapter theorizes the idea of platforms, arguing that weblog platforms are no longer just tools, as they have developed into public spaces in which information is disseminated, creating new

knowledge, new connections, and new networks. The fourth section continues the discussion of the internet as a means of research, focusing on various ethical challenges that the internet poses for social research. This section concludes with the ethical stance that I take while analyzing weblogs, considering Tōkatsu groups' weblogs to be public content. In the fifth section I discuss issue mapping techniques that allow researchers to map issues and controversies on the web, and to explore the relational dynamics of networks and the processes of accumulation and production of knowledge.

4.2 Case Study Approach

This research is qualitative in nature since it aims at observing, describing, interpreting and analyzing the multilayered reality of contemporary local action. Gibbs (2007) characterizes qualitative research as a method intended "to approach the world 'out there' (not in specialized research settings such as laboratories) and to understand, describe and sometimes explain social phenomena 'from the inside' in a number of different ways" (p. x). Mason (2002) emphasizes the richness and complexity of qualitative data which, by being understood within its context and natural environment, leads to serendipitous findings and offers meaningful insight about various social or psychological issues.

Gibbs (2007) suggests three types of analysis: one that examines individuals' and groups' experiences, one that analyses interactions and communications in the making and one that investigates and interprets documents or traces of groups' and individuals' experiences and interactions. Pat Bazeley (2013a) concludes that qualitative research is case oriented in nature since data is usually centered around one or multiple instances of a phenomenon which might be called "cases" (p.5).

This analysis is based on an empirical case study that investigates the issue of protecting children from radiation in a local Japanese community. Robert Yin (2008), discussing the

design and methods of doing case study research, emphasizes that case study research is "one of the most challenging of all social science endeavors" (p. 3). Arguing that a case study design should be considered when the research wants to describe, explain and explore things out there while seeking to answer "how" and "why" a social phenomenon works, Yin provides the following definition for the case study approach:

1. "A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundary between phenomenon and context are not clearly evident.
2. The case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing the convergence in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis" (p. 18).

Thus, Yin emphasizes that case study research deals with a real-life phenomenon in its full complexity. This complexity derives from the fact that a researcher needs to analyze various relationships and sources of evidence inside a particular case, as well as the complex systems that surround it. The case study usually focuses on the process, trying to elucidate how the process has been carried out, and on the outcome by explaining what the result was and how it was achieved. Researchers usually choose the case study method when other methods like survey research fail to explain the complex causal networks of real life.

The major problem of case study research is the definition of the "case". The early case studies were individuals' life histories, however the case is not necessarily limited to an individual and may cover events, entities, programs and organizational changes. "Cases can be characterized on the one hand by their concreteness and circumstantial specificity and on the other by their theoretical interest or generalizability" (Schwandt, 2014, p. 27). This research focuses on the Tōkatsu network case and is based on qualitative methods (ethnographical study and interviews) on the one hand, and unobtrusive analysis of

Tōkatsu weblogs' content including examination of hyperlinks and attached files of groups' documents, e.g. petitions, requests, study meetings' leaflets, etc. on the other. The unobtrusive method, as Berg (2001) defines it, is aimed at "examining and assessing human traces. What people do, how they behave and structure their daily lives, and even how humans are affected by certain ideological stances can all be observed in traces people either intentionally or inadvertently leave behind" (p. 189). Weblogs provide a lot of data that contain records created by activists' groups. Furthermore, unobtrusive methods allow a researcher to analyze data without influencing or affecting its course or flow. On the other hand, by interpreting and affixing meaning to the data, a researcher creates a risk of biasing the results. Therefore, researchers are advised to corroborate the data with some obtrusive methods like interviews, etc.

When talking about data collected from the Internet, Venturini (2012) warns that the Internet can not stand in for the real world since not all networks and actors are online, and in order to trace the social processes we also have to take into consideration the offline presence of related actors and their networks. "(1) search engines are not the web; (2) the web is not the internet; (3) the internet is not the digital (4) the digital is not the world" (p. 803). Flesher Fominaya (2016), analyzing participation and collective action, also argues that "activists communicate within a hybrid media ecology in which on and offline communication interacts in myriad ways" (p. 96). For this reason, the weblogs' content study is supplemented by the analysis of 12 semistandardized interviews with Tōkatsu groups' activists and field notes from participation in groups' events.

4.3 Building on the Tōkatsu Case: Research Questions and Data Collection

 Soon after the Fukushima accident, spots of relatively intense radiation contamination were found in several prefectures of the Kanto region and numerous activists mentioned during the interviews that contamination could not be divided by prefectural borders (one spot covers north-eastern part of Chiba Prefecture and southern part of Ibaraki Prefecture).

Yet, in lobbying their interests and requesting measures to be taken to solve the issue, activists were corresponding with their respective city and prefectural governments, from which responses varied. Therefore, in order to limit the scope of the data and produce a solid and comprehensive picture of the situation, this research focuses only on the case of Chiba Prefecture.

This research has been performed in the intersection between two fields of research: social studies and internet studies. The main advantages of conducting such research is that through collecting web data and applying social studies theories and digital methods to explain the results, one can ensure "the *accessibility*, *aggregability,* and *traceability* of the statements and literatures as well as their connection to actors and of actors to each other" (Rogers et al., 2015, p. 44, italics in original). Digital behaviors leave traces that can be easily identified through hyperlinks, shared topics and vocabularies between concerned actors. These traces can be further mapped, clustered, re-accessed and re-evaluated any time, thus adding to the reliability of the research.

Following the inductive logic and making generalizations from numerous sources of data, this research argues that the spontaneous formation of local groups of concerned parents can be seen as an example of everyday politics and that Tōkatsu activists can be called expert citizens. The central questions guiding the following analysis are: How did

Japanese local activists establish themselves as people who can speak the language of science? How was knowledge about internal radiation produced? What sort of relationships and identities appeared as a result of Tōkatsu groups' activities? How did weblogs, by enhancing the process of fact-making, knowledge accumulation and information proliferation, augment the reality of the issue and facilitate knowledge production?

To answer the afore-posed questions this research employed techniques of qualitative analysis. Furthermore, to trace the actors in the controversy and their interactions, this research employed digital methods, issue mapping in particular.

4.3.1 Sampling Method

The research started with the preliminary analysis of existing digital resources about the Tōkatsu issue in May 2013 and two preliminary interviews with the Tōkatsu activists. Luker (2010) defines interviews as "accurate accounts of the kinds of mental maps that people carry around inside their heads" (p. 167) and by conducting the first interviews I was trying to capture the nature of what was going on in the Tōkatsu region. The first semi-standardized interviews were conducted in Japanese on July 13, 2013 in the city of Abiko.

Based on the interviews, the major actors of the issue were identified, and the websites discussed during the interview were accessed. One of the major actors mentioned during the interview was the Kanto Network to Protect Children from Radiation (Figure 4-1). The list of supporters' groups was extracted (Appendix 1.2) and weblogs created by the Chiba Prefecture activists were first accessed and reviewed.

Figure 4-1 Top Page of the Kanto Network Website

Among these websites, six blogs that were created by residents of the Tōkatsu area of Chiba Prefecture with larger numbers of discrete message posters, comments and more detailed data were selected. Weblogs had been created under the fc2.com, blog.livedoor.com, ameblo.jp, and Wordpress.com platforms. Table 4-1 shows titles, geographical locations, and the entire number of weblogs' entries to be analyzed. During the first stage of reading weblogs, it was found that some weblogs are not accessible any more, therefore they were excluded from the present research.

Table 4-1 Groups and Weblogs

Place	Group Name in Japanese	Group Name in English	Blog Entries (N)
Nagareyama	流山・東深井地区のこども達を放射能から守る会	Protect Nagareyama, Higashifukai-area Children from radiation group	170
	流山の子どものために放射線対策を進める会	A society for promoting radiation-control measures for children of Nagareyama (ICDT Nagareyama)	73
Abiko	我孫子の子どもたちを放射能汚染から守る会	Protect Abiko children from radiation contamination group	174
Matsudo	こども東葛ネット	Children of Tōkatsu network	83
Kashiwa	環境とエネルギー・柏の会	Kashiwa environment and energy group	43
Kamagaya	鎌ヶ谷市放射能対策市民の会	Residents' group for radiation-control measures in Kamagaya	600

Screenshots of the opening pages (Appendix 1.4) and additional data that were found on the main blog pages were also collected. This included "about me" entries, hyperlinks and static text. Data from group introductions was manually extracted and saved in a separate spreadsheet.

The weblog entries and comments' sections that were saved into Microsoft Word documents were further imported into NVivo11 (QSR International, 2016) qualitative analysis software. A database for the Tōkatsu case study was created including official documents that groups produced such as: requests, petitions to the city, prefectural or state level authorities; leaflets announcing forthcoming events; hyperlinks and the descriptions of hyperlinks destinations; maps and pictures posted online by blogs' authors.

After the digital data collection phase was finished it became obvious that group weblogs did not fully represent the activities of the groups, so seven semi-standardized

interviews were conducted with nine activists. The semi-standardized type of interview was chosen in order to allow activists to narrate their own visions of the problem while guiding them with open-ended questions, some of which were prepared beforehand while some developed naturally during the course of the discussion. A preliminary list of questions and my short self introduction was translated into Japanese and was sent to activists before our meetings. Snowball sampling has been used to access other groups' representatives since all of them were closely connected.

Snowball sampling is a methodology used to study hidden populations when the research focuses on a sensitive issue (Faugier & Sargeant, 1997). "Many possible study populations, for example police, nurses or school teachers, have a relatively high social visibility" which makes them easy to access and to observe. Yet, other groups, "because of moral, legal or social sensitivities surrounding the behavior in question, have a very low visibility" making it difficult to contact them, let alone conduct research about them (Biernacki & Waldorf, 1981, p. 144).

Tōkatsu activists, while trying to openly discuss the issue online and promoting their activity offline, were particularly sensitive since the issue involved community and family relationships. Therefore, asking the first interviewees to introduce me to others was considered the best strategy. Many interviewees enjoyed the interviews saying that their activity allowed them to meet a lot of interesting people including foreign researchers like me, and were willing to give me referrals to other groups' representatives.

4.3.2 Sample Size

Overall I interviewed 12 activists from the Chiba and Tokyo regions (nine women and three men), along with one lawyer who was cooperating with a small group of local residents from Abiko and Inzai cities in the mediation related to the storage of incinerated

ash on the territory of the neighboring Teganuma final disposal plant. I also interviewed the head of OurPlanet-TV which is a non-profit and non-commercial online media station that has been producing independent documentary films and interviews related to contamination in the Kanto region. Since I accessed and analyzed the content of six weblogs, my initial goal was to interview at least one representative of each group. Some groups' representatives were sharing different tasks related to their activities and were willing to meet together (Kamagaya, Abiko, Kashiwa). As a result, I got ten interviews in total, meeting with 14 people. However, two Nagareyama groups were not active at the time when I contacted them, therefore I could not meet with representatives of these groups.

4.3.3 Interviewees and Interview Questions

Rapley (2006) argues that interviews are "social encounters where speakers collaborate in producing retrospective (and prospective) *accounts* or *versions* of their past (or future) actions, experiences, feelings and thoughts" (p. 16, italics in original). In order to gain an understanding of activists' perspectives, the radiation contamination controversy and events and actions surrounding it, I conducted semi-structured, individual face-to-face interviews and face-to-face group interviews in Japanese. The semi-structured character of the interviews allowed for conversations in which people could talk freely, elaborating on their ideas in the order that was determined by the flow of the discussion rather than by the rigid structure of the questionnaire.

Despite not being a native of Japan I speak Japanese fluently, therefore interview questions were first created in Japanese by me and were then checked by a native speaker of Japanese. After having preliminary interviews in July 2013 and analyzing the content

of activists' blogs, I modified my initial questions and compiled the final list of questions (See Appendices 9 and 10).

In order to get access to the field and to different actors, a researcher often needs to find a gatekeeper—a person who is local and native to the situation, who has access to various actors and information and can provide an introduction to other members of a group or community. My first three interviews were organized by my colleague who, being an Abiko citizen and a former member of the Abiko City Council, introduced the problem and the group to me and invited me to come to the city of Abiko and to talk to activists. My colleague also participated in our first three interviews and facilitated the discussion by asking various questions and providing her observations and comments. By virtue of her experience as a politician and as an active community member, her presence helped to establish rapport, to make the discussion vivid and allowed me to get additional information regarding various aspects of the Tōkatsu issue. After the interviews she also tried to familiarize me with the community settings by inviting me to participate in different local events and introducing me to various community actors.

Furthermore, as was discussed above in Chapter 3, having a family and being a mother is a socially and politically valued status, particularly in Japan. At the time when I started my interviews I was a single, 25-year-old woman with no children, which was one more obstacle that made it difficult to start conversations and to establish relationships with mothers whose actions at that time were widely criticized and whose maternal anxieties had been neglected. In this regard my colleague, who has raised two children, was seen as one who could understand and sympathize which made my interference less humiliating and uncomfortable for group members.

The questions for the first interviews were constructed to clarify what motivated activists to get involved in the issue, what their major concerns were, what kinds of

solutions they proposed, what costs were of getting involved and what they have achieved during the course of their actions. During the first interview three mothers were encouraged to tell the story of how each of them started their activity and to talk about the steps they took to protect themselves and their families from radiation exposure.

One of the mothers was mainly in charge of the Abiko group weblog. Another one was particularly active in lobbying activities, including making calls to city and school authorities and various committees, writing petitions and collecting signatures. During the interview I got numerous pamphlets and leaflets that discussed the Abiko group's activities. Furthermore, they introduced the Kanto network that was formed by activists from several prefectures in the Kanto region to lobby their interests. Activists also introduced me to their weblog and websites of other groups. At the time of the interview, Abiko group activists were collecting signatures and they presented me with an example of a petition from their very first campaign (Appendix 1.1) which they organized in cooperation with five other cities in the Tōkatsu region. They also provided the petition text they made in 2013 with a signature gathering sheet (Appendix 1.3).

The second interview was conducted on the same day with a senior local neighborhood association's representative. His group was protesting against the storage of incinerated ash on the territory of the neighboring Teganuma final disposal plant. It appeared that by 2012, Chiba prefectural government could not deal with radioactive ash generated during the incineration waste laden with cesium having to find alternative storage sites for it. Consequently, the Chiba prefectural government initiated a plan to temporarily store the ash at the Teganuma final disposal plant operated by the Chiba Prefectural Sewerage Management Public Corporation. Yet, senior activists of the cities of Abiko and Inzai were against the idea of accommodating highly radioactive ash in their neighborhood. They criticized that proposal organizing demonstrations and going through mediation

(Novikova, 2016). The same set of questions regarding the purposes of the activity, steps undertaken and actors involved were asked.

Since the time span of the research was limited to four years starting from March 11, 2011 and finishing on January 1, 2015, three more open-ended interviews were conducted in July and August 2015 to ask Tōkatsu activists about the results of their activities over four years and reflections on what should have been done and how activists saw their activity by that time. Questions, designed to reveal what triggered participants' interests in the activity and what steps they undertook soon after the Fukushima accident, related to what further steps they were planning to undertake, what their impressions and reflections were regarding four years of activities, their opinions on whether or not their activity was successful and why, and the role of the Internet, blogs in particular, in their activity (Appendix 1.7, 1.8).

In 2015 many interviewees showed an interest in politics due to the ongoing debate related to the revision of the Japanese constitution. Many activists discussed politics and participated in demonstrations against the revision of the constitution. To examine if the nature of the participation had changed, several more interviews were conducted in April and May 2017 with several representatives of the groups that were still active.

On April 19, 2017 I met with two representatives of the Kamagaya group. The same sets of questions were used to reveal what further steps they were planning to undertake, what their impressions and reflections were regarding four years of activities, their opinions on whether or not their activity was successful and why, and the role of the Internet, blogs in particular, in their activity. This was the first time when I had a chance to talk with an active father who, while working in a real estate agency, had to monitor the land that his agency was selling. Contamination could decrease the value of the land,

therefore real estate agencies of prefectures neighboring Fukushima started monitoring the situation soon after the accident.

Another representative was a mother of two children. At the time of the accident she had one child who did not go to kindergarten. It made her activity easier since she was not a part of any institution e.g. a school, and could openly express her opinion. Most mothers whose children were going to middle and high schools hesitated to express their concerns openly to school authorities due to being worried that their positions or activities regarding the issue might influence teachers' evaluation of students' performance in class.

The Kamagaya group's title is "Residents' group for radiation-control measures in Kamagaya" which differs from others that emphasize a "let's protect children from radiation" component. Interviewees explained that they did not want to shelter themselves behind the word "children". However, the word "radiation" also evoked unnecessary associations since at that time on the Internet (particularly on Twitter,) people who were concerned about radiation were humiliated by saying they had a "radiation brain" or *hōshanō*, where *hōsha* is radiation and *nō* is brain.[7]

On May 14, 2017 I conducted another interview in the city of Kashiwa with two representatives of the Kashiwa environment and energy group. The interview was conducted after a lecture that was organized by the group earlier that day. While the lecture experience will be explained in the section that describes fieldtrips, it is important to mention that my participation in the event allowed me to establish rapport and provided necessary context for the interview. One group representative was a part-time working mother of three kids while another one was a senior citizen who had retired several years after the accident.

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[7] The word radiation, *hōshanō*, 放射能, in Japanese consists of three characters and the last "nō", 能, means "capacity". By changing one character in the word to the homophone 脳, which means "brain", one can change the meaning of the entire word.

The senior citizen provided her opinion on the generational gap existing in relation to the issue of protecting children. In particular, she explained that at first, after the accident, she could not understand why young parents were so alarmed even though the city of Kashiwa was situated 200 kilometers off the crippled Fukushima station and could not be affected by the accident. However, seeing a mother in a supermarket who was nervously reading the explanations about the production areas for each product on the shelf made her change her mind. Furthermore, while participating in the activities of several other radiation-related groups she was convinced that contemporary parents were very responsible people. She realized that it was her personal ignorance that made her neglect the issue and perceive young mothers as hysterical and over- concerned.

Anspaugh et al. (1988) explain that radiation exposure can either be external, caused by the passing cloud or "inhalation of radionuclides in the passing cloud" (p.1514), or internal. Internal exposure might be caused by radionuclides deposited in soil, transferred though the food chain and digested. Thus, after first monitoring levels of air pollution, soon activists started collecting data on soil contamination in order to get an idea of the level of potential internal radiation exposure in different areas of the Kanto region after the earthquake.

Soil monitoring posed various challenges by requiring complicated equipment and professional knowledge. It was a time-consuming and labor-intensive procedure. Furthermore, in order to get soil samples from public spaces such as parks or gardens, municipal approval had to be obtained. Therefore, in some areas citizens organized local monitoring stations by purchasing measuring devices and studying monitoring techniques. By 2017 there were 42 citizen-run monitoring stations[8] functioning all around Japan and

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[8] Apart from 42 monitoring stations all around Japan there are 277 service windows inside the Fukushima Prefecture that were created to provide simple analyses of products for individual consumption.

connected by a national network. Furthermore, consumer clubs and some municipalities had the necessary monitoring equipment, allowing citizens to send food and soil samples for monitoring.

The national network that connected monitoring stations enhanced information and the exchange of knowledge between them. Yet, the data obtained by numerous monitoring stations was kept separately, thus not allowing people to see the complete picture of the accident's consequences. In 2014, it was decided to organize the East Japan Soil Measurement Project that would create a digital map of the soil contamination in the Kanto and Tōhoku regions. In order to create the map, numerous groups and volunteers from various prefectures in Eastern Japan connected and started collecting and sending soil samples from their regions to monitoring stations all around Japan. Then the collected data was processed and regional contamination maps based on this data were created. The activists were fighting with time since the radionuclides that could be recognized as originating from the Fukushima nuclear plant were decaying, making it difficult to prove that soil samples from particular regions had been contaminated after the accident and not before it.

The Kamagaya group's activists were cooperating with the East Japan Soil Measurement Project by sending soil samples from the city of Kamagaya. During the interview with representatives of the Kamagaya group I was introduced to the project and invited to talk to one of the East Japan Soil Measurement Project's organizers. The project is based out of the Children's Future Monitoring Station in Tokyo, in the city of Kunitachi. This project is an example of case where a local group became a national initiative and is going to expand further, translating its website into various languages and seeking cooperation with activists all over the world.

During the interview I asked the same set of questions including the question about the meaning of monitoring data and the project overall. The interview was conducted on May 24, 2017. One month earlier on April 4, 2017 during a press-conference (Otsuki, 2017), Imamura Masahiro, the Minister of the Reconstruction Agency, when explaining the Fukushima Prefectural Government's decision to cut off financial assistance to people who had evacuated from Fukushima Prefecture, stated that the decision to evacuate was up to voluntary evacuees[9]: "It is the responsibility of a person him or herself. One can do anything, even a trial". This statement was met with strong opposition and during our interviews was invoked several times. In the situation when the national government was cutting financial assistance, easily accessible digitized monitoring data could become visible and could create a persuasive argument in disputes and litigation with the state and the Tokyo Electric Power Company (TEPCO), the owner of the crippled Fukushima Power Plant.

While participating in numerous lectures and reading weblogs that activists were writing I noticed that some events were being recorded by the community video station— OurPlanet-TV—and reported online. Later on, as I mentioned above, I visited the lecture of its representative—Ms. Shiraishi—and made an agreement to conduct an interview with her. Hadl (2010) argues that the Japanese community media sector is relatively small when compared with other countries. Yet, in the aftermath of the earthquake and nuclear power accident many community radio and video stations became active in delivering facts and issues that traditional media failed to address. On May 29, 2017, I conducted an interview with Ms. Shiraishi Hazime, the representative of the non-profit and non-commercial online community video station, OurPlanet-TV, to find out their role in the controversy.

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[9] Voluntary evacuees are people who evacuated voluntarily from the Fukushima Prefecture, although their places of residence were not designated as exclusion zones by the national government.

Ms. Shiraishi explained that the purpose of their video station is to "convey small voices", or *chiisana koe wo tsutaeru*, meaning to represent the interests of minorities, including children, that are usually neglected and underrepresented by traditional media. She argued, that after the accident, attention was given to the ionizing radiation dosage standards that were based on a Reference Man[10] thus implying male adults, while children, pregnant women and the health and risks that radiation exposure posed for them were neglected. OurPlanet-TV tried to provide possible information and cover the problem with their perspectives in mind.

As Ms. Shiraishi explained, due to the organizational constraints of the newsroom (time, space, etc.) and institutional obstacles, traditional media can not cover all events and all data related to the issue. Therefore, OurPlanet-TV, in the tradition of investigatory journalism, is trying to report on various issues in their full complexity.

4.3.4 Length of Interviews

The length of interviews ranged from 30 minutes to 2 hours and 15 minutes. The portion of the interview that went along with my questions was usually completed in 60 to 90 minutes.

At the end of each interview, interviewees asked me about my place of origin and if I was in Japan during the disaster. The fact that I was in Japan, in Ibaraki Prefecture, during the earthquake led our discussion to common worries and fear we experienced at that time and feelings of my parents who insisted that I should leave Japan soon after the earthquake. This helped me to establish a rapport and created a relaxed atmosphere. I have Russian

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[10] A Reference Man is "a person assumed to have the anatomical and physiological characteristics of an average individual. These assumed characteristics are used in calculations assessing internal dose (also may be called "Standard Man")". http://hps.org/publicinformation/radterms/radfact132.html Retrieved: October 30, 2017.

citizenship, therefore, interviewees also asked what I know about the Chernobyl accident. Their interest was fueled by the fact that laws and measures implemented by the Soviet Government and respected Independent States after the collapse of the Soviet Union were widely cited as an example that Japan should follow. Main laws enforced in Ukraine and Belorussia were translated into Japanese by the activists in 2011 and were used as arguments in lobbying and mitigating activities with local and state authorities.

When I explained my research objectives and my focus on activists' internet usage in detail, activists usually expressed regrets about not having enough internet literacy and asked my opinion or advice regarding the most efficient ways of data proliferation and citizen engagement.

4.3.5 Interview Locations

Interviews were held in public places, usually coffee shops or restaurants, chosen by interviewees due to the close proximity of these locations to their homes or work places. This allowed more natural conversations and provided a lot of insight about various issues. One interviewee and I had lunch together, which naturally triggered a long discussion about food contamination and activities related to food monitoring. One interview with an activist from the Tōkatsu Networks' group was conducted at the participant's house and another was conduced in an office of a local gymnasium, since mothers only had time to talk while their children were practicing at the gym. One interview with a representative of the East Japan Soil Measurement Project was conducted in the restaurant adjoining to the monitoring station – the "Children Future Monitoring Station". First of all, I was assured that all products at the restaurant had been checked and proved to be safe. Moreover, after the lunch I had a chance to observe soil monitoring devices and get information of how the monitoring station operates: how people come in contact with

monitoring station operators, how samples are collected and measured and how data is analyzed.

4.3.6 Fieldtrips

Yin (2008) argues that a case study should take place in the natural setting and advices the researcher to create opportunities for direct observations. Thus, to get a sense of what is going offline I observed Tōkatsu and related groups' meetings. The first meetings I visited on September 22 and 23, 2013 were held in Tokyo as a part of The 10th Tokyo Peace Film Festival. I watched a documentary called "Fukushima, Rokkashyo, Message to the Future" and participated in two talk events. The first talk on September 22 was aimed to present three mothers from the city of Kōriyama, Fukushima Prefecture, and to listen to the stories of their new lives following the Fukushima accident and their voluntary evacuation experience. Fukuda Kenzi, a representative of the Safe Fukushima Children Lawyers' Network, described a newly established act called *Tōkyōdenryoku genshiryoku jiko ni yori hisai shita kodomo o hajime to suru jūmin-tō no seikatsu o mamori sasaeru tame no hisai-sha no seikatsu shien-tō ni kansuru shisaku no suishin ni kansuru hōritsu* (Act on Promotion of Support Measures for the Lives of Disaster Victims to Protect and Support Children and Other Residents Suffering Damage due to Tokyo Electric Power Company's Nuclear Accident) (Government of Japan 2012, June: referred to as the "Victims Support Act" hereafter). It was established at the national Diet on June 21, 2012 and was aimed to help people who hoped to evacuate from contaminated regions and to settle in another area, or those who had evacuated and were waiting to return home. On August 30, 2013, the government made public the draft of the Basic Framework of the Victims Support Act and started the public comments period. The deadline for the public comment period was originally set on September 13 and was later extended until

September 23. The talk's participants were explaining how public comments can help in solving these issues and they asked those who came to the event to submit their comments.

The Victims Support Act, being modeled after the Ukraine's 1991 law "On the Social Protection of Citizens Who Have Suffered as a Result of the Chernobyl Disaster" (Hirakawa & Shirabe, 2015; Ogawa, 2014), could enable victims from affected areas to choose whether to evacuate or keep residing in affected areas. Yet, the definition of the areas under the Major Support Measures appeared to be the most controversial issue. The Victims Support Act defined them as areas "where the radiation level is below that which requires the government to issue evacuation orders but above a certain standard" (Hirakawa & Shirabe, 2015, p. 77). The residents of areas where the level of radiation required the state government to issue evacuation orders were eligible for compensation from the government and TEPCO. On the other hand, those who lived in the areas with lower level of contamination were not eligible for any financial compensation in case of voluntary evacuation. Therefore, the definition of the standard became crucial. However, the Basic Framework that was approved in a Cabinet meeting on October 11, 2013 was not related to the standard and defined the areas under the Major Support Measures following administrative logic and designated 33 municipalities in Naka-dori and Hama-dori of Fukushima Prefecture as Support Target Areas (Hirakawa & Shirabe, 2015; Ogawa, 2014). The Basic Framework provoked criticism from numerous civil organizations and local governments which led to several Tōkatsu groups' activities toward its termination.

The second talk organized by the 10th Tokyo Peace Film Festival was performed by the famous documentary filmmaker Kamanaka Hitomi who presented footage she recorded in Ukraine and Belorussia. The screening was followed by a discussion about low-dose radiation contamination and child protection issues in Japan. Kamanaka Hitomi is a

famous documentary filmmaker who had covered problems of nuclear power and radiation contamination before the Fukushima accident. She became famous from the film *Rokkasho Rhapsody* (2006) that introduced the problem surrounding Rokkasho reprocessing plant and *Ashes to Honey* (2010), a documentary that portrayed residents of Yamaguchi Prefecture who were opposing the construction of a nuclear plant in their prefecture. After the Fukushima accident, her documentaries got attention and were screened all over Japan by numerous civil organizations.

The third meeting was an opinion exchange meeting at *Shiru miru café* (Study and See Café), held by the Abiko group in one of the community centers in the city of Abiko. One of advantages of these types of meetings is that participants, particularly mothers, can bring their children with them and if there are a lot of children and they are relatively small there is usually one person who takes care of the children while the others are talking. The meeting I joined on October 26, 2014, took place in *washitsu* (a Japanese style room) where people could sit on the floor. Tea and some homemade sweets were served. There were around 10 participants and at that time there was a father among them who expressed his concern about the situation in the city of Abiko.

The meeting started with self introductions because the information regarding forthcoming events was usually announced via mailing lists, the group blogs, some members' Twitter accounts, etc., therefore, there was always a chance that some new members would join the meeting. The leaflet announcing the meeting was created by group members and posted on the Abiko group's weblog (See Appendix 1.6). Most people who joined the meeting were from the city of Abiko. The self introduction included participants' names, number of children, the names of schools their children went to and the grades they were in. At that point some parents could find that their children were at the same school which usually triggered discussion about school authorities' response to

the issues of contamination of school grounds and school breakfasts. They asked each other if children were allowed to bring their own breakfasts to schools and if schools made public the production areas of products that were used as ingredients in school breakfasts. It appeared that I was the only person from a different prefecture who did not have children.

They also explained their reasons for joining the meeting, their worries and concerns, measures they had taken to prevent their children radiation exposure (cooking school breakfasts by themselves, buying vegetables and fruits from southern prefectures that are considered to be relatively clean, etc.). At that time group announced the organization of the *Shiru miru café* by the Kanto Network and explained the purposes of this café: monitoring activities, health checks, study meetings and opinion exchange tea meetings.

The second opinion exchange meeting was held on June 28, 2015. It was held in one of the community centers in the city of Abiko. Organizers had booked a Japanese style room in advance. There were 13 participants from the city of Abiko and neighboring cities. The meeting started from self introductions and information exchange. There were several regular members of the Abiko groups and they introduced themselves, their names, names of schools that their children went and their role in the group activities. At that time several new members joined the meeting and they were asked about how they found the group and why they decided to join. The meeting started at 10 am and by 10:30 the Abiko City Council member Uchida Mieko arrived and asked of what sort of concerns mothers had and how she could help. She introduced herself as one of those who lobbied for mothers' interests in the Abiko City Council and expressed her desire to communicate their interests to the city Mayor and other council members.

Participants started asking her to apply to the city of Abiko with the following requests: more detailed and careful food monitoring, a grant system that would allow Abiko children

to go to recuperation camps outside of Chiba Prefecture, and an echography examination for children before entering school. Furthermore, mothers asked to make more efforts to spread the information about risks of radiation exposure and to organize a roundtable discussion between the city's mayor and citizens so that their voices could be heard directly. These requests have not been satisfied yet despite the fact that they had long been articulated in various petitions and requests.

The Abiko City Council member left after that and mothers continued conversation about a Kyushu island delivery service and other possibilities to get clean and safe food. The discussion also touched upon other issues related to food safety as pesticides, artificial food additives and chemical substances that food may contain. They emphasized that consumer clubs, such as the Jōso Consumer club, cooperate with farmers who do not use agricultural chemicals. The last topic of the discussion related to recuperation camps—places in no-contaminated prefectures where parents could go with children for several summer weeks for free or for a relatively low price. Mothers who were worried about radioactive contamination in their community did not allow their children to play in city gardens and parks therefore the recuperation camps were seen as a unique opportunity to allow children to come in contact with nature. At the end of the meeting, information regarding forthcoming study meetings and other initiatives were announced and participants were encouraged to contribute to the children's echography check project by donating money (Japanese: *kanpa)*.

Consumer clubs played one of the most prominent roles in the post-disaster recovery activities. Tōkatsu groups were connected with Jōso Consumer Club (partially covering Ibaraki Prefecture and Tōkatsu region) and Consumer Club Nijinomachi (operates in Tōkatsu region). Reithmuller (1994) argues that consumer cooperatives are an "influential part of Japanese society" (p.389). The author describes that they not only operate retail

stores, but also manage holiday resorts and education facilities, organizing cultural events and actively participating in the community life. The major goal of consumer cooperatives is to guarantee consumers' access to safe and clean food since, as was discussed in Chapter 3, people are concerned with food, soil and water quality issues due to the history of industrial pollution and food contamination in Japan. During the course of their activity consumer clubs have established their own food standards that are stricter than those imposed by Japanese government. Citizens who become members of consumer clubs' cooperatives are usually better educated and have higher income than average consumers since membership implies regular fees, and prices there are slightly higher than in supermarkets. The majority of their members live in households where women work full time or part time (Reithmuller, 1994). The Jōso Consumer Club became the center of the Tōkatsu region's activity.

The third meeting that I observed was a lecture by Professor Takahashi from the Yamaguchi University. It was held in the Jōso Consumer club's building in the city of Moriya. The event was announced via mailing lists and several groups' weblogs[11]. The lecture contained the results of a survey conducted by the Kwansei Gakuin University Disaster Recovery System Research Institute in November, 2014. The survey targeted residents in the south part of Ibaraki Prefecture and the northwestern part of Chiba Prefecture. Survey organizers received about 2,000 responses. Although several areas in the Kanto region were designated by the central government as "Intensive Contamination Survey Areas", detailed pollution surveys and residents' consciousness surveys were not conducted. For this reason, this survey was conducted four years after the nuclear accident, revealing various critical issues. One of the organizers of this survey, Dr. Hiroto Takahashi

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[11] http://kodomokanto.net/archives/1320; https://tohkatsunet.wordpress.com/2015/07/17/社会心理学で解き明かす「人びとの気持ちと選択/ Retrieved on July 12, 2017.

of the Yamaguchi University, analyzed the results and presented them to the Kanto network activists and others who were interested in the question (Takahashi, 2015). Kanto Network activists actively cooperated with survey organizers, who felt themselves obliged to explain the results to the survey participants first. OurPlanet-TV recorded this event and published it online. Among participants there were Kanto network activists (parents and senior citizens) from Ibaraki, Chiba, Tochigi and Saitama Prefectures.

The next meeting, which I observed on September 7, 2015, was a meeting of the "Committee of Ending the Nuclear Power Generation and Reconsidering Lifestyle" organized by the Jōso Consumer Club. The committee members, mainly senior people, were discussing their soil monitoring results, analyzing numbers and suggesting to create a database that would include and compare all the data they had been collecting during these four years following the disaster along with the birth rate and death rate for each city or village. Members in charge of monitoring and data analyzing shared their concerns regarding the lack of knowledge about monitoring procedures, the amount of information regarding the influence of radiation exposure on human body and the difficulties related to this information's reliability. They were also discussing the ways to share the information they produced and collected with a wider audience using the Internet, free local newspapers and leaflets. These leaflets should have an impact and to be easy to understand.

Furthermore, the committee was lending DVDs with movies related to environmental issues and people who watched the movies were supposed to fill out a questionnaire. During the September meeting committee members were discussing the answers to these questionnaires. This committee's main activities are to monitor soil and food, to collect monitoring results from different cities and villages and compare them, to organize various study meetings and movie screenings and to translate foreign sources of information (e.g.

Chernobyl related) into Japanese. Tōkatsu activists who were the objects of this research are not members of the Committee of Ending the Nuclear Power Generation and Reconsidering Lifestyle, however they sometimes participate in study meetings organized by the committee and use the monitoring data produced by the committee members.

The last meeting was a lecture organized in May 14, 2017 by the group called the "Kashiwa Environment and Energy Group". It was conducted in the city of Kashiwa as a part of the Civil Action Festival[12]. This Festival was organized with the support of the city to promote civil activities and to demonstrate how many civil organizations exist in the city of Kashiwa. According to the city's website, 76 organizations took part in the festival by organizing various events such as lectures, talks and exhibitions. The lecture was organized in the Kashiwa city culture and social-activities facility which, according to their website, is a place where citizens play the leading role. "It is a facility that can be used as a place of discovery for new citizens, a meeting place, a place for creation, a place for hobbies with friends and a place of learning."[13]

The lecture I visited was conducted by Shiraishi Hazime, a journalist and representative of the independent television channel called OurPlanet-TV. The lecture was titled: "Six years after the Nuclear Accident. What can we do for our children? – The reasons to participate in the thyroid-cancer screening at Kashiwa". The lecture was aimed at discussing the current situation with thyroid health checks and cases of thyroid cancer among children from affected areas, and included information about hospitals that have been constructed, statistics, types of thyroid cancer and stages, and methods of treatment with relation to stage and type. The discussion of thyroid cancer screening relates to the idea of "biokinetic mimicry" (Petryna, 2013). It explains the processes which occur in

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[12] http://www.city.kashiwa.lg.jp/soshiki/020300/p041170.html Retrieved: October 25, 2017.
[13] https://www.palettekashiwa.jp/about/ Retrieved: October 25, 2017.

human bodies when they absorb needed minerals. Biokinetic mimicry takes place when the human body mistakes one material for another, for example, mistaking cesium-137 for potassium absorbing it into muscle tissue. Additionally, strontium-90 might be mistakenly absorbed instead of calcium and built into bone materials and radioactive iodine might be misread for stable regular iodine and absorbed into the thyroid gland (Petryna, 2013, p. xxvi). This might result in thyroid cancer and other diseases, however the relationship between the type, length and intensity of exposure, and possible health effects have not yet been scientifically elucidated.

The lecturer argued that, despite the fact that 185 cases of malignancy were diagnosed in the Fukushima Prefecture and neighboring prefectures, authorities refused the causal relationship between the cases of cancer and exposure to radiation. She emphasized that this neglecting discourse might result in the downscaling of the state screening system. She also presented several examples from her fieldtrip to Chernobyl explaining their practice of dealing with children's health problems. During her presentation she showed two videos: footage of a thyroid cancer surgery and a small documentary about the activities of the Kanto Children's Health Screening Support Fund, which independently organizes thyroid-cancer screening in different cities of Chiba, Ibaraki, Saitama and Tochigi Prefectures. She further explained how it is important now to conduct health checks for children to be able to prevent complications in the future and to be able to monitor the situation in the region that was contaminated.

There were around 20 participants: seven men and twelve women. The ages of participants differed, including young mothers with small kids and senior citizens, one of whom was joking that their group from the city of Shiroi used to have a lot of young members. At that time their group title was "Let's protect children from radiation".

However, nowadays when most young participants have left the group they were thinking of changing the name of the group to "Let's protect grandchildren from radiation".

The lecture was concluded with the question section where concerned mothers were asking if their children should undergo the echography, and representatives of groups from other neighboring communities were sharing their experience of organizing thyroid-cancer screenings in their respected cities. During the break, homemade cookies stuffed with seasonal fruits were served. At the end of the meeting participants were encouraged to make donations to support the Kanto Children's Health Screening Support Fund and other initiatives. After the lecture participants went to the lunch and I got a chance to get an interview with the Kashiwa group activists.

4.3.7 **Data Collection and Preparation**

Through the process of data collection, I followed the principles of data collection outlined by Yin (2008). The first principle is triangulation which is the use of multiple sources of evidence in order to corroborate the same fact or phenomenon. In order to explore how Tōkatsu activists engaged with scientific uncertainties and became expert citizens I have collected official documents produced by Tōkatsu activists: requests, official letters and petitions to the municipal, prefectural or state level authorities; leaflets announcing forthcoming events; interviews and notes from direct observations of groups' meetings, group weblogs content; hyperlinks and the descriptions of hyperlinks destinations; maps and pictures posted online by blogs authors.

The second principle is the creation of a database. Using NVivo 11 (QSR International, 2016) the collection of various sources and annotated bibliography of them was created so that documents were readily retrievable for later inspection or use. NVivo11 is a qualitative software that can import texts, video and audio data as well as images. It also

allows text editing, transcribing and qualitative coding. NVivo makes transcribing video and audio data easier by synchronizing the media and the transcript. When coding, it makes references to the exact location of the coded data. These references allow the user to code and then to retrieve all coded passages from the original document without disturbing the original data. Furthermore, the software allows the user to view coded passages in its original context. Coded information is stored in nodes and these lists can be later reorganized in hierarchical structures with parent and child nodes in them. It is also possible to create annotations and to write memos that can be linked to codes or documents (Bazeley, 2013b).

The interviews were transcribed using NVivo11. Kvale (2008) defines the process of transcribing as "translating from an oral language, with its own set of rules, to a written language with another set of rules. Transcripts are not copies or representations of some original reality, they are interpretative constructions that are useful tools for given purposes. Transcripts are decontextualized conversations; they are abstractions…" (p. 98). Depending on the purpose of the research, the volume of information transcribed might be different. The interviews for this research were transcribed verbatim while preserving all grammatical expressions, dialect words and regional terms being used by respondents. For the purpose of this research, digressions from the topic of the interview, nonverbal and emotional elements that are irrelevant to the present research were excluded while other elements such as repetitions and incomplete sentences were transcribed. Table 4-2 shows the timespan of the fieldwork and its content.

Table 4-2 Fieldwork Timespan

Date	Type of Event
July 13, 2013	Interview with 3 representatives (mothers) of the 'Abiko Group"
July 13, 2013	Interview with an Abiko City activist protesting the storage of ash at the territory of the Teganuma final disposal plant.
September 22, 2013	The 10th Tokyo Peace Film Festival. Movie screening: *Fukushima, Rokkashyo, Message to the Future* and talk event with 3 mothers from the city of Kōriyama, Fukushima Prefecture and a lawyer Fukuda Kenzi, a representative of the Safe Fukushima Children Lawyers' Network.
September 23, 2013	The 10th Tokyo Peace Film Festival. Talk with documentary filmmaker Kamanaka Hitomi "I want to protect children from radiation exposure", and screening parts of her footage.
October 26, 2014	"Study and See" Café 'Abiko Group' Meeting (Appendix 1.6)
June 28, 2015	'Abiko Group' Tea meeting to exchange opinions
July 19, 2015	Lecture of Professor Takahashi "Risk Perception and Risk Reduction Strategies of Mothers After the Fukushima Nuclear Disaster"
September 7, 2015	Meeting of "Committee of Breaking with Nuclear Power Generation and Reconsidering Lifestyle" organized by Jōso Consumer Club
July 23, 2015	Interviews with 'Abiko Group" representative (mother of one child)
July 25, 2015	Interviews with 'Tōkatsu Network' group representative (mother of one child)
August 7, 2015	Interviews with ' Kanto Network' group representative (married women)
April 19, 2017	Interview with two representatives (mother of two children and a father of one child) of 'Kamagaya residents' group
May 14, 2017	Talk event in the city of Kashiwa "6 Years after the Nuclear Accident. What can we do for our children? – The reasons why you should take thyroid echocardiography at Kashiwa"
May 14, 2017	Interview with two representatives (mother of three children and a senior person) of 'Kashiwa Group'
May 24, 2017	Interview with a representative (farther of one child) of East Japan Soil Measurement Project
May 29, 2017	Interview with the head of OurPlanet-TV

Using Evernote Web Clipper (saving in Article mode) all group weblogs' entries and

comments from March 2011 to January 2015 were extracted in January 2015 from the

websites and put into Microsoft Word documents according to the name of each blog. Multiple copies of each source were created to ensure that an intact original is kept on file and imported into NVivo11. The data - transcripts of the interviews, field notes, leaflets and other materials provided by the activists and weblogs' content - were further analyzed in the original language (i.e., Japanese), and only by me using NVivo11.

4.3.8 **Data Analysis**

The coding was concept driven, meaning that the categories and concepts came from the Bang (2004) framework of everyday makers and expert citizens. The collection of codes was constructed and further amended during the analysis as new categories were detected in the text.

Bang and Sorensen (1999) define the ideal everyday maker with the following characteristics: (1) *Do it yourself* meaning that their participation is grounded in their lived experiences; (2) *Do it where you are*, therefore, their participation is local and immediate; (3) *Do it for fun but also because you find it necessary*, therefore, they employ creative forms of action, and use various types of media; (4) *Do it ad hoc and part time*, thus, they are not driven by organizational membership but rather project specific; (5) *Do it concretely (rather than ideologically)*, they are project oriented, being interested in an issue rather than in idea-driven social and political change; (6) *Do it responsibly and show trust in yourself*; (7) *Do it by looking at expertise as an other rather than as the enemy*. The concept of expertise was further expanded demonstrating how expertise was acquired, how new knowledge came into being and new identities of expert citizens emerged. The conceptual framework is summarized in Table 4-3.

Table 4-3 Conceptual Framework

Concepts	Questions Asked to the Data
Concepts	**Questions Asked to the Data**
Individual Level	How did activists engage with risks?
Personal responsibility	
Self-help	
Relationship with others	
Relationship with environment	
Community Level	How their action can be characterized?
Ideological Neutrality	
Localism	
Collaboration	
Expertise Production ↓	How have activists generated their own expertise?
Problem Articulation	
Fact-Making	
Sense-Making	
Acquiring Interactional Expertise	
Giving Prominence to the Issue	
Acquiring Contributory Expertise	
Transmitting Knowledge	

Following this framework, the data was analyzed and explained further in Chapters 5 and 6.

4.4 Theorizing Weblogs

This study analyses the network that connects numerous weblogs creating an association based around the issue of protecting children from radiation exposure. In order to understand the network of weblogs the definitions of a weblog and the genre of blogging has to be discussed. The genre began to emerge in the 1990s, and the term itself was introduced by the weblog writer John Barger in 1997 (Miller & Shepherd, 2004; Novikova, 2016). Dave Winer's widely cited definition of the weblog suggests that:

> "Weblogs are often-updated sites that point to articles elsewhere on the web, often with comments, and to on-site articles. A weblog is kind of a continual tour, with a human guide who you get to know. There are many guides to choose from, each develops an audience, and there's also camaraderie and politics between the people who run weblogs, they point to each other, in all kinds of structures, graphs, loops, etc." (Winer, 2001).

Miller and Shepherd (2004) described blogs as having three major characteristics: chronological organization, linkage function and a feedback mechanism that allows readers to make comments on specific posts (Gurak et al., 2004; Miller & Shepherd, 2004; Hookway, 2008). Blogging implies producing new content and making new meaning by compiling numerous sources into new ones, by linking, counter-linking, commenting and responding. Nowadays, blogs are based on free and open source software and blogging does not require programming skills, providing users of low technical competence with the opportunity to produce attractive and regularly-updated online content (Thelwall and Wouters, 2005). Blog platforms allow invisibility and anonymity thus making the discussion between writers and readers easier and reducing psychological barriers (Kobayashi, 2012). On the other hand, blogs' anonymity gives marginalized actors "a democratic voice, the ability to participate in the global form of deliberation" while allowing them to remain "outside of the repressive state apparatus that work to silence" such voices (Bollmer, 2016, pp. 162-163).

"The motivation for blogging varies, starting from the desire to connect with others online, expressing one's opinion, sharing one's experience, making money, and becoming a citizen journalist, to the desire of forming and maintaining a community forum and mobilizing action. As a result, there are different blog genres in which classifications are based on various characteristics. Nowson (2006) underlined three predominant types in the blogosphere: news, commentary, and journal, diary-like, blogs. On the other hand, Herring et al. (2006) classified blogs into five genres: filter blogs, personal journals and

knowledge blogs so called k-logs, a combination of two or all of the first three types" (Novikova, 2016, p. 61).

At the dawn of the blogosphere researchers theorized blogs as single-authored websites and blogging "as a solitary act" (Gil de Zuniga et al., 2010). Yet, internet allows many-to-many communication and multi-authored blogs appeared in 2000s as the response to the changing media environment. Fieseler et al. (2010) argue that, in contrast to static websites that have fixed content, weblogs have significant potential for engaging various actors in a dialogue by allowing "easy sharing and linking documents online" (p.601). The authors theorize that weblogs are the first inventions of the Web 2.0 era. Hoegg et al. (2006) provides the definition of the term Web 2.0 as "the philosophy of mutually maximizing collective intelligence and added value for each participant by formalized and dynamic information sharing and creation" (p.13). This definition demonstrates that by enabling collective work and sense-making, Web 2.0 has a strong potential for engagement and knowledge production.

Another important concept that should be discussed in the relation to weblogs is the idea of the "platform". Gillespie (2010) while discussing the politics of a "platform", YouTube in particular, argues that the term "platform" helps to understand how "YouTube and others stage themselves for these constituencies, allowing them to make a broadly progressive sales pitch while also eliding the tensions inherent in their service: between user-generated and commercially-produced content, between cultivating community and serving up advertising, between intervening in the delivery of content and remaining neutral" (p. 348). Many researchers have discussed platforms' affordance and argued that platforms' structures, their commercial interests, technical algorithms and legal features might allow or restrain specific types of participation and content, significantly influencing the course of collective action (Clark et al., 2014; Tufekci, 2017).

Gillespie (2010) by specifying semantic areas that are relevant to the idea of platform – computational, architectural, figurative and political - argues that platforms position themselves as "open, neutral, egalitarian and progressive support for activity" in contrast with traditional mass media (p.352). On the other hand, by being structured in a particular way, various platforms can make certain activities more or less efficient.

Blog platforms that were analyzed in this research - fc2.com, blog.livedoor.com, ameblo.jp, and WordPress.com - enabled various types of internet-based actions as online petitions and public comments campaigns allowing activists to mediate their goals and ideas more easily by transmitting long texts (in contrast with Twitter), maps and audio-visual representations of groups' activity. These platforms are free and user-friendly, ensuring that even people with low computer literacy could participate. By increasing the number of people who could easily access blogs' information they decreased the cost of participation and diminished space constraints. The structure of blog platforms allows users to find blog posts by entering key-words in search engines as Google, Yahoo, etc. which in turn made them more visible, thus easing mobilization. By allowing comments and hyperlinks they facilitated internal debates, dissemination of information and decision-making among activists while enhancing the knowledge production process.

On the other hand, in contrast with Facebook, they reduced risks related to identity and privacy disclosure by allowing users to publish anonymous posts, to organize anonymous groups and to write anonymous comments (Van Laer & Van Aelst, 2010; Tabuchi, 2011). Furthermore, by structuring the information in chronological order they allowed archives of groups' activities to be accessed freely and easily, enabling "the symbols embedded in these discourses to be culturally transmitted, feeding struggles and contributing to collective memory of protest" (Cammaerts, 2015, p. 6).

Thus, this research argues that weblogs and weblog platforms are no longer just tools, as they have developed into public spaces in which information is spread and new knowledge, new connections and new networks are created. Therefore, these public spaces should be studied in their continuity by tracing their associations and weblogs are one of many types of data that can be utilized for this purpose.

Japanese society often requires restrictions of individual manifestations making people mask their emotions. By allowing anonymity and letting weblog writers to share hidden emotions and to communicate with like-minded people without uncovering one's identities weblogs achieved popularity in Japan making Japan the blog nation (Pontin, 2007). In 2011, when the Tokatsu groups' activity began, Research NTTcom[14] conducted a poll about internet usage in Japan revealing that people spent the most time online shopping, reading or writing weblogs, or watching streaming content (Table 4-4) (Novikova, 2016).

Table 4-4 Internet Usage in Japan 2011 Survey Results

Service	Percentage
Accessed From PC	
Online shopping	15.4%
Private blogs	13.6%
Watching/Downloading Video	12.5%
Accessed From cell Phone	
Community Websites	19.8%
Private blogs	16.0%
Miniblogs	13.8%
Accessed From Smartphone	
Miniblogs	13.8%
Private blogs	10.7%
Community Websites	10.7%

Before the Fukushima nuclear power plant accident many researchers reported that blog writers were mostly involved in writing and reading about personal topics avoiding

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[14] http://research.nttcoms.com/database/data/001350/. Retrieved: September 13, 2015.

socially uncomfortable subjects related to social issues, injustices or political activities (Kobayashi, 2012). The situation has changed after the Fukushima Nuclear Power Plant accident, and the blogosphere formed an appropriate space to share concerns, seek information, and connect with like-minded people thus making possible knowledge co-production.

4.5 Ethical Issues

Gibbs (2008) argues that due to the nature of qualitative research, which tends to be rich and detailed, it is difficult to maintain the privacy of participants involved in it. It becomes even more complicated if research includes analysis of Internet data. Since the radiation issue was a very sensitive topic at the time this research was started (the year 2013), it was difficult to obtain the agreement of participants to meet and to talk. Therefore, participants were provided with information about the research, its objectives, questions and my short biography well before the interviews. Oral informed consent was obtained from all participants to record interviews and to use interview information as the research data. All names in interview transcripts were anonymized.

With regard to online research, participant knowledge and consent, privacy and confidentiality still remain widely discussed critical issues. At the dawn of the internet there was a sense of anonymity and freedom from the physical world that the internet was expected to secure. Researchers had to negotiate the idea of the internet as an alternative reality with the privacy of subjects discussing how participants' identities can be protected. Buchanan and Ess (2008) emphasize that an online identity corresponds to an individual in the real world and numerous research (Ohm, 2009) has been done proving that there is always a risk that the identity of the participants will be identified. Buchanan and Ess (2008) summarize that Internet research gives more space for ethical reflection while on

the other hand providing more opportunities for discursive exchange between a researcher and participants.

Another challenging issue related to Internet research ethics is the understanding of the public and private space. Members of a particular forum or bulletin board may consider their forum as a private space therefore Buchanan and Ess (2008) advice to ask members of a particular forum how they understand their common online space and this understanding should dictate the role of a researcher and the form of her analysis report. Morison et al. (2015) summarize two approaches to how contemporary scholars conduct online research. The first approach deals with the researcher's active role in the coproduction of data under analysis. Analysis may require a researcher's collaboration with participants leading to researcher having an active role in content production on a discussion forum or weblog being analyzed. The second approach assumes that a researcher takes a passive role as an "observer" of online social phenomena and collects the data without interacting with it thus leaving online users unaware of the researcher's presence.

The practice of observation was criticized for giving a researcher a power position of an expert who "'gazes' on research 'subjects' with the aim of appropriating their voices or behavior for research purposes, with no benefit to those being observed" (Morison et al., 2015, p. 227). Nevertheless, Jowett (2015) analyses the utilization of online discussion forums in critical psychological research and suggests making a distinction between more and less private forms of online communication. He provides an example of online forums, invitation-only groups or forums that require membership to view or an approval from a moderator to join. On the other hand, he argues that treating "the vast majority of publicly accessible online material as private because the authors may object to its use in research is arguably an extreme position" (p. 290). Jowett also cites the British Psychological

Society's (2009, p. 9.1) statement of general ethical guidelines, stating that "observational research is only acceptable in situations where those observed would expect to be observed by strangers", and argues that "the multiparty and anonymous nature of Internet forums implies that contributors can expect their posts to be read by strangers" (p.289).

This study, following Jowett (2015), Monson and Donaghue (2015), and Gibson et al., (2015), is based on observing data presented on the Internet through webpages and weblogs. While understanding and respecting the perspectives of the participants throughout the analysis, I did not obtain informed consent from all blogs' authors and contributors. Yet, group representatives were informed about my research and its objectives. To find the distinction between public and private content, I followed Monson and Donaghue (2015). They referred to Appendix 1 of the Heuristic Chart of Ethical Questions by Data Type and Venue[15] when considering the openness of the data. All data collected for this research was publically available without requiring a password or log-in. The data was gathered from group weblogs that encouraged people to share the information, to mobilize or to comment on the issue, which implies that "contributors were aware that their posts would be read" (Monson & Donaghue, 2015, p. 5), reposted and responded to by others. Tōkatsu groups' weblogs have more than one author and all contributors used screen names rather than their real names when writing blog entries or comments. In this research, all data was anonymized in order to exclude or reduce the risk of participant identification. Furthermore, when asked about permission to analyze the data presented on the weblogs, group representatives emphasized that they made clear distinction between private and public information and all information that they considered private was shared via mailing lists that included a limited number of group members. They further explained that the information posted on weblogs was intended to be open to

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[15] https://aoir.org/reports/ethics2.pdf Retrieved October 2, 2017.

the public and group representatives did not have any objections to this data being used in this research.

4.6 Issue Mapping: Methodological Set-ups

To analyze the case of the Tōkatsu region and to describe the controversy behind it the cartography of controversies was exercised. Venturini (2010) explains that "controversies mapping entails no conceptual assumptions and requires no methodological protocols. There are no definitions to learn; no premises to honor; no hypothesis to demonstrate; no procedure to follow; no correlation to establish" (p. 259). The Internet content was analyzed by applying the five observation lenses suggested by Venturini (2010). The first layer of analysis suggested by the author was to proceed from conflicting statements regarding the problem to the literature in order to "map this web of references, revealing how dispersed discourses are woven into articulated literatures" (p. 266). The second step is to define actors. Venturini emphasizes that actors are not isolated, therefore when analyzing a controversy, we have to perceive all actors as being components of a network and therefore have to trace the networks of those actors.

Drawing on controversy mapping (Rogers et al., 2015) I aim at exploring how the parts of the Tōkatsu network are bound together through the process of association and interaction. This might help to explain the relational dynamics of networks and the knowledge accumulation process.

Issue mapping is a group of techniques that aim at producing "mappings that will aid in identifying and tracing the associations between actors involved with an issue, and to render them both in narrative and visual form" (Rogers et al, 2015, pp. 9-10). To operationalize abstract concepts of activists' individual frames and associations into links and mentions, Rogers et al. suggest utilizing digital methods. The authors theorize that by

opening new channels for participation and action the web revealed the importance of studying these channels and actors amid debates about contemporary issues. Thus, collecting hyperlinks and common content across websites, for example, may add to "the study of associations between the actors linking to each other" (p. 30), thus revealing issues of particular importance and groups concerned with them.

To get insights into actors' associations this research follows Tōkatsu actors' networks. Social networks have long been discussed as playing a significant role in the development of social movements, particularly environmental activist networks (Ackland & O'Neil, 2011, p.178). A major contribution to the study of social networks and their importance for social movements was made by Mario Diani who defined social movements as "consisting in networks of informal interaction between a plurality of individuals, groups, and/or organizations, engaged in a political and/or cultural conflict, on the basis of a shared collective identity" (Diani, 1992, pp. 2-3). Ackland and O'Neil (2011) further elaborated on this idea arguing that social movement actors "exchange practical and symbolic resources" (p.177) through informal networks. The authors defined the organizational practical exchange network "as a directed network where ties between organizations represent the exchange of practical resources", while an organizational symbolic exchange network was defined as "an undirected network where ties between organizations reflect mutual recognition of shared characteristics and goals" (p.179).

Contemporary movements extend their networks online and form new networks in virtual spaces through hyperlinks. Park (2003) defines hyperlinks as "(a) technological capability that enables one specific website (or webpage) to link with another" (p. 49). Thelwall (2009) theorizes that, being designed as a "navigation aid" to help users easily move between web pages (p.27), hyperlinks come with specific meaning and can be considered as indicators of page value or endorsement (Kleinberg, 1999), of content

similarity or of acknowledgement of organizational connections. "Making a link to another site, not making a link, or removing a link may be viewed, sociologically or politically, as acts of association, nonassociation, or disassociation, respectively" (Rogers, 2013, p. 44). Rogers provides an example showing that governments tend to link to other governmental sites only while corporations usually provide only links to themselves, inlinks. Ackland and O'Neil (2011) argue that hyperlinks create "a sense of "critical mass" or authority for a message that may be lacking in the real world" (p.180). Consequently, linking between actors and sources of information is purposive and tracing links and ties between organizations "becomes telling" and meaningful, revealing how information flows and how actors associate with this flow of information and with other actors.

Rogers (2013) theorizes that a selectively interlinked set of actors dealing with the same issue may be treated as an issue "space" (p.46). To trace and analyze the Tōkatsu network and the low-dose radiation issue space the outlink analyses was undertaken. To establish the corpus for the outlink analysis all Tōkatsu weblogs (six in total) were accessed and all offsite links that were found on each entry and each comment thread were manually harvested. Manual strategies were used because most crawling software could not capture individual blogs sited on ameblo.jp and blog.livedoor.jp which could cause a distortion of the results. The time span was limited to four years starting from March 2011 to January 1, 2015. All groups and their blogs were established after March 11, 2011 therefore the analysis starts in 2011. The data thus gathered was visualized as network graph to emphasize patterns in actors' associations and knowledge accumulation.

Links were collected and divided into 16 types and the definitions of these link types are set out in Table 4-5.

Table 4-5 Link Categories and Definitions

Link Category	Definition
Shops and rental companies	Outlinks to the websites of shops and companies that leased monitoring devices
Hospitals and clinics	Outlinks to the websites of hospitals and clinics that offered thyroid checks and other analysis that would explain total body irradiation
Research centers and universities	Outlinks to the websites of research centers and think tanks as Radiation Risk Research Center, Tokyo Metropolitan Institute of Public Heath, etc.
City councils and municipal facilities	Outlinks to the Kamagaya, Abiko, Kunitachi, Funabashi, Nagareyama, Noda, Matsudo, Inzai, Kashiwa, Sakura, and Shiroi City websites and other municipal facilities as clean centers and schools
Prefectures	Outlinks to the prefectural websites as Chiba, Tokushima, Kagoshima and Akita
Ministries and agencies	Outlinks to the websites of national level ministries and agencies as Ministry of Agriculture, Forestry and Fisheries; Ministry of the Environment; Ministry of Land, Infrastructure, Transport and Tourism; Reconstruction agency
Government	Outlinks to the websites of the Upper/Lower houses of the Diet, Prime Minister's Office and political parties
Traditional Media	Outlinks to the websites of national and local newspapers and television stations (Newspapers: Tokyo, Mainichi, Asahi, Yomiuri, Sankei, Chibanippo, Huffington Post and Television stations: NHK, TBS, Chiba-TV)
Alternative media portals	Outlinks to the websites of alternative newspapers and online media channels: YouTube, Ustream, Facebook public pages, etc.
PTA	Outlinks to the websites of parent teacher associations
Consumer clubs	Outlinks to the websites of consumer clubs
Dictionaries	Outlinks to the encyclopedias and dictionaries as Weblio, Wikipedia
Maps	Outlinks to the online maps
Politicians' weblogs	Outlinks to the websites of individual politicians
Other personal weblogs	Outlinks to individuals
Groups' blogs	Outlinks to other organizations such as NGOs/NPOs, or citizens' groups

Link categories being supported by data from interviews help to reveal what actors were involved in the issue. As a result, a map of the issue network was created.

Furthermore, actors became associated because they share the same issues. Therefore, while tracing outlinks, shared issues—the context in which the link was used—were collected and further content analysis of shared issues was conducted. Alluvial diagrams are employed to visualize the relations between actors. In this case the width represents the number of times a specific actor mentions the others. The alluvial diagrams were made using the free software called RAWGraphs.

The titles and explanations of events that groups hosted or announced were further analyzed and several trends that describe post-disaster discourse and topics that people were interested in were revealed. Actors are also connected to the places of their activity, therefore the names of group locations were collected and the issue map was created to show the geography of the issue and to connect online information to the offline communities. The results of the mapping are expressed through visualizations such as annotated cartographical maps, network graphs and timelines.

This research argues that Tōkatsu activists, through the course of their action, became expert citizens acting as mediators between experts and the public. By doing so they participated in the creation of knowledge about low-dose radioactive contamination and its influence on human health and community life.

4.7 Summary

This chapter described the case study approach and issue mapping as research methodologies that have been applied to analyze Tōkatsu groups' activities. I noted significant research trends and described how case study methods (semi-standardized interviews and direct observations), and digital methods (hyperlink analysis and analysis of actors) were adopted in the longitudinal study of Tōkatsu group (from March 2011 to June 2017). This research aimed at demonstrating how new identities of expert citizens

appeared, emerging as active knowledge producers and active participants in the post-Fukushima environmental debate. Furthermore, this research explained what opportunities for risk articulation and knowledge co-production were available for Japanese local activists at the time of the accident and how they leveraged the Internet to construct knowledge about low-dose radiation contamination.

In the following chapters, I provide the results of this analysis, the discussion and implications of this research. Showing how Bang's (2004) framework can be applied to Tōkatsu region activists I explore the nature of contemporary political participation in the aftermath of the environmental accident. I analyze the network that was created by dispersed parents of the Tōkatsu region demonstrating how the Kanto network that emerged as a result shaped the issue of low-dose radiation contamination. In the discussion section I provide a matrix of the knowledge co-production process demonstrating the process of expert citizens' identity formation and its role in the local environmental debate.

Chapter 5: Data Analysis

5.1 Introduction

Confronted with a lack of knowledge regarding the low-dose radiation risks, concerned parents had no choice but to start monitoring their neighborhoods, collecting data and information about the influence of radiation on the human body and circulating and discussing their personal experiences and the experiences of those who were influenced by the Chernobyl accident. Consequently, this chapter demonstrates how Tōkatsu region activists mobilizing various tools and devices created a dialogue with specialists and established themselves as people who can speak in the language of science, becoming active knowledge producers. Furthermore, this chapter explains what social relationships and identities appeared as a result.

5.2 Tōkatsu Groups: Participation in Local Community Life

In order to trace the controversy behind the low-dose radiation issue in the Tōkatsu region I will refer to the Waki Yurika report (2015) where she—as a Tōkatsu activist herself—describes the situation that followed the disaster. Apart from television and newspaper news reports that repeatedly stated that the situation was under control, on March 20, 2011, there was a tweet from the official Twitter account of the Prime Minister's Office containing information related to the disaster:

> For those living in Tōhoku and Kanto: even if it rains it does not pose any health impact. Although there is a possibility that radiation levels higher than those originally present in nature can sometimes be detected in rainwater, it is still an extremely small amount, and is within a normal range that there is no need to be worried about.

This message assured citizens that everything was fine and safe. However, on March 24, 2011, *Asahi Shimbun*[16] reported that the Tokyo Metropolitan Government announced on February 23 that 210 Bq/kg of radioactive iodine was detected in tap water at one of the water purification plants. As it exceeded the threshold dose level for infants by two times, parents and school authorities were urged to refrain from giving tap water to infants.

From the first days following the accident people started worrying about its consequences. Most activists that I was talking with were referring to the weblogs of two professionals whose weblogs and Twitter posts they were following from the very first days of the disaster and who were among the first who announced that some parts of the Kanto region had also been heavily contaminated. One of them was Takeda Kunihiko (Chyubu University)[17] who announced in May 2011 on his weblog that there was heavy contamination in several cities of the Tōkatsu region (Kashiwa, Matsudo, Nagareyama and Misato) and called for children protection (Figure 5-1).

Figure 5-1 Post from Takeda Kunihiko's Weblog

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[16] http://www.asahi.com/special/10005/TKY201103230282.html Retrieved on September 14, 2017.
[17] http://takedanet.com/archives/1013801484.html Retrieved on July 12, 2017.

Another one was Hayakawa Yukio (Gunma University)[18] who is majoring geology and who monitored numerous localities in the Kanto region, created the contamination map and posted it on his blog[19] and Twitter page.
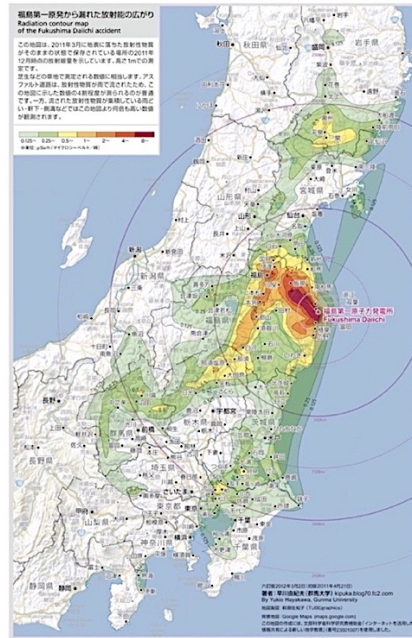
Figure 5-2 Radiation Contour Map of the Fukushima Daiichi Accident (2012.03.02)

One more source of information was the data from radiation monitoring stations. While there is only one monitoring station in Chiba Prefecture which is located in the city of Ichihara, southern part of the Chiba Prefecture, the neighboring Ibaraki Prefecture has 68 monitoring stations that monitor water and air and collect data every two minutes. One of the activists mentioned that the monitoring system in Ichihara showed normal numbers the days following the disaster while Ibaraki stations showed relatively high numbers which made some citizens worry about the consequences of the accident.

Starting from March 20, 2011, Jōso Consumer Club tested the breast milk of mothers living in Ibaraki and Chiba Prefectures. The results showed that a small amount of radioactive iodine had been detected in the breast milk of four mothers. The highest

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[18] http://kipuka.blog70.fc2.com; https://twitter.com/HayakawaYukio Retrieved on July 12, 2017.
[19] http://kipuka.blog70.fc2.com/blog-entry-473.html

amount of radioactive iodine, 55.9 Becquerels per kilogram, was found in the breast milk of a mother in Kashiwa city, Chiba Prefecture.[20] It alarmed residents living in the Tōkatsu region.

Soon after, citizens started actively monitoring their neighborhoods, posting monitoring data online and sharing it through various digital media channels. Consequently, on May 16, 2011, *Yomiuri Shimbun* published an article saying that:

> The Expansion of False Rumors about the Radiation
> Rumors saying that "hot spots" of intense radiation related to the Fukushima Daiichi Nuclear Power that were found in 4 cities including cities of Kashiwa, Matsudo and Nagareyama, Chiba Prefecture, and the city of Misato, Saitama Prefecture are spreading by way of chain mails, Twitter, internet bulletin boards, and other media.
> The Nuclear Emergency Response Headquarters of the Ministry of Education, Culture, Sports, Science and Technology said that "The numerical values measured in Chiba and Saitama are the same as usual". The Anti-Spam Consultation Center of the Japan Data Communications Association warned, "We would like you to refer to the evidence-based information that is provided by public institutions and the press". The center is asking users to forward mails that include such rumors so they they may better understand and analyze the situation.

Figure 5-3 *Yomiuri Shimbun*, May 16, 2011.

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[20] http://csrp.jp/wp-content/themes/CSRP2014Ver2/slides/Oishi_J.pdf Retrieved: October 25, 2017.

This article symbolizes what Venturini (2010) called "the clash of conflicting worlds" (p. 262) when various actors were expressing conflicting opinions about one issue and it facilitated the action. Furthermore, despite the fact that monitoring numbers were relatively high, Tōkatsu region schools did not cancel spring sports days in May 2011 and city authorities did not provide any further information regarding the situation. As Waki (2015) reports, on May 23, 2011, Matsudo City division of Radiation Control got about 300 inquiries a day from citizens about the influence of radiation exposure (p. 75). However, authorities could not provide citizens with detailed information.

5.2.1 Personal Responsibility and Self-Help

When facing with accidents and life-changing events temporal frameworks that were once taken for granted suddenly become overturned, with life being divided into 'before' and 'after'. The Fukushima accident raised questions associated with temporality: whether the accident was predictable and unavoidable, could anything have been done to prevent it and what will happen next. Bülow and Hyden (2003) when discussing identity and temporality in narratives about chronic illness argue that different forms of temporalization in the narrative about the illness are significant since they relate to the idea of responsibility and freedom of liability. By drawing on the Morson (1994) and Bernstein's (1994) works, Bülow and Hyden (2003) introduce the concept of "shadows of time" that explain how "events cast their shadows over the narrator's present" (p.78). These shadows of time can come from the future ("foreshadowing"), from the past ("backshadowing") and from the side ("sideshadowing").

Bülow and Hyden (2003) describe the concept of sideshadowing that researchers often ignore when analyzing people's narratives as a time line. The concept explains the way a person, when explaining the situation, emphasizes alternative courses of events; things

that could have happened in this particular situation. The authors argue that this interpretation of life experience as something not being predestined, but as "something that develops and can be influenced" (p.95) leads to the idea of personal responsibility. The idea of time and changes, of life before and after the accident and feelings of loss often appeared in respondents' answers:

> Nature has really become the scariest thing. [If the accident had not happened], we could get a lungful of fresh air, grow vegetables for our family and eat them freshly-picked right from the garden. All these things I wish [my family] could do, and the fact that we can not do it anymore makes me realize how much we have lost. (Kamagaya group mother)

Bülow and Hyden (2003) further argue that foreshadowing— "the shadow that future events cast over characters" (p. 78)—rarely happen in narratives which involve real people and are more common in literature and movies when readers know something that characters are not yet aware of. The idea of risks and uncertainties always imply forecasting and reflections about future events, therefore, Tōkatsu activists often described possible future consequences of the accident and the idea that these consequences influence their present activities and present life making them take responsibility for their lives and lives of their children.

> Although I do not know what will happen, but if in about 10 years my child becomes sick and he tells me: "Mum, why didn't you do anything at that time? If you had done the right thing this wouldn't have happened to me," I will probably not be able to blame myself enough. (Kamagaya group mother)

Thus, the activists realize personal responsibility for the possible future events and in the replies made by Tōkatsu activists personal responsibility becomes a recurring theme.

Believing that authorities will not tell the truth or will not have enough time and resources (human, financial, etc.) to cope with the situation, they realized that it was no

longer a state or prefectural matter but an individual and local one. Thus, the personal responsibility implied independence from state decisions:

> While the original level of radiation here [in the city of Matsudo] is 0.03, isn't it strange that now it is 0.8 which is 100 times higher than usual. The professor said: "I can not tell if it is high or low. It is the state that decides if it is high or low. It is politics. It is a political decision". Really? Numbers that we consider high. There are politicians who are to decide if the region is contaminated. I was surprised. It was the first time when I thought that the only thing I can do is to protect my child by myself. (Matsudo group mother)

While on the other hand, personal responsibility implied independence from the collective opinion, and from the opinions of peers and friends.

> I was told by my friend that even if her child got sick [from the radiation], she would think that it was her child's fate. I was deeply shocked when I heard this. So I was told that if that was a child's fate, there was no point in worrying about it. If I could not do anything other than being tormented I was told to accept the situation. No, my way of thinking might be different from yours but I want to protect my children and will take another side [side of those who worries about the issue]. (Kashiwa group mother_1)

Personal responsibility implied personal decisions to question the widely accepted narrative of safety, to worry about the situation, to alter the natural order of daily life and to seek possible solutions to the problem. Activists were faced with a new reality in which they had to embrace new risks that in turn required them to make new choices. They were obliged to formulate new life strategies by taking actions in order to increase the quality of their family and children's lives. It reshaped various aspects of people's lifestyles including their diets, when mothers had to spend extra time going between various supermarkets in order to find food made in distant southern prefectures that were considered safe, or had to cook using ingredients that were proven safe. It also influenced leisure activities, thus reshaping relationships with friends and peers when mothers, for example, made children abandon their outside activities or to stop eating school breakfasts

thus influencing children's relationships with peers and parents' relationships with teachers and other children's parents.

On the other hand, the accounts of Tōkatsu activists suggest that the activity itself put a lot of pressure on those involved in it, in the form of family and friends' criticism and the stress of being over concerned about the radiation issue. As one of Abiko mothers put it: "My son said that his mother can see the radiation (laugh). I wonder why others can't?*"

Many interviewees reported that they had no prior experience in community activism, little radiation-related knowledge and almost no experience in organizing. Therefore, at the very early stage, parents (particularly mothers) got together driven by concerns about the health and safety of their children and their families. They started meeting to discuss the issues they were worried about, started learning about the radiation and monitoring their neighborhoods, and raised the questions of who is responsible for their children and if it is correct to delegate all the responsibility to the school, the city or the state.

Even though many activists felt themselves incompetent in issues related to radiation and its effects on human health, they tried to find the time and resources to study, monitor, and analyze the results that they got by themselves. They tried to become skilled and prudent in order to take charge of their, and their children's lives.

5.2.2 Community Relations

The new reality implied not only new responsibilities and new lifestyles, but also new relationships and new networks. Mothers often emphasized that they were unable to openly express their concerns and share their grievances, and were looking for like-minded people. The Internet in Japan was usually a place were people were anonymously sharing their feelings "from tiny things in their lives to serious mental struggles" (Tamura, 2004, p.138). Numerous authors (Tamura, 2004; Nakada and Tamura, 2005) argued that

Japanese cyberspace in general and weblogs in particular were perceived as an extension of the private sphere. Thus, apart from information provision, the desire to share their anxieties while avoiding disclosure and open confrontation (Onishi, 2004) led to the appearance of numerous webpages where anonymous individuals and groups were expressing their concerns and worries; sharing the information and calling for some action.

> I think that the Internet is very useful for those who did not have courage to meet directly and for those who only wanted the information. I think that one needs courage to contact unfamiliar people and meet with them. At the beginning there were around 30 people and I think that it would not be possible if there was not such an issue [as radiation contamination]. I have never had an experience with participating in offline meetings when people who got to know each other online meet in the real world. It was my first time. (Kamagaya group mother)

Most groups created group's weblogs and mailing lists, and also got in contact via Facebook and Twitter. The Kamagaya group, for example, also created two mailing lists - one that was designed for all concerned people who were seeking information and advice and the other was designated for 10 to 15 core members to help them manage their activities. Since mothers were the most active participants, those who had small kids and could not participate in monitoring and other activities could obtain the information and get advice from those who had enough time to research the problem.

By creating one more tool for communication – mailing lists - group members clearly divided public and private spheres making weblogs the public face of their groups while mailing lists remained the place where people could disclose their experiences and thoughts, reflecting upon their worries and seeking advice on matters related to school and everyday practices. This communication process helped to develop the language to narrate and identify the problem and the capacity to do it together, looking for common solutions and consensus.

After getting in contact with each other and meeting face-to-face they deepened their

bonds, enjoying their activities and their networks that were gradually expanding beyond

prefectural and regional borders.

> At the beginning we just gathered to exchange information because there
> were many people who did not have anyone to talk to so we just gathered
> and talked. What can we do, where should we buy food, is this park safe,
> etc. (Kamagaya group mother)

The issue brought new relations with new networks of interaction with those individuals

and groups who understood the risks involved in the situation. One of the Kashiwa

interviewees' words reflect this:

> It was difficult to get people to understand [me], so [our group] was the
> place where I could connect with people with similar values; it was the
> place were I could feel relieved, where I could start thinking that what I
> was doing was not wrong. I think that I would have been really crushed if
> [our group] did not exist. I would think that I am the only one who is
> strange. Listening to the stories of Ms. Shiraishi [a lecture presenter] or
> anyone else, or investigating the information about the Chernobyl affected
> areas, [I realized that] they do it! They do health checks, they take children
> to health recuperation camps, so what I am doing is not wrong. Now I think
> I got strong enough. Therefore, I really think that this is so good that we
> have this kind of connection and I am glad I was trying hard [in my
> activities]. (Kashiwa group mother_1)

Activists frequently mentioned that, being among like-minded people, they met a lot of

acquaintances and friends during the course of their activity.

> I was able to meet different people whose interests are not limited to the
> radiation contamination issues. Among those who cared about radiation
> there were a lot of people who were also worried about various other things
> and we met with them in different settings. So I think that it is great that
> I've been able to meet more people. (Kamagaya group father)

In 2012 the group called the Kanto Network was created. It included 41 groups from the

cities of Chiba, Saitama, Tochigi and Ibaraki Prefectures (43 groups at present). Their

purpose was to negotiate with the Diet members and relevant ministries and agencies

issues related to the Victims Support Act. One of the activists mentioned that the creation

of this network was very important, not only in terms of political lobby activities.

> There were not so many people concerned with the problem and involved in some sort of activity in each [affected] city therefore [the Kanto network] gave us a feeling that we were not alone and we could confirm that there were other people with the same concerns. This was good. (Kamagaya group mother)

Consequently during the course of action, through the experience of participatory workshops, monitoring and decontamination activities and study and tea meetings, a shared sense of solidarity emerged among participants. Many people reported that they had found new friends.

5.2.3 The Character of the Tōkatsu Participation

Ideological Neutrality

Tōkatsu citizens selected by themselves how and when they participated by writing petitions to their respective local city councils, organizing public comments campaigns and creating community groups to find supporters. To make their efforts even more effective they attracted public attention using the internet and creating networks. They concentrated on several concrete issues such as monitoring of air, soil and food, decontamination of school yards and public places, monitoring results and other accident-related information open to the public, regular health checks and tests. Their goal was to produce concrete results rather than fighting out abstract ideological disputes. They did not have a single leader or single agenda, and did not share any collective frame. When asked why they started their activity, interviewees talked about the issues and causes they worried about never mentioning any organization as a key mobilizing factor.

> The reason why I started this activity is because I could not think of anything except the necessary minimum. I send my son to school, right? I can not tolerate the fact that the school is contaminated. I thought that it would be strange if I let things get out of hand in the place where my child spends one third of the day…we have to worry about our children. I thought that it is absolutely unacceptable not to do anything even though so many

kids are going there, therefore I approached the school... I pressured the school officials so hard that I was about to break down, but I negotiated with the school principal, so therefore the school was decontaminated. (Abiko group mother_4)

Localism

The participation was grounded in experiences the activists had lived through, and therefore it was local in nature. The accident raised questions about neighborhood, food and water safety, and left residents worried about their future and future of their children. They did not intend to keep the state effective but rather focused on empowering themselves in relation to various local circumstances and conditions emphasizing the importance of empowerment from below, as demonstrated in the following account:

After all, when something happens, we citizens have to act first, not the state; of course, the state is supposed to act first, but every person in the community must speak out and take action. At that time when this happened in the region outside the Fukushima Prefecture, officials of the cities of Matsudo and Abiko followed our requests and acted in accordance with the critical nature of the situation. When we asked them to decontaminate here and there, they decontaminated. They did it before the state had made a decision whether or not to finance that initiative; they did it not because they were paid for it, but for the sake of their citizens. Therefore, I think that civilian control is very important. (Matsudo group mother).

Some activists were questioning the concept of *shimin* (citizen) referring to the antinuclear activist Hirose Takagi who did not believe in the idea of *citizen.* He argued that it evokes the image of the nation state and associates with radical activists that fight for abstract ideas; a type of activism that leads nowhere. In contrast, he propagated the idea of *jūmin* (local resident) that resonated with what Tōkatsu activists were actually doing. Only *jūmin* knows his or her environment and can productively act to protect its interests.

Initially, I am [from the generation of those] who [first] started demonstrating in front of the National Assembly, against nuclear power plants, etc. Our generation was like that. If there was something [we

disagreed about], we went out to the city and demonstrated, and at universities this kind of activity was very popular. If there was something [I did not like], I complained and went to demonstrations. Takashi Hirose said that he did not believe in citizens' movements, he believed only in residents' movement, because movements that did not address concrete problems of a particular area would not last long and would always break up. The reason why I started this activity in the city of Kashiwa is because I agreed with this argument. So, I started my activity when I asked myself "what I can do in Kashiwa?" (Kashiwa group mother_2)

They did not overestimate their achievements, perceiving their engagement as valuable to themselves.

[Through the course of my action] I did not originally intend to win but now I want to, and even though this victory is very modest I think that the most important thing is not to forget to worry. Don't start thinking that everything is already fine and we have nothing to worry about, that we live in a safe world. We have to let people know that there are still people who worry about the issues. For example, we have to continue conducting health checks and have to draw people's attention to the fact that we continue to do health checks. By doing so, little by little, even a little bit, if we draw people's attention, people will not forget that this should not happen again. (Abiko group mother_4).

The participation of Tōkatsu activists was casual in nature with very few rules and obligations. Joining was free and participants had no formal obligations to either the founder or any leader of the group. They participated only when they could fit their activities into their lifestyle. One activist even mentioned in her interview that she stopped her activities when she became busy with her children's middle school exam preparations.

Ms. K has got 4 children, Ms. N works, everyone's situation is different and people with small kids are very busy. Our activity is something that we do in addition to our everyday routines, which takes up a lot of our time. (Abiko group mother_3)

Activists were able to control how, when and up to what extent they were involved and this made their participation easier. They decided their roles:

I am not good at talking directly to the city authorities therefore I am posting on my blog to get more associates, but as for Ms. K, I do not even know how many times she has called to the board of Education, she also

> called to the [Abiko] City, to the Teganuma reprocessing plant section…
> (Abiko group representative, mother_3)

They also decided the level of involvement and the level of privacy.

> There were around 30 people who were actually meeting regularly. There were also several people who did not want to meet but needed the information, so they were on our mailing list. There were also people who would say: "I am also involved in the same type of activity but do not want to tell my name". Everyone had a hard time saying things openly, especially people whose children were going to kindergartens or elementary schools.
> (Kamagaya group mother)

The level of involvement was also related to the gendered nature of the Japanese employment system which designated fathers as the major bread-winners in a family. It usually requires long working hours, as was discussed in Chapter 3, meaning that it that does not allow enough time to participate in many activities outside of work and demands great devotion. This results in the fact that fathers generally do not dare to question the system, relying on information from television and news reports (Morioka, 2015). On the other hand, this system implies that mothers in Japan often work part-time, consequently having enough time to participate in a group's activities. This was emphasized as one of the reasons why there were only a few fathers among the participants. Other activists mentioned women's maternal instinct and natural desire to protect their children and family. Yet, the Japanese school and preschool system appeared to be an obstacle for some parents' participation making it difficult to go against the systems of school breakfasts for example, and other rules.

5.3 Relationship with the Existing System

Tōkatsu activists do not see themselves as opposed to the state because the radioactive contamination is not an individual problem, but rather an issue that the government should address. Furthermore, they do not identify themselves in relation to political authorities;

they do not oppose them or support them. They try to get involved in politics at their local level by writing petitions, meeting with local authorities, and lobbying for the Victims Support Act. Some politicians were members of Tōkatsu groups and participated in group discussions and meetings.

From the interviews, it became clear that most Tōkatsu groups, while being critical of government policies such as the level of standards and data openness, did not want to be seen as being involved in politics. This avoidance of politics was also accelerated by the negative image of the New Left which is seen as a violent extremist group of citizen activists (Ando, 2014). Tōkatsu parents rarely participated in antinuclear demonstrations and were careful of any association with extremists, seeing them as "professional activists" who have not been directly affected by the issue. In contrast, Tōkatsu parents by virtue of their parenthood considered themselves as *tōjishya* (those who were directly concerned)[21].

They separate national and local city authorities, explaining the last one in terms of co-governance and cooperation rather than hierarchy and opposition. This might be explained by the fact that city authorities always replied to activists' petitions and letters and reflected on activists' requests (e.g. by making open monitoring data available on municipal webpages, etc.), thus accelerating the process of trust-building, which culminated in the collective petitions of nine city mayors to prefectural and national level bodies asking to be included in the jurisdiction of the Victims' Support Act.

When answering the question of what they gained during the course of action and what they understood, most of the participants mentioned close relationships with local government and the mutual understanding and mutual respect they received.

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[21] McLelland (2009) explains the term '*tôjisha*' as having originated in the fields of law, politics, and administrative studies, and referred to the "people or parties directly involved in the matter, often the matter of a litigation/lawsuit". Contemporary *tojisha studies* emphasize the uncritical and essentialist subjectivity of the participants, contrasting it with "objective' expertise established by outside authorities" (McLelland, 2009, p. 9).

> I think we have gained a fiduciary relationship with the city. I think that [the city] trusts us. From the very beginning we tried not to become hysteric and emotional when talking with the city authorities. Actually, the city is not bad, the city is also a victim, so we tried to talk to them with this in mind. What is more, even if we wanted them to do something immediately there might be some circumstances when they could not move quickly. We understood that when the country was not willing to do anything it was difficult for the city to make any decisions on their own. We talked to the city while keeping in mind that we would have to come back and talk again. So I think that we have built a relationship in which the city listens to our opinions. I think there are different ways to perform an action, for example leaking the information to the media, but we understood the city's circumstances and tried to avoid this type of action, proceeding through the negotiation process with patience. (Kamagaya group mother)

Thus, activists clearly demonstrate that they wanted to connect to their local governments and in order to cooperate with them they explored various channels of participation such as round table meetings with city mayors, petitions, letters and cooperation with city council members. Activists themselves were defining and expanding the concept of activism including very careful and sophisticated analysis of community relationships and power balance.

As a result, starting from 2011, activists negotiated monitoring and decontamination of numerous school yards and public places to be conducted by respected divisions of city councils. Monitoring results were then made public on city websites and local newspapers. Furthermore, they got permission for children to bring homemade lunches or to refuse food items that were considered risky. As Kimura (2017) argues, school breakfasts in Japan are the part of educational curriculum and according to the Food Education Law established in 2004, "the objectives of school lunch program are to teach the contributions of various people to the production of food, to deepen understanding of traditional food, and to foster the spirit of cooperation, in addition to the intake of appropriate nutrition" (p. 455). Thus, it took a lot of efforts for activists to go against the national educational program by negotiating and gaining the permission for children to bring homemade breakfasts, and also by making public the origin of products used in school breakfasts.

Worrying about children's health, activists made school doctors include visual inspection of thyroid glands and thyroid glands' palpation in regular health checks. Likewise, they made city authorities extend the retention period for children's medical cards allowing them to be kept at school for ten years instead of five. Finally, the city of Kashiwa, Matsudo and Abiko started subsidizing part of thyroid echocardiography expenses for all residents starting from those who were born after the accident, up to those who were at high school at the time it occurred. Furthermore, the city of Abiko also partially covered expenses for blood tests that are meant to examine hormone function and the presence of tumors. According to the *Mainichi Shimbun* the aim of these policies was to alleviate the anxiety of mothers concerned about their children's health.

5.4 The Emergence of Tōkatsu Groups as Knowledge Producers

The process which started when concerned people got together to share their anxieties and to gather information on the radiation-related issues could be called knowledge accumulation. They made themselves familiar with the issue by discussing their observations (recent monitoring results from various sources, recent health problems), comparing and evaluating monitoring results.

The second step included the articulation process. According to Hakanson (2007) the "aim of articulation is typically to develop more explicit theory". The process of articulation includes "cognitive frames ("theory"), coding schemes and other symbolic means of expression ("code"), and the technology embedded in physical artifacts ("tools")" (p. 63). In the case of low-dose radiation exposure, the assumption that it has some influence on human health might be considered a theory. In order to prove this assumption and add to the existing knowledge, activists used various tools such as

monitoring devices and the Internet (MyMaps, weblogs and SNS) and they employed numerous codes such as numerical data and pictorial representations.

One of the Tōkatsu groups' first contributions to the low-dose radiation knowledge production was in their monitoring activities (Figure 5-4)[22].

Figure 5-4 Monitoring the Neighborhood in The City of Kamagaya

Rogers et al. (2015) argue that there has been a proliferation of new types of maps with various symbols and layers created by non-cartographers that influenced decision-making in critical post-disaster situations. This sends us back to Kuchinskaya (2014) who, while analyzing radiation contamination discourse in Chernobyl, argued that "the mere presence of maps or radioprotective standards adds to the public visibility of the hazard" adding something concrete to the discussion (p.96). However, by the time of the Chernobyl accident maps appeared to be an official tool to present the tragedy since only designated institutions had the necessary equipment to monitor and create maps and the authority to publish them, making them open to a wide audience (Kuchinskaya, 2014). In contrast, citizens of the Tōkatsu region concerned with specific locations (school yards, parks, etc.) equipped themselves with MyMaps and other free and user-friendly applications and

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[22] This photograph was provided to the author by a "Kamagaya father" with the written permission to use it in this thesis. The photograph has been altered in order not to show the face of the contributor.

monitoring devices, and they created numerous maps that became tools for visualizing the

threat (Figure 5-5).
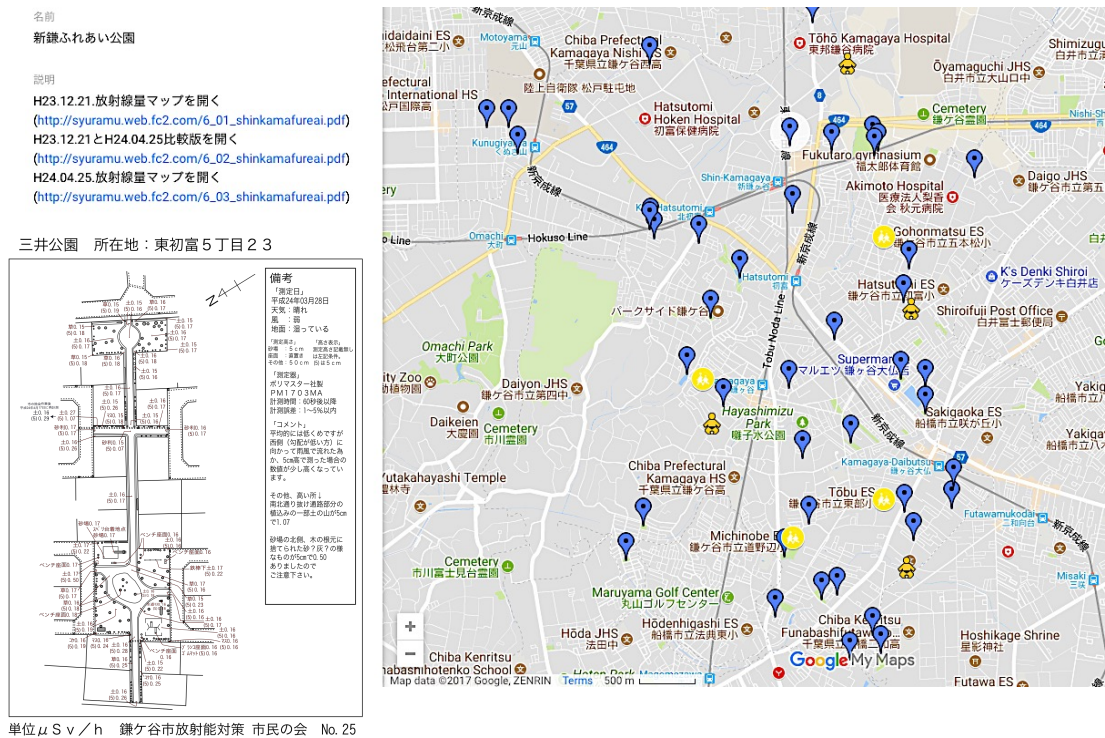
Figure 5-5 Mapping the Result of Monitoring

Being explicit and visualized on maps, monitoring results become available to be used

for negotiation and debate with experts, citizens and government officials.

> We created our map because the return policy [in Fukushima, the process of returning evacuees to their homes] is steadily progressing as if there was no such problem [as radiation contamination]. In reaction to this we [wanted to show] that contamination looks like this. We did not carefully take one sample per 1 square kilometer or anything like that, so as a map it is not based on a sufficient number of samples. So is hard to compare it with the state-produced maps of Belarus or Ukraine. This map was made by citizens only. Yet, we got 3000 samples which is not simple at all, and after all it shows evidence of the contamination trend. So, in case of evacuation or autonomous evacuation, the former reconstruction minister said that people [in Fukushima who had voluntarily evacuated from their homes around the Fukushima Nuclear Plant] should bear the responsibility for their decisions to evacuate. After all, if it is not an extremely high level near 20 mSv, like 18 mSv, there is no guarantee of [getting housing aid]. We need a map like this to be able to advocate saying that it's messed up for people to have to be responsible on their own. (An East Japan Soil Monitoring Project representative)

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As a result, local officials could no longer deny the severity of the environmental problem and started taking citizens' claims seriously.

> I have a child and while she is at kindergarten, she plays in the park. I measured that park. There is a hut in the park and a gutter, and the numbers I obtained in the gutter were too high. I could not accept them. At that time, I created this handwritten map. After that I uploaded my map to Google maps showing that this or that place numbers were high. I usually did it on Wednesdays because real estate agencies [where I work] usually have a day off on Wednesday. Therefore, I used to go to the park on Wednesdays to measure and then to make maps. From the very beginning when I just started my activity the City Parks division was following what I was doing. They showed the maps that I was creating to the division that was in charge of the decontamination, explaining were to conduct the decontamination work. So the city was also using my maps. (Kamagaya group father)

Thus, by monitoring and making monitoring data available on groups' websites to all concerned members of the community, Tōkatsu activists allowed the entire group of concerned citizens to know about their environment. In addition, they managed to produce transportable, easily accessible and trustworthy knowledge about their local environment.

Yet, different actors were involved in the data collection and knowledge production which made it difficult to keep findings coherent and ensure their reliability. Star and Griesemer (1989) discuss *method standardization* as a way "to create common understandings, to ensure reliability across domains and to gather information which retains its integrity across time, space and local contingencies" (p. 387) in scientific work. Activists were using common methods and standards issued by international scientific institutions for data sampling, measuring and other activities trying to prove the reliability of their results.

> If we do not base our monitoring practices on the same standards there is no meaning in such activities because the results, obtained from monitoring close to the surface or far from the surface, are different. Depending on the place there are some spots that show very high numbers, and at the beginning there were many such places. We came to conclusion that there was not good to measure places with high numbers in order to make a fuss. So we thought that if we didn't calm ourselves down they [city authorities] would not believe us. (Kamagaya group mother)

Furthermore, while officials and experts were arguing that it is hard to compare the post-accident situation in Fukushima with Chernobyl, citizens were able to make a case for such a comparison by monitoring the local community and presenting the situation in numbers. This, in turn, allowed them to become active producers of knowledge about low-dose radiation exposure.

One more important notion which appeared in relation to the monitoring activities was the idea of experience. Among the new groups formed by concerned people, a new form of authority was emerging; one that was not based on training or status but on the experience with the problem.

> We started when we realized that we needed to discuss this issue with somebody because this was something that we did not understand by ourselves, so people who did not understand the issue got together. After doing this we gradually came to understand the issue, and then the people who understood gathered to explain it to those who didn't. (Kamagaya group father)

As it was mentioned in the theoretical chapter, the idea of co-production implies the shift from fact-making to sense-making. Tōkatsu activists became involved in the sense-making process when they started organizing study-meetings to learn about the radiation. The analysis of study meetings titles that were announced on Tōkatsu blogs (Appendix 1.11) demonstrates the major issues of concern, what citizens were willing to know and what they were willing to learn about (Figure 5-4).
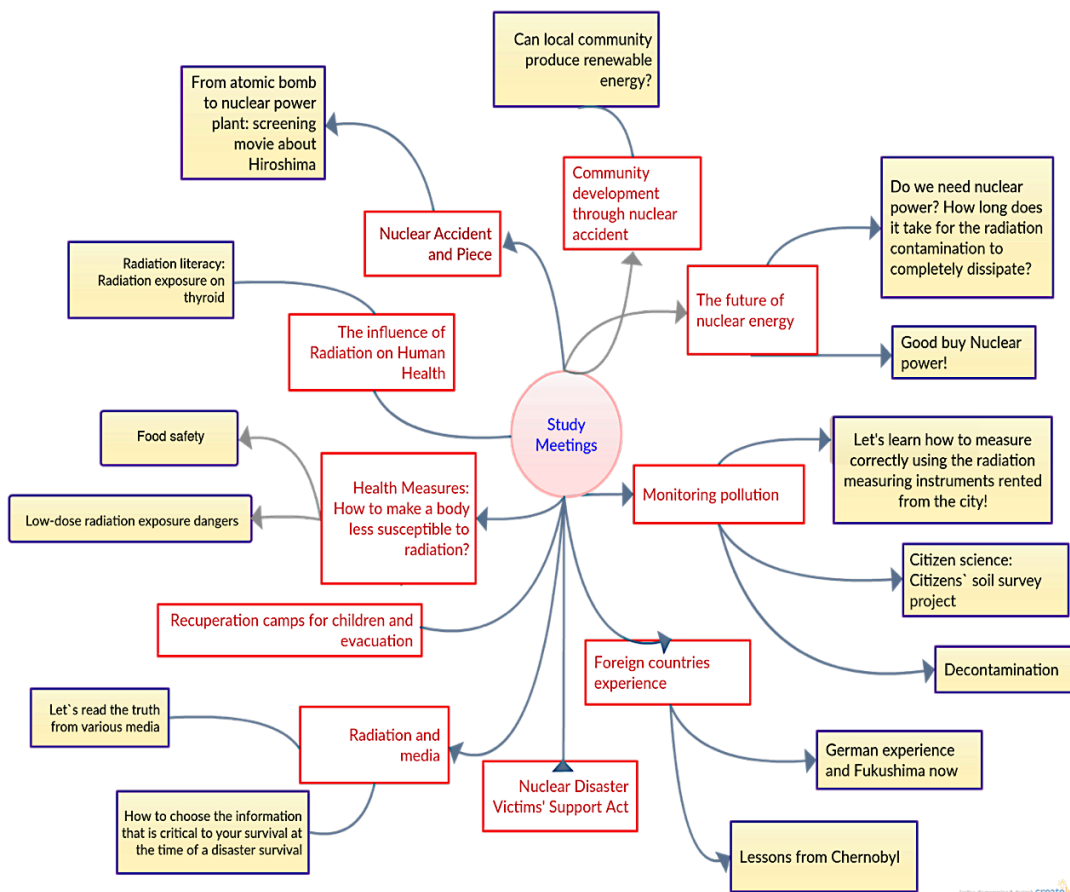
Figure 5-6 Major Trends in Study Meetings

The range of topics that activists were interested in included not only pressing issues such as the monitoring and decontamination processes and the influence of radiation on the human body, also the future of nuclear energy, the atomic bomb and peace movement, community development and mass media practices in presenting information.

Since the effects of low-dose radiation contamination were still being researched, area activists were also trying to acquire knowledge that would likely enhance the efficiency of municipal services. They put a lot of effort into becoming competent by gathering existing publications on a subject and mastering technical vocabulary. Furthermore, many European countries (Russia, Ukraine, Belorussia, Germany, etc.) had experience in dealing with radiation contamination and in order to get access to various publications activists in those countries have undertaken substantial translation work, thus making articles

published in foreign languages available to local officials and concerned citizens in Japanese.

> First, we were concerned about what influence the radiation has on human health and invited a doctor to conduct a study-meeting. The second thing we did was the translation of the report on health effects of radiation that was written by a doctor and published by the end of 2011 commemorating the 25th anniversary of the Chernobyl accident. The head of the Jōso Consumer club asked us if we could make a Japanese translation of it and we all agreed to do so. This report had been translated into English and we had to translate it into Japanese. There were quite a lot of educated mothers, and we divided this report and each of us translated three pages of it. After that we edited it together and decided to sell it. It was the first time when I learned that Chernobyl was such a horrible accident. Before, there was no reports written by doctors or medical practitioners… what we understood was that likvidators[23] and their families had severe health damage. What is more, we learned that people who were living in close proximity to the nuclear plant also had not only thyroid cancer but also reported numerous cases of other health problems. I myself really wanted to compare Chernobyl with Fukushima. Soon after the Fukushima accident people all over were saying that Chernobyl and Fukushima should not be compared and that they were different, while just swallowing what the government was saying and not really knowing why the accidents weren't similar. I wanted to learn as much as I could, therefore I decided to do the translation. (Representative of the Kanto Network)

Thus, activists were not only gathering information and collecting monitoring data but also were trying to share this information by selling translated books, by publishing results on groups' websites, and spreading the information through the mailing lists. This played an important role in building up activists' expertise and raising the awareness of the health effects of low-dose radiation contamination (Appendix 1.5). Furthermore, by translating and writing reports of various sources and study meetings activists publicized knowledge while emancipating themselves from an official agenda.

Callon et al. (2011) argue that "a first point of entry of laypersons" into the process of knowledge production is "the work of giving prominence to problems, identifying obstacles" (p.77). In order to focus the attention of authorities, experts and public on the

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[23] The civil and military personnel who had to neutralize the Chernobyl accident.

problem of low-dose radiation contamination effects concerned activists started approaching local city halls by writing petitions and collecting signatures. While collecting signatures activists were sharing brochures with contamination maps and radiation-related information thus making people aware of the problem (Appendix 1.3). By writing petitions and letters to respected city authorities, activists not only articulated the problem but also structured it, classifying and dividing the problem into areas of particular concern.

The sense-making process was also exercised during tea meetings and informal study meetings (without a lecturer or an expert) of Tōkatsu groups' members. During those meetings activists were discussing recent issues and data obtained, recently visited study-meetings and upcoming events, recent health issues and actions taken towards school and city authorities. During those meetings, major problems were identified and analyzed. Tsoukas (2009), drawing on Bell (1999), underlines that the "defining feature of knowledge, compared with data and information, is the maximal exercise of human judgment" (p.942). By analyzing data, drawing new distinctions, splitting the issue and asking municipal authorities to take particular steps, new knowledge about the issue was generated.

As a result, activists managed to establish a dialogue not only with local authorities but also with specialists. The dialogue was rooted in what activists learned about their community. They interacted, discussed and negotiated, asking new questions and seeking answers to them.

> At first we were only requesting action from city hall, but we noticed that radioactive contamination was not understood at the city level, so we went to talk to the prefectural [government], and then to the national [government]. That time we found a professor from the University of Tokyo's Institute for Solid State Physics and asked him to write something like a letter of agreement. We were thinking that when mothers said that they were doing something for their kids, they would be treated like they were hysterical. But obviously 0.5 is not a normal level. Despite these numbers they did not admit [that it was dangerous], there was this

situation... so we asked a person named Dr. Oshikawa for a support. …So he wrote a letter dividing it into different topics as health checks related issues, decontamination issues, radiation protection issues and monitoring issues.

When applying [to the city hall] we attached various materials such as the pollution map that was made by the Jōso Consumer Club when they measured air pollution soon after the accident to show the situation at the very beginning when we were exposed. We thought that the city hall people surely did not know therefore we attached different data to prove how high the numbers were there (Abiko group's mother _2).

In December 2011, the Act on Special Measures Concerning the Handling of Environmental Pollution by Radioactive Materials Discharged by the Nuclear Power Station Accident Associated with the Tōhoku District Off the Pacific Earthquake That Occurred on March 11, 2011 was passed, and due to the Tōkatsu parents' efforts the Tōkatsu region was included in the "Intensive Contamination Survey Areas" zone. After that, once the process had started, the problem had been recognized and measures to solve it had been identified the activists thought that they could delegate further exploration of the problem to experts and authorities. However, this was not the case.

In 2012, when the Act to Protect Children was established, activists of Chiba, Ibaraki and Saitama Prefectures realized that the borders of contamination area do not resemble cities or prefectural borders and this issue has to be approached as cross-border one. This led to the formation of the Kanto Network in October 2012. The newly established network helped activists to lobby their interests in the Diet and Reconstruction Agency and made their local activities more efficient since requests and petitions written by one group were made available for others, thus saving time and effort. Becoming a network also allowed the Tōkatsu groups to connect with numerous experts, clinicians, local politicians and local businesses by organizing numerous study meetings, lectures and discussion forums. Consequently, this network enabled wide discussion of the problem, facilitated negotiation and practical activities becoming the promoter of newly acquired information and

knowledge. This, in turn, made possible the formation of a new identity for them as expert citizens.

In September 2013, when the initiative to be included in the jurisdiction of the Act to Protect Children failed, Kanto network activists realized that "the last we can rely on are our local fellows and local government" (Ohtani, 2017, p.52). They organized *Kantō kodomo kenkō tyōsa sien kikin* (the Support Fund for Health Checks of Kanto Region Children) - a project that would allow annual thyroid cancer screenings for children in the Kanto region. By that time, it had become clear that most mothers who were worried for their children's health hesitated to go to hospitals and to discuss their worries with hospital practitioners since doctors were advised to reject thyroid-cancer screenings, suggesting parents to voluntarily refrain from them (Ohtani, 2017). This project was organized in order to help those parents and to collect data about children's health in the region.

Using citizens' donations, the project organizers purchased necessary ultrasound equipment and several clinicians joined the project to undertake the screenings. The project followed the example of Taratine - Mothers' Radiation Lab Fukushima. Taratine was initiated in the city of Iwaki, Fukushima Prefecture, in October, 2011, by the famous photojournalist Hirokawa Ryuichi who was known for his coverage of the effects of the Chernobyl disaster. This laboratory, which once started as a citizen monitoring station that measured food, expanded into providing health consultations, performing thyroid checks, whole-body radiation measurements, blood tests, abdominal ultrasound exams and cataract exams. The Kanto project representatives learned from Taratine how to conduct health checks.

Using the franchising model, the Kanto project creates the database and takes responsibility for managing all patients' data and negotiations with doctors while the groups of local citizens take charge of the process organization by securing the place for

the screening, announcing the event and finding the volunteers who could help to manage the screening process (Ohtani, 2017). Every month the project conducts thyroid cancer screenings in one of the cities of Chiba, Ibaraki, Tochigi or Saitama Prefectures thus giving the opportunity to all concerned parents to check their children. The activists' major objective is to invite as many people as possible and to conduct thyroid cancer screening on an annual basis. This project allows the construction of a database that would show changes in children health throughout the years which, being complemented by soil and air monitoring data, could help to establish new correlations and formulate new hypotheses about the health effects of internal low-dose radiation exposure. Consequently, the project provides parents with data regarding their children's health while giving clinicians, who cooperate with activists, new questions and new results for analysis thus clearly illustrating the common interest of researchers and citizens.
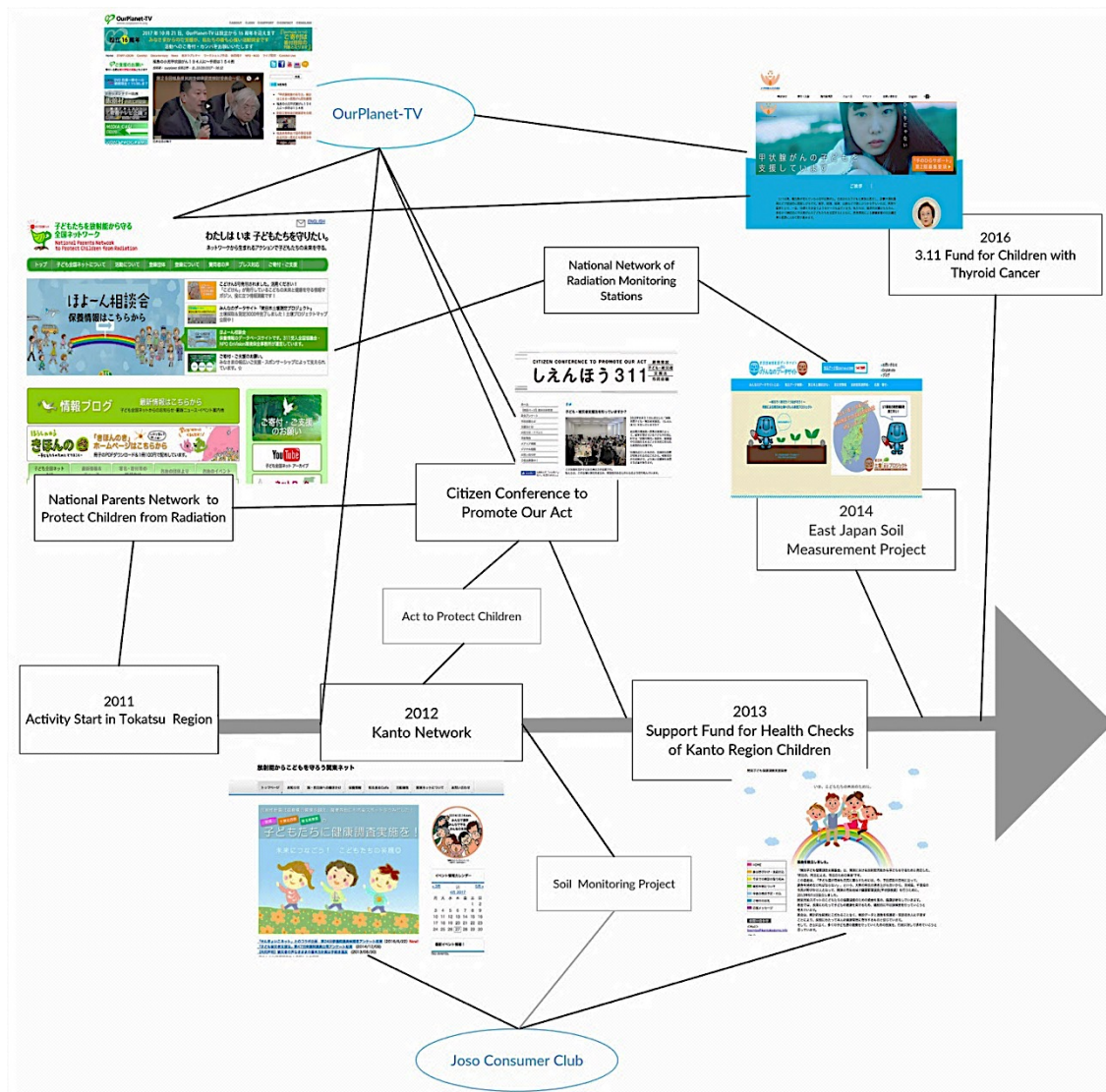
Figure 5-7 Issue Networks Map

Figure 5-7 shows the map of networks dealing with issues of radiation contamination, children's health protection, monitoring and advocating. It contains names of organizations and pictures of their websites' introductory pages. Most of these organizations, except those in blue ovals, appeared after the Fukushima accident. The map demonstrates how locally dispersed groups, that got together soon after the accident in 2011, developed into region-wide (below the time line) and nation-wide (above the time line) initiatives that together have been trying to handle the complicated issue of radiation contamination by raising awareness surrounding it.

5.5 The Internet's Role in the Knowledge Co-Production Process

The second set of research questions were concerned with knowledge networks, identifying the most relevant information in a radiation risks debate, actors that were involved in the issue and their networks. Since knowledge production is a dialogue, this research argues that Tōkatsu weblogs were used in order to inform and engage concerned public, and additionally, to facilitate dialogue between concerned actors thus leading to knowledge creation.

Bennett and Segerberg (2013) argue that "[d]igitally networked action is often suspected to be unsustainable in the long term" being dismissed as "clictivism" (p.114). The authors suggest not to isolate single acts of engagement, examining various types of digital tools in a larger context and defining "holistic engagement patterns" (p.115). Following Bennett and Segerberg (2013) this research suggests that various digital tools are used by Tōkatsu activists as a space for engagement while at the same time facilitating knowledge co-production.

The authors identify two types of engagement: "exchanging information about an issue and suggesting or enabling actions that people could take to promote goals and causes" (p. 136). They further operationalize two categories of "engagement opportunities on organization websites (information and action), along with two modalities of each type (passive and interactive)" (p.137).

Informative elements that were oriented to information proliferation ranged from study meetings' reports to information regarding the influence of radiation on human health, information on diagnostic and monitoring centers, lists of relevant literature, testimonies on symptoms that appeared after the accident, monitoring results posted by authorities or made by groups' participants. Informative elements also included monitoring standards

and policy initiatives related to the post-disaster management. This information created a context that could be used by those concerned with the issue.

The feature of weblogs that allows comments made them dynamic platforms where concerned public could engage in discussion. Other dynamic or interactive elements that enabled wider public engagement included mailing lists' addresses, video materials on YouTube and Ustream, Google MyMaps, announcements of upcoming events (e.g. study meetings, lectures, movie screenings, festivals, workshops), public comments and petitions. These mechanisms required users to take action in order to be involved while facilitating the creation of ties between concerned community members.

The third set of mechanisms that allowed blogs' readers to engage in the "crowdsourced communication processes" included "digitally networking mechanisms", primarily hyperlinks. Hyperlinks are major networking mechanisms that introduce various actors and lead to external platforms where a user can get new information and engage in action (Vicari and Cappai, 2016, p.1661). The analysis of citation links (218 in total) revealed that this issue involved a wide range of actors and information sources, ranging from prefectural and city level administrative websites and individual politicians to political parties, ministries and agencies' websites. Among actors were also news outlets (e.g. national and local newspapers, alternative television channels), and social media platforms. The prevailing number of links went to formal non-profit organizations and informal community groups, local radioactivity measuring stations, neighborhood associations, webpages of individual journalists and independent experts, thus indicating that Tōkatsu groups used hyperlinks to create coalitions. Actors also included health services and research centers, parent-teacher associations, consumer clubs, small grocery stores and big malls that offered assistance to activists.

Table 5-1 Issue Actors

Actors	Number
Shops and rental companies	7
Hospitals and clinics	5
Research centers and universities	4
City councils and municipal facilities	14
Prefectures	4
Ministries and agencies	5
Government	4
Traditional Media	11
Alternative media portals	9
PTA	2
Consumer clubs	2
Dictionaries	2
Maps	1
Politicians' weblogs	6
Other personal weblogs	21
Groups' blogs	103

Consumer clubs became the centers of local activism after the Fukushima nuclear accident monitoring air, soil, food and breast milk. Having resources, facilities, necessary devices and trained staff they facilitated activism in the Kanto region by organizing lectures and study meetings, publishing books and radiation-related educational pamphlets, initiating movie screenings and translating scientific reports. By collaborating with concerned citizens, and local business, by organizing workshops and by introducing monitoring practices and fieldtrips, they acted as mediators between concerned citizens and experts (Takao, 2016). The process of collective studying and monitoring created the sense of solidarity making some of activists who had not originally been members of consumer clubs to join them. Under the roof of consumer clubs, new identities for activists – expert citizens – emerged.

As we can see from Table 5-1, active citizens either united into groups or alone had the biggest number of outlinks which suggests that they were the entrepreneurs who wished to bring the issue into the public agenda. This table also demonstrates the number of

conflicting sides that were involved in the controversy. Many actors were characterized by cooperation and mutual interests. Among them were concerned citizens, consumer clubs, individual politicians, municipalities, anti-nuclear experts, some hospitals that provided health checks and businesses as Geiger counter[24] leasing services, or big supermarket chains that were willing to attract local customers by supporting their activities, restricting food standards and opening food monitoring results.

On the other hand, between some actors there was a conflict that attracted major attention. Among them were prefectures that were not willing to be included into the jurisdiction of the Act to Protect Children since Chiba Prefecture is an agricultural region and the official acceptance that Chiba Prefecture is contaminated would harm the image of the entire prefecture. As was mentioned before, traditional media formed one more opposing space since they were neglecting the issue of low-dose radiation influence or portraying it as a matter of harmful rumors and nonscientific facts rather than as a problem that needed to be addressed.

The state formed one more space by not willing to address the issues of low-dose radiation contamination. The official acceptance of this issue would mean that the state would be obliged to provide financial support for those victims who were willing to move away from contaminated areas. This, in turn, would become a burden for the country that had to cope with a triple disaster. Furthermore, a significant number of nuclear experts continued to oppose the idea that low-dose internal exposure might cause significant health complications. Yet, the major controversy emerged between scientists who were saying that everything was safe and those concerned citizens who wanted to collect scientific evidence to either support the idea of safety or contradict it.

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[24] The Geiger counter is an instrument that measures ionizing radiation.

To show what issues the actors share with each other, the context in which outlinks were mentioned was collected from six weblogs and content analysis was conducted.

Table 5-2 Shared Issues

Shared issue	Examples
Advocacy	Petitions, public comments, collecting signatures, questioners
Studying and socializing activities	Study meetings, lectures, movie screenings, festivals, workshops, tea meetings
Monitoring and decontamination activities	Monitoring, decontaminating, publishing results, mapping
Information proliferation	Groups' introductions, events announcements, action-related information sharing and mobilization, reports about past events

This table demonstrates that major shared issues included advocacy, socializing and studying activities, monitoring and decontamination activities and the proliferation of information. To understand how knowledge was assembled, how information was shared through numerous citation links from different types of actors and more specifically, who were the drivers behind the issues, more detailed analysis of hyperlinks' context was undertaken. These relationships between issues and actors were mapped as a bipartite network (a network with two types of nodes; issues nodes and actors' nodes), and then represented as a diagram. While identifying and analyzing the main issues that Tōkatsu groups refered to when they put hyperlinks to various actors the diagram not only reveals what the issues are, but also where they are and to whom they are related.

Results show that there are issues shared by blocs of actors, as activists refer to governmental websites (i.e. National Diet, Reconstruction agency, Environmental ministry, etc.) when they want to announce that these governmental actors organize public comment campaigns to get the feedback from citizens with regard to different policies. The closed political opportunity structure of the Japanese political system has not allowed

the grassroots organizations to affect the policy-making process (Tabusa, 1992). Thus, public comments campaigns were seen as one of the few possibilities for activists' voices to be heard by state level authorities.

On the other hand, city level authorities were more easy to approach and the relationship with them involved also disaster management issues such as monitoring and decontamination, as well as various types of exhibitions and fairs, meetings, opinions' exchanges, etc. (Figure 5-6).
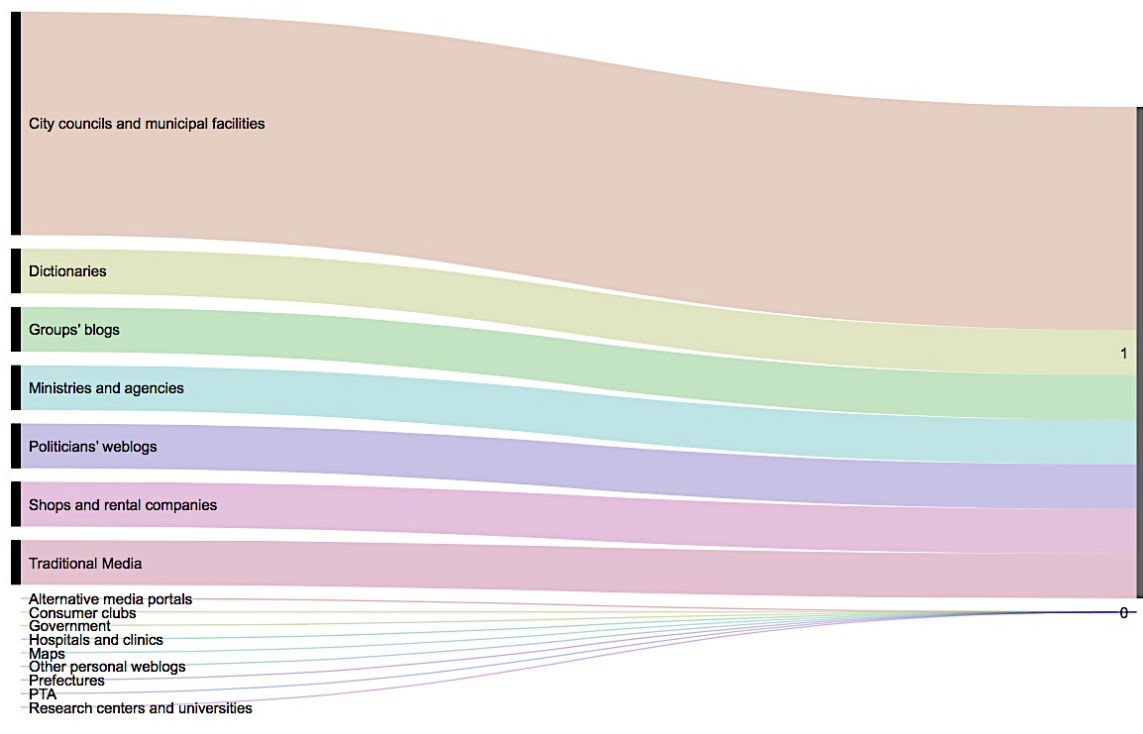
Figure 5-8 Working with Public Activities

Furthermore, studying activities such as study meetings, lectures, movie screenings, etc. were more often associated with activists' organizations and various NPOs and NGOs rather than with research institutes, thus demonstrating that information pathways did not develop around sources that are traditionally associated with scientific knowledge expertise. Instead, they developed around dispersed groups of activists and individual independent experts concerned with radiation-related issues. These results suggest that

scientific information was not centralized within several established sources but was rather shared, co-produced and contested by various actors, thus being crowd-sourced in nature.
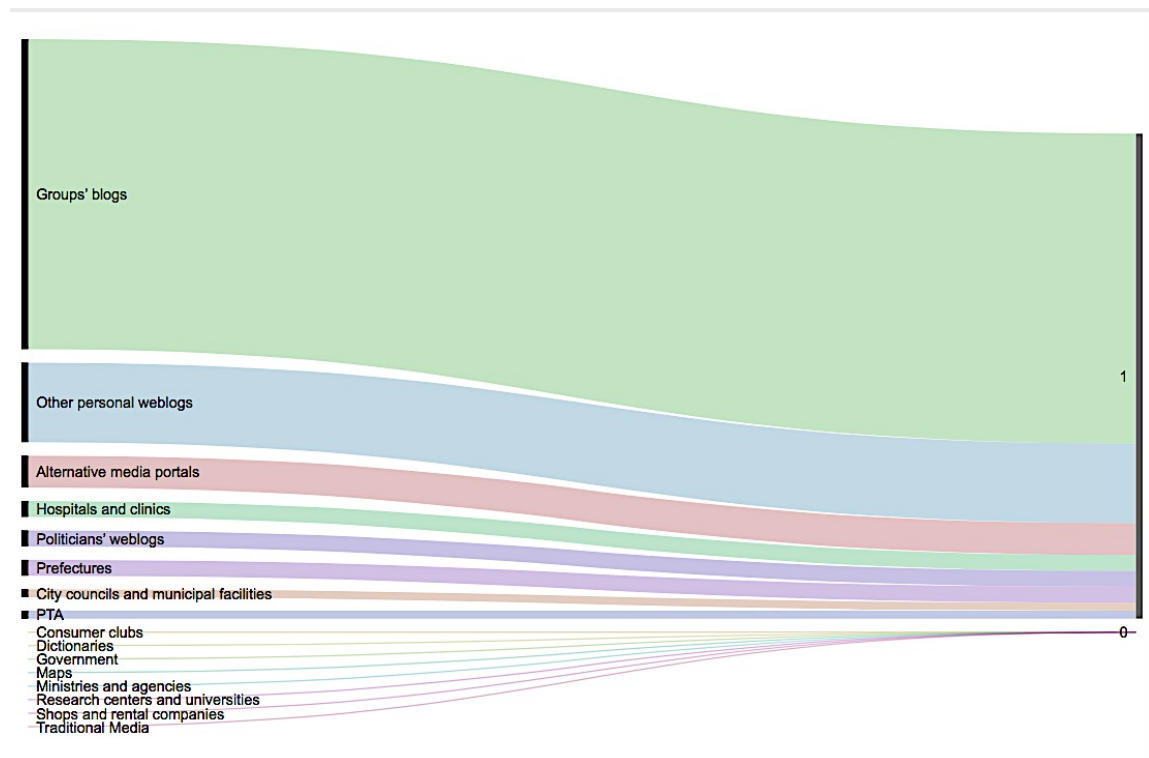
Figure 5-9 Study Activities

Among the various actors, the National Parents Network to Protect Children from Radiation which was established soon after the accident in May 2011 to connect all actors across Japan related to the issue of children protection and can be considered as an umbrella organization, is not popular. International NGOs such as Greenpeace and the Friends of the Earth also do not get much attention proving that hyperlinking strategies do not represent the desire of affiliation with established actors. Instead, links' destinations mostly refer to local actors demonstrating that in the post disaster situation local ties and community ties are tightening and becoming significant.

In order to show an informal association of groups dealing with similar issues hyperlinks to groups that included "children" or their protection in their title (27 groups in total), their purpose or self-explanation were divided into a separate group, and collected with titles,

links, self-explanations, and context in which they were used (Appendix 1.9). In a mapping procedure, I drew a node and a line that connected each of the groups I analyzed with various others. (Figure 6-8).
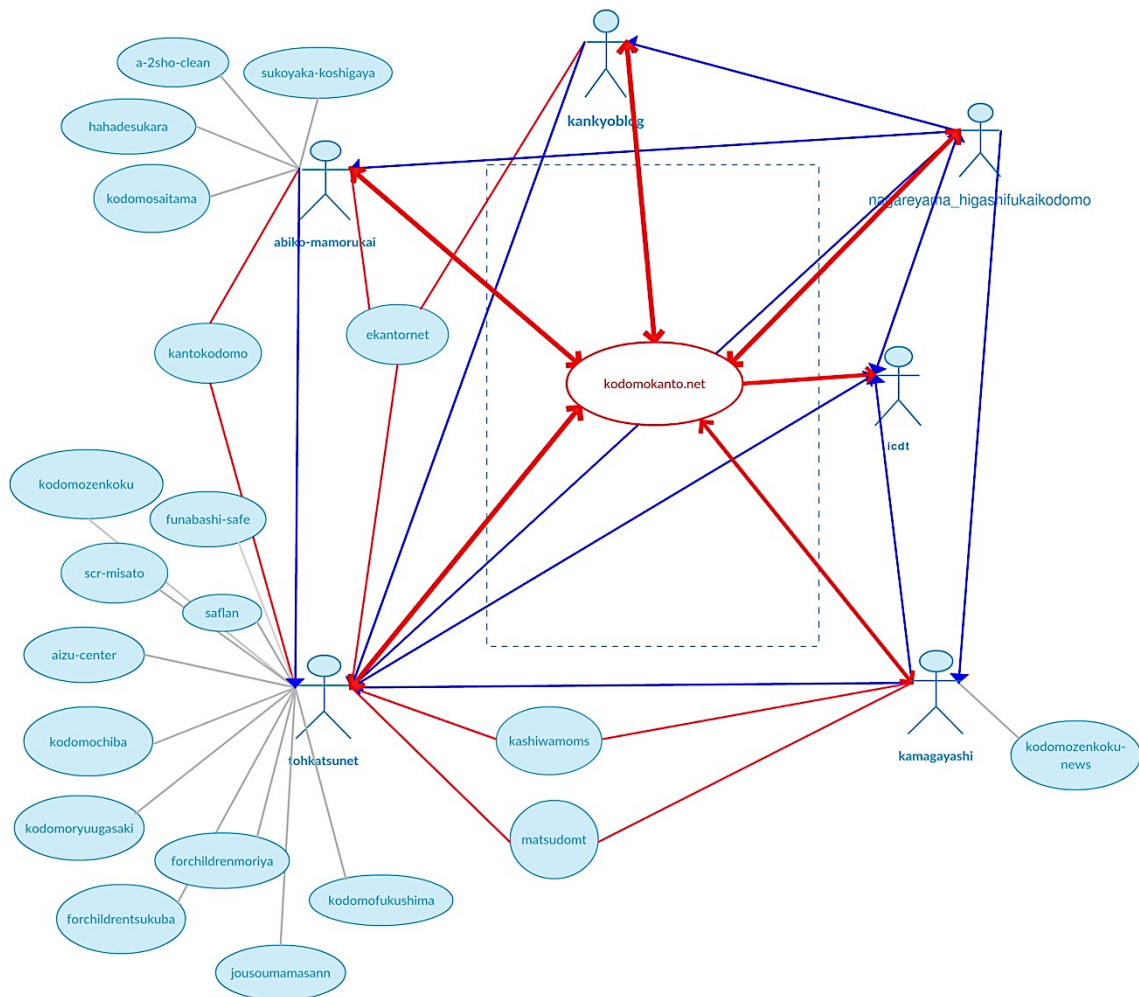
Figure 5-10 "Protect Children" Network

A few co-links – outlinks to the same organization – were found. The central organization that connected all six Tōkatsu groups together is the Kanto network. As it was discussed above, this group was created in 2012 by activists of Chiba, Saitama and Ibaraki Prefectures with the help of Jōso Consumers' Club in order to monitor the soil in the region and to make lobbying activities more efficient. It could be said that the Kanto network forms the association and defines its boundaries. The groups I analyzed

mentioned and linked to each other with relation to various events and occasions thus the events' calendar appears to be the most important impetus for group association.

5.6 Expanding the Geography of the Issue

Nicholls (2009) argues that "concepts based on territorial notions of place and space have lost their saliency in a world increasingly constituted by relational flows" (p.78). However, this research, while discussing a small region and its activists, argues that digital space is the continuation of offline space and the concept of space is equally important for the digital space. Although Tōkatsu activists began their activities in neighboring schools and parks, they approached the contamination issue as one that requires them go beyond city and prefectural borders in favor of a regional outlook. Furthermore, radiation contamination in general is an issue related to the places in which people live. Thus, this part of the chapter is going to engage with the idea of place.

The activity, which once started as local and city-centered, crossed the borders of several prefectures. The activists from Ibaraki, Chiba, Saitama and Tochigi Prefectures got together in 2012 to make the Kanto network. I mapped places concerned with the issue of child protection and radiation contamination, demonstrating the Kanto region map and the Kanto network that connects 43 groups. By drawing a map of the issue, I reveal how on the one hand, local and community ties are tightening and becoming more significant, while on the other, the activism is spreading wider. Figure 5-9 shows all groups that have an online presence and are connected by the Kanto network (Appendix 1.2).
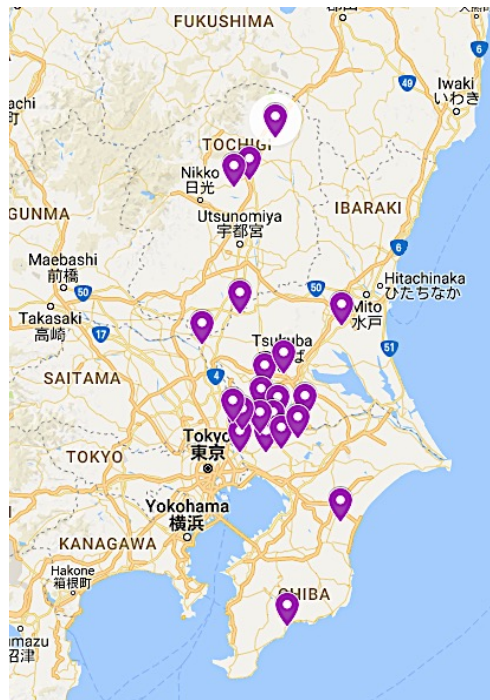
Figure 5-11 Kanto Network Presented Online

The interviews revealed that the actual number of active participants has significantly decreased since 2011, having sometimes three or four people acting in a group, however, groups have continued their activities and are supporting their webpages and weblogs in order to keep the issue alive, thus leaving it in the public eye.

5.7 Summary

This chapter revealed the complicated structure of contemporary local activism in post-disaster community theorizing the ideas of power relations, community networks and the concept of place. It showed how new identities that could partially fit into the framework of expert citizens have emerged. In Chapter 1, I argued that the Tōkatsu region is distinct from others since its citizens did not originally possess local knowledge. The analysis of interviews, weblogs' content and other related documents allowed me to trace the process of knowledge construction by local activists and demonstrated how this process involved numerous other actors, making the process of co-production of knowledge possible.

Chapter 6: Discussion

6.1 Introduction

This research started from the argument that the nature of contemporary risks is changing and "the state is becoming less and less a direct service provider and more of an overseer and regulator". In such a situation, "micro-political participation actions" that are "designed to influence indirect agents of the state in the day-to-day world" are an aspect of politics which is getting more and more important (Pattie et al., 2004, p. 266). Furthermore, contemporary participation is not declining, rather contemporary citizens' engagement should be theorized in the categories of "co-production" assuming that more voices are given to various actors.

The definitions of political participation have been analyzed and the new typology of political participation suggested by Ekman and Amna (2012) was discussed. According to the new matrix, the Tōkatsu activism was theorized as a collective form of civil engagement that implied actions taken collectively in order to influence society. However, this definition lacks the notion of knowledge production and puts activists in the position of those whose opinion is not necessarily taken into consideration.

By applying Beng's (2004) framework of expert citizens and Collins's (2014) idea of intermediary and contributory expertise, I analyzed Tōkatsu groups' activities. This analysis demonstrated that the controversy of low-dose radiation exposure formed an "arena of common interest" (Garrety, 1997, p.731) between numerous concerned actors, leading to the emergence of new knowledge and a new identity called "expert citizen". The research on risk communication and the science of knowledge studies usually ignores the intermediary role of expert citizens, mostly theorizing a lay-expert dichotomy. By

creating the matrix of knowledge co-production, I demonstrate the mediating role of expert citizens in the risk communication and disaster management processes.

6.2 Co-Production of Knowledge Model

Environmental issues, radiation and nuclear-related issues in particular, always involve numerous actors, interests and controversies between them. This research by drawing upon the study of social movements, political participation, science and technology studies and internet-based communication studies, aims at exploring how Tōkatsu local activists engaged with scientific uncertainties and what identities appeared as a result. More specifically, this research describes how local citizens became active participants in the construction of scientific knowledge about long term low-dose radiation contamination? How did Tōkatsu region activists establish themselves as expert citizens – people who can speak in the language of science - and what social relationship appeared as a result?

The second set of research questions explore how local activists used digital space in the process of knowledge production. In particular, these questions are meant to analyze which types of information were most relevant to a radiation risk debate, what actors were involved in the issue and how the issue networks looked.

This research raised questions of scientific credibility and expertise, albeit claiming that public participation in risk-related issues should be discussed in categories of co-production rather than participation. It advocated public capacity to shift scientific paradigms and enact social changes by formulating new initiatives and creating new knowledge along with lawmakers, radiation scientists and health professionals.

The second chapter discussed that, before and after the Second World War, the Mode-1 of science studies was prevailing. At that time, scientists were considered the most knowledgeable members of the society; their expertise was based on their training and

their judgments, being justified by methodologically rigid experiments, and norms were grounded in acceptance from the scientific community. The Mode-2 idea that replaced Mode-1 implied that there are a lot of actors that can be involved in knowledge production, among whom were think-tanks, politicians and NPOs. Since then, scientific judgments ceased to be objective. People started to think of experts as producing knowledge in favor of business or state interests while disregarding those of the public. In the Japanese nuclear industry, there were pro-governmental (*goyogakushya* that belonged to the nuclear village) and anti-governmental (anti-nuclear experts explained in the third chapter) experts whose existence provoked the atmosphere of skepticism and distrust in science, while dividing people into conflicting camps: one camp of those who believed that the situation was under control and that the radiation posed no health risk, and another group of people who were convinced of the critical nature of unfolding events. In response to this bipolar situation, concerned residents raised questions about the credibility and reliability of experts and existing knowledge, with regard to the effects of radiation exposure on the human body.

Aya Kimura, when discussing gender politics of food contamination in her book *Radiation Brain Moms and Citizen Scientists* (2016), argues that "ordinary citizens, particularly many lay-women, acted as citizen scientists" (p. 156). This research, in contrast, suggests that local citizens, particularly mothers, did not act "like" citizen scientists; instead, by acquiring interactional expertise, they were citizen scientists or expert citizens themselves. To prove this argument, I created the model of the knowledge co-production process, suggesting that knowledge was not only produced but also co-produced with experts and authorities (Figure 6-1).

Co-production of Knowledge Process

- Collecting data and information gathering
- Coalition with actors within smaller community, discussion, sense-making, deconstruction of existing knowledge, collective learning
- Coalition with actors within bigger community, with experts and politicians
- Translating knowledge to lay public
- Advocating and policy changes
- Codifying new knowledge (new documents, new institutions, new methods)

Arrows:
- Transition from non-participation to activism
- Acquiring Interactional Expertise→Becoming Expert Citizens
- Acquiring Contributory Expertise

Figure 6-1 Knowledge Co-Production Model

The process of knowledge co-production started from collecting data and gathering information in regard to the issue. The invisible nature of radiation made concerned people seek resources and devices to make the problem of contamination socially salient and to visualize the radiation, producing numerous food, soil and air monitoring reports and maps. These maps contained graphical evidence of the threat, becoming a tool for advocating the interests of local communities and their residents. A significant amount of research that emphasizes this phase of post-Fukushima citizen science has been conducted so far (Kimura, 2016; Plantin, 2015). Yet, researchers often overlooked the process of sense-making, the constant discussions and collective learning that were continuing offline and online, on groups' and individual blogs, SNS pages and mailing lists, in citizens' houses and community centers.

In the case of the Tōkatsu region, the issue of long-term exposure to low-dose radiation became a little-studied controversy. Kinchy and Perry (2011) argue that the lack of knowledge about this particular issue may be explained by the power relationship inside a particular community in the processes of agenda-setting for scientific research. They also

outline the institutional, cultural, gender, military and industrial priorities that may influence the allocation of funds, thus influencing the agenda of a particular research project.

The Chernobyl accident in 1986 could have become the source of the knowledge regarding the health-related consequences of nuclear exposure. However, as was discussed above, communicational, technological and financial resources of that time did not allow people to conduct the research that would allow to "link together individuals' reconstructed histories of exposure and their clinical profiles" (Petryna, 2013, p xix). Furthermore, Petryna argues that soon after the Chernobyl nuclear plant accident, a relatively high threshold dose for the population was set, thus reducing the size of population considered to be at risk and consequently making health effects below the threshold scientifically insignificant.

The same happened after the Hiroshima and Nagasaki bombing in 1945 when the American government denied the existence of radiation effects, attributing the reports about radiation death to "Japanese propaganda" (Todeschini, 1999) thus making research of the effects of radiation meaningless. It happened again after the Fukushima Nuclear Power Plant accident when the government assured citizens that risks posed by the accident would not have any significant effects on human health. When the state and scientists dismissed risks, the Tōkatsu activists decided to collect data about air and soil pollution, as well as other data such as results of thyroid cancer screenings and records of medical checks. This data being systematically collected over several years following the disaster could help to create a sufficient database of clinical profiles and environmental parameters that would help people to understand the possible influence of internal low-dose radiation exposure on children's health.

The discussion of the issue on the internet facilitated the construction of new networks and the expansion of existing ones, leading to the creation of coalitions. The first coalitions included only parents whose children went to the same schools or citizens living in the same neighborhoods. However, Tōkatsu activists soon realized that this issue had a much broader character, and by overcoming city and prefectural borders, connected into the Kanto network that now consists of 43 groups, residing mainly in Chiba, Ibaraki, Saitama and Tochigi Prefectures.

Although there were many citizens who were worried and concerned with the issue soon after the Fukushima accident, the case study suggests that the emergence of expert citizens was determined by the networks of various actors through which concerned citizens could accumulate resources and get access to various types of expertise (by inviting foreign researchers and organizing discussions with Japanese experts). As Takao suggests "[it] is citizen networks that allow individual citizens to know whom to contact, learn where to get information, and [how] to connect with various community needs, priorities and values" (Takao, 2015, p.1112).

At the same time, co-production assumes experts and political actors who would discuss parents' claims and collaborate on making solutions. Interviews and weblogs' analyses demonstrated that numerous researchers, lawyers, politicians and nongovernmental organizations had become involved in the issue, not only by actively participating in data-collection and citizen training, but also collectively writing petitions and subsidizing funds to support local activities and to make them overcome prefectural borders.

As a result, a new type of activists' identity—expert citizens—has emerged. While Takao (2015) argues that expert citizens are professionals that deal with policy problems in elite policy networks, this research insists that expert citizens do not necessarily need to be included in elite politics or to represent some sort of formal engagement. The Kanto

Network as well as the Tokatsu groups that are included in the Kanto network do not have regular membership and they can not be characterized as organized civic groups. Their activity can not be assessed by classical indicators of political action and can not be described in categories of collective political participation. However, they accumulated expertise sufficient enough to become a part of the knowledge co-production cycle.

Research on civil society and political participation while discussing various types of engagement argues that civic activism can have potential when it is independent from the state. Yet, research on Japanese civil society organizations usually point out that these organizations are shaped by state funding policies and state interests. In contrast, present research demonstrates that contemporary independent local groups are able to change local policies through numerous micro-actions, thus invigorating wider policy innovations. When the controversy involves risks, experts become one more influential actor who, when acting in cooperation with concerned citizen groups, have the capacity to change scientific paradigms. Following Takao (2015) I argue that expert citizens have the potential "to act as a mediating force" "bridging the divide between experts and lay people" (p. 113). As seen in the cooperation between the citizens' groups and municipal governments, Tōkatsu groups accumulated the interactional expertise, resources and networks needed to provide the less informed and less resourceful community members with informational and technical support. At the same time, they were able to fully represent lay public interests to experts and politicians.

Thus, based on the research findings and previous research, a reversed definition of expert citizens was generated. I define expert citizens as groups of independent from the state, local volunteers who are, by building cooperative networks between citizens, experts and policy-makers and by extensive process of learning and data collection, were able to

acquire sufficient interactional and contributory expertise in order to pragmatically deal with scientific controversies and related policy problems.

This research further examined weblogs' data, theorizing the possibility to employ issue mapping techniques in qualitative analysis. Issue mapping techniques allow us to represent controversial issues by visualizing various types of data available online, including hyperlinks and their destinations and contexts, maps and pictures. Being visualized, this type of data allows us to see the issue scale and the number of actors involved in the controversy. It also allows us to see the range of issues people are concerned with and the polarization of opinions or the so-called echo-chamber effect, when certain opinions and values become amplified and repeated among a certain community while contradicting opinions and critics are neglected or not taken into consideration.

6.3 Limitations

This research has some clear limitations that have to be taken into consideration when generalizing the results. Firstly, this research analyses the case of the Tōkatsu region, where local government was relatively cooperative and eager to work together with citizens. The first chapter explained some possible reasons behind that. Yet, such opportunities might not be available in other localities in Japan. Furthermore, the proximity to Tokyo and the demographics of the population might be another limitation which prevents the generalization of these results to other localities. More specifically, metropolitan areas have a higher percent of full-time working parents which, as was observed in Chapter 3, might be one of the key obstacles to participation in activism or other political activities in Japan. On the other hand, rural areas might pose another obstacle in the form of community pressure that would obstruct civil participation.

Furthermore, this research did not cover social network platforms and traditional media analysis that could provide additional information for discussion. Interviews with key official actors including politicians, experts and business representatives as well as farmers would add valuable angles to the issue controversy uncovering a range of perspectives on the post-Fukushima situation. This research argues that the Tōkatsu activists were no longer lay people in the full sense of the word but had become expert citizens, therefore it would be important to conduct interviews with the lay people of the Tōkatsu region who did not consider the situation to be risky and thus did not participate in civil action.

6.4 Suggestions for Future Research

This research embraced the issue of radiation contamination from the perspective of the sociology of knowledge and public participation while mentioning the gender division of the issue. Yet, it would be important to develop the gender perspective with relation to science and local governance, more specifically by addressing political ecology research and the gender division of knowledge. This type of research would add to the literature of eco-feminism and shed light on the gendered access to resources and control over the environmental decisions and technologies in Japan. Furthermore, a quantitative approach to the web analysis would shed light on some patterns of contemporary environmental activism.

Adding a comparative perspective, be it a comparison with other localities within Japan or in other countries, would help to eliminate the variations in opportunity structures, including power relations within communities, existing norms and policy practices.

Furthermore, a lot of Japanese experts, mainly physicians, cooperate with Chernobyl experts. By acquiring and analyzing data on health effects of radiation in Chernobyl, they try to refine knowledge about the impact of radiation on human health and to extrapolate

data acquired from Chernobyl to the post-Fukushima reality. As was discussed above, various institutional factors influence the selection of data and methods in scientific research, and further ethnographic work among individual experts cooperating with other experts and institutions inside and outside of Japan could shed light on the intricate nature of radiation-related knowledge construction.

6.5 Conclusion

This research demonstrates that risks do not necessarily imply acceptance, ignorance or defeat in the face of an unpredictable future. In contrast, they induce new attitudes and new relations towards oneself and one's future. More specifically, they create new ethical responsibilities, affect community relationships and change the borders between lay public and experts, leading to the development of new initiatives and the appearance of new identities. Risks also raise questions of whose understanding of facts and whose knowledge is legitimized. Nowadays, due to the abundance of information available online, contemporary science often becomes questioned by people who, by reading internet sources, consider themselves experts. This research demonstrates that the process of acquiring expertise is long and sophisticated, and it involves numerous actors, data and effort. On the other hand, this research argues that by acquiring sufficient expertise, small local groups can become active participants in the knowledge co-production process, thus influencing local policy and creating pathways for more significant changes to scientific paradigms.

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1.1 First Collecting Signatures Campaign in 2011

In order to apply to the Matsudo, Kashiwa, Nagareyama, Noda, Abiko and Kamagaya City Councils, Tōkatsu region activists organized collecting signatures campaign in 2011.

福島第一原発事故による放射能放出問題について

子どもの健康・安全・安心の実現のために

放射線量が比較的高い千葉県東葛地域（ホットスポット）の対策充実化を求める署名活動にぜひご協力ください！

以下の内容を東葛地域6市（松戸市、柏市、流山市、野田市、我孫子市、鎌ヶ谷市）に要望します。

1：市内の幼稚園、保育園、学校、公園等の土壌放射性物質及び地表から1メートル、50cm、5cmの空間放射線量を検査・測定すること。

2：測定にあたっては、できる限り数多く定期的に継続して行い、測定値データは全てホームページ等で直ちに公開すること。

3：測定値が年間被曝量1ミリシーベルト（抑制目標値）相当を超えた場合、児童・生徒の屋外活動制限や各種行事等の延期・中止、園庭・校庭の表土の入れ替え、必要な箇所への除染等、迅速に適切な対策を講じること。

4：各市各地域における空間放射線量測定及び水質・土壌の放射性物質検査の実施体制の構築並びに関連対策への予算措置を国・県に対し要請すること。また国に対し、安全性基準の明示とその根拠や考え方についての説明を求めること。

5：学校給食の放射性物質に関する安全性について、随時詳細な情報を開示すること。また希望者は弁当を選択しやすくできるよう、不安感を持つ児童・生徒、保護者に十分配慮した対応を図ること。

6：市役所及び教育委員会に、これら放射線・放射性物質問題に関する相談窓口を設置すること。また主な相談内容やその回答などを随時市の広報誌に掲載すること。

ご賛同頂けましたら裏面にご署名ください

1.2 Kanto Network Supporters' List

The list that includes all groups that are connected with the Kanto Network. It was extracted from the Kanto Network website's supporters' list: (http://kodomokanto.net/aboutus/賛同団体) on November 17, 2017.

1. 小美玉市の子供を放射線から守る会
2. 子供の未来を守ろう@うしく
3. 子供を守る結城市民の会
4. 下妻市の子ども達を守る会
5. 常総市の子ども達を守る会
6. 常総生活協同組合
7. 生活クラブ生活協同組合 取手支部
8. つくば・市民ネットワーク
9. とりで生活者ネットワーク
10. 古河市の子ども達を守る会
11. 放射能汚染からこどもを守ろう@つくば
12. ここいきねっと(三郷)
13. 放射能汚染からこどもを守ろう@守谷　ブログ
14. 放射能汚染からこどもを守ろう@竜ヶ崎
15. 放射能からいのちを守る茨城ネット
16. 放射能NO！ネットワーク取手
17. 八千代町の子ども達を守る会
18. 我孫子の子どもたちを放射能汚染から守る会
19. 鎌ヶ谷市放射能対策 市民の会
20. 環境とエネルギー・柏の会
21. 郷土教育全国協議会
22. こども東葛ネット
23. 自給エネルギーの会
24. 白井子どもの放射線問題を考える会
25. ちば放射能対策支援ネットワーク
26. 流山・東深井地区のこども達を放射能から守る会(東深井子ども)
27. 流山の子どもたちのために放射線対策をすすめる会
28. 東日本大震災被災者支援千葉西部ネットワーク
29. 放射能汚染から子どもたちを守る会・野田
30. 松戸市PTA問題研究会
31. SCRmisato
32. 吉川健やかネット
33. 放射能から子供を守る会＠印西
34. グリーン愛す＠茨城古河
35. 東葛病院被曝医療委員会
36. 放射線から子どもたちを守る三郷連絡会

37. 越谷サテスナの会
38. こどもと一歩の会
39. 避放射能子ども保養所「まちの縁側かもがわ」
40. 流山市放射能から子どもを守るネットワーク
41. 子供の未来を考える会 ハチドリ
42. 放射能から子どもを守る会・塩谷
43. 那須塩原放射能から子どもを守る会

1.3 Collecting Signatures Campaign Organized in 2013

This campaign was organized by groups of the Kanto Network. Leaflets (front and back side) include background information about the issue and articles from *Asahi Shimbun, Tokyo Shimbun, Joso Shimbun, Ibaraki Shimbun*, and *Shibanippo*. Leaflets were provided with the list for writing names.

放射能からこどもを守ろう関東ネット

放射性物質は福島県の県境を越え、関東各地にも汚染スポットをうみだした！

茨城　千葉北西部　埼玉南東部　の

署名活動実施中！！

子どもたちに健康調査実施を！

福島第一原発事故から2年がたちました。福島県以外の茨城、千葉北西部、埼玉南東部でも、市町村や市民による放射線測定や除染が進むなか、いまだに子どもたちに対しては健康調査がされていません。

私たちは、汚染地域で子育てする母親たちが県境を越えて繋がりました。その目的は、昨年6月に成立した「原発事故子ども・被災者支援法」の対象地域に名乗りを上げ、対象地域として適用を受けることです。そして適用を受けることで、各自治体が国の支援を受け、速やかに子どもの健康調査を実現してくれることです。
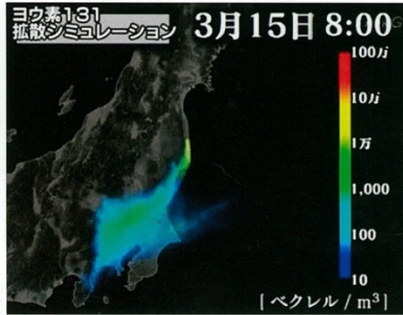
◆ 健康調査を必要とする背景は

事故直後の3月15日から関東一円を蹂躙した放射性ヨウ素の汚染が事実としてあります。今となっては放射性ヨウ素による被ばくを知ることはできませんが、水道水から暫定基準値をも超える放射性ヨウ素が検出された自治体が相次いだことから子どもの甲状腺への影響が心配されています。また3月21日には、大量の放射性セシウムなどの放射性物質を含んだ雨が、私たちの家に、木に、大地に膨大な汚染をもたらし、そしてこの汚染は今もなお『消えることなく静かにそこにある』のです。

ヨウ素131 拡散シミュレーション　3月15日 8:00

| ベクレル / m³ |

◆ 私たちの自治体はどう動いている？

私たちの住む自治体は、親たちの切なる声を聞き、なんとか健康調査を実現しようと努力しているところもあります。しかし、実現するには財政的に難しいことも事実です。風評被害を恐れず、国に支援を求める自治体に、私たちは『本当に安心して住める街づくり』に取り組む姿を見ました。茨城県議会、茨城市長会・町村会、千葉9市などが、国に対して『支援法の対象地域』を求め動き出したのです。国はこれに応えるべきです。

◆ 国に対し、私たちの想いを届けよう

『原発事故子ども・被災者支援法』は、成立してから半年が経過した今も、その対象地域すら決定していません。この法律は、被災者である私たちの『声』を聞き、作り上げていくという画期的な法律です。そこで、私たちは子どもを守りたいという想いを国に届けるべく、署名を行うことにしました。子どもの健康を守るため、私たちとともに想いを届けましょう！

放射能からこどもを守ろう関東ネット　ホームページ： http://kodomokanto.net/

署名用紙を掲載してます　オンライン署名も受付中

小美玉の子どもを放射能から守る会　　放射能汚染からこどもを守ろう＠守谷　　白井　子どもの放射線問題を考える会
子供の未来を守ろう＠うしく　　放射能汚染からこどもを守ろう＠龍ヶ崎　　流山・東深井地区のこども達を放射能から守る会
子供を守る結城市民の会　　放射能からいのちを守る茨城ネット　　松戸市ＰＴＡ問題研究会
下妻市の子ども達を守る会　　放射能ＮＯ！ネットワーク取手　　流山の子どもたちのために放射能対策をすすめる会
常総市の子ども達を守る会　　八千代町の子ども達を守る会　　野田市さくらの会（放射能から子どもを守るママ達の会）
常総生活協同組合　　我孫子の子どもたちを放射能汚染から守る会　　東日本大震災被災者支援千葉西部ネットワーク
生活クラブ生活協同組合（取手支部）　　鎌ヶ谷市放射能対策　市民の会　　放射能汚染から子どもたちを守る会・野田
つくば・市民ネットワーク　　環境とエネルギー・柏の会　　ＳＣＲ misato
とりで生活者ネットワーク　　郷土教育全国協議会　　吉川健やかネット
古河市の子ども達を守る会　　こども東葛ネット　　放射能から子供を守る会＠印西
放射能汚染からこどもを守ろう＠つくば　　自給エネルギーの会　　ちば放射能対策支援ネットワーク
ここいきねっと（三郷）　　茨城県・埼玉県南東部・千葉県北西部の市民有志　　グリーン愛す＠茨城古河　　2013/4/3現在

子どもの心電図異常増加

「被ばくとの関連心配」

取手の市民団体調査

子どもの心電図検査を調査した「生活クラブ生協取手支部」の根岸裕美子代表㊧と「とりで生活者ネットワーク」黒澤仁美代表

同支部と市民団体「放射能NO！ネットワーク取手」（本木洋子代表）、「とりで生活者ネットワーク」（黒澤仁美代表）の3団体が、同市教委が開示した資料をもとに分析した。

取手市教育委員会が小学1年生と中学1年生を対象に実施した学校検診の心電図検査（心臓検診）で、2011年度以降、心臓に異常や病気があると診断された児童・生徒が必要と診断された児童・生徒数は5・26%と08・45%、10年度末の2・9倍からさらに、10年度末の2・9倍に増えていることが分かった。

一方、精密検査が必要と診断された児童・生徒のうち、28%はまだ精密検査を受けておらず、病気の管理が必要と診断された児童・生徒数は今後さらに増えることが考えられるという。

根岸さんらは、チェルノブイリ原発事故のセシウムが心臓に蓄積するとした研究結果などから「被ばくが関連しているのではないかという疑いがぬぐいきれない」と話し、「病気の子が増えている。小学1年生の検査では、原因は事実なら大変なことで、中学1年生だけの検査でも分かる。データで有意差が出てきている子どもが心配」などと、医師会の先生らに毎年検査を実施してほしいと話している。

（鈴木宏子）

↑常陽新聞（2012年12月26日）

放射能から子守れ「法適用を」

健康診断 国が生涯実施
9市で署名活動へ

福島の原発事故に伴い、国が定めた汚染状況重点調査地域に指定された柏など県内9市が、国に「原発事故子ども・被災者支援法」の適用を求めて動き始めた。各地の市民らが、「子どもを守るため国の責任で健康調査を」と訴え、行政も動かした。市民グループは3月、それぞれの地元で署名を集める活動に乗り出す。

支援法は一定基準以上の放射線量の地域に住んだ人が、避難してもしなくても国は生活を支援し、子どもには生涯、健康診断を実施すると定めている。昨年6月、民主党政権下で成立したが、対象地域を含む具体的な中身は決まっていない。

署名を集めに乗り出すのは、千葉、茨城、埼玉3県の34自治体でつくる「放射能から子どもを守る関東ネット」。汚染状況重点調査地域に指定された県内9市（松戸、野田、柏、流山、我孫子、鎌ケ谷、印西、白井、佐倉）の市民グループも参加し、国へ地域指定を要請するよう地元の各自治体に働きかけてきた。

これを受けて9市が連携、各市の担当課長らは26日、復興庁に①支援対象地域を早く指定する②復興にかかる費用は国が負担する、などを求めて緊急要望した。

柏市の「環境とエネルギー・柏の会」は3月1日夕、柏駅東口で署名を呼びかける。代表世話人・柳沢典子さん（56）は「自費で子どもの甲状腺エコー検査や血液検査をしている母親もいる。異常を早期に発見するためにも、国の責任で継続的な健康調査が必要だ」と話している。

（佐藤直子）

↑朝日新聞（2013年2月28日）

原発事故被災者支援法
復興相「対象に」
千葉9市、国へ

放射性物質の除染で重点調査地域に指定されている千葉県内の9市が26日、国の「原発事故子ども・被災者支援法」の適用を求め、復興庁で根本匠復興相に要望書を提出した。

本庁復興相宛ての要望書を提出したのは県内9市（松戸、野田、柏、流山、我孫子、鎌ケ谷、印西、白井、佐倉）の各市。放射性物質による汚染の不安解消に向け、除染や食品の安全検査などを続けている。

支援法は昨年六月に成立したが、対象地域など具体的な中身は決まっていない。要望書は「支援を求める市民の声は強く、基本方針が出る前にアピールしておきたい」と提出した。（柏）

↑東京新聞
（2013年2月27日）

千葉日報→
（2013年2月27日）

「原発事故支援地域に」
県内9市、復興庁に要望

放射性物質対処特別措置法で汚染状況重点調査地域に指定された県内9市（松戸、野田、柏、流山、我孫子、鎌ケ谷、印西、白井、佐倉）は26日、復興庁に対し、「原発事故子ども・被災者支援法」に関する緊急要望をした。

同法は昨年6月、超党派の議員立法で成立。福島第1原発事故の影響で健康・生活不安を抱える被災者の生活を支援するのが目的で、放射線量が一定基準以上の地域を「支援対象地域」に指定することになる。「支援に」かかる費用は全額国が負担すること、医療の確保、子どもの就学支援など具体的な施策を盛り込むことを求めている。

3.11 から

柏で街頭PR

「子どもに健康調査を」
母親ら支援法適用訴える

「原発事故子ども・被災者支援法」の適用を求め、東葛地域や茨城県南部のネットワーク部による、東葛、茨城、埼玉3県の市民団体が二十九日夜、JR柏駅前で街頭アピールした。「東葛の子どもに健康調査を！」と記した横断幕を掲げ、子どもの放射線量調査などを求める松戸市の市民団体「汚染から子どもたちを守る会ネットワーク」の母親らが訴えた。

ただ、同法の対象となる地域は未指定。「放射線対策をすすめる東葛・茨城・埼玉ネットワーク」など千葉、茨城、埼玉3県の市民団体「汚染から子どもを守る会ネットワーク」などが連動。

今後、署名などで運動を広げていきたいという。

（横山祐輔）

↑東京新聞（2012年11月30日）

子ども被災者
支援法適用を
県市長会、町村会

「原発事故子ども・被災者支援法」による支援対象地域に、本県の指定を求める要望書を根本匠復興大臣に提出した＝写真。

要望書は、会田真一市長会会長（守谷市長）、豊田稔同副会長（北茨城市長）、野島貴雄村会長（河内町長）、浜田昌良同副大臣に手渡した。

↑茨城新聞
（2013年3月1日）

参議院議長　殿
衆議院議長　殿

放射能被ばくから子どもを守るための対策を求める請願書

請願趣旨

　２０１１年３月東京電力福島第一原子力発電所での事故により、大量の放射性物質が放出され、空気・土壌・飲食物などあらゆるものが汚染されてしまいました。茨城県、千葉県北西部、埼玉県南東部は、同３月１５日、２１日に放射性プルームが通過したことにより、高濃度の汚染地域となりました。またこの地域では、放射性ヨウ素による相当量の汚染があったことが各研究機関の調査によって解明されつつあります。しかし当時は、国から屋内退避の指示もなく、多くの子どもたちが放射性ヨウ素による被ばくをしたと考えられます。

　２０１２年６月に成立した「原発事故子ども・被災者支援法」では、子どもが放射線による健康への影響を受けやすいことを踏まえ、子どものときに一定基準以上の放射線量の地域に住んでいた場合は、健康診断が生涯にわたって実施されるよう国が必要な措置を講じることとされています。早期発見と早期治療体制の速やかな整備こそが、子どもたちの健康への懸念と被害を最小限に抑える唯一の方法だと考えます。ついては、子どもたちの健康を守るために次のことを要望します。

請願事項

１．茨城県、千葉県北西部、埼玉県南東部の子どもや妊婦の健康管理調査等を定期的に継続して実施すること。
　　健康管理調査などの内容
　　　①甲状腺に係る検査　②血液検査　③尿検査　④心電図検査　⑤問診の実施　等

２．検査結果は所見を含む全てのデータを受検者または保護者へ渡し、結果について充分な説明を行うこと。

３．「原発事故子ども・被災者支援法」の基本方針策定においては、茨城、千葉北西部、埼玉南東部において
　　空間線量が２０１１年度１mSv/年を超えた地域を対象地域に含めること。

以上、国会法第７９条の規定により請願致します。

氏　　　名	住　　　所（都道府県から記入　「同上」「〃」は不可）
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1.4　Tōkatsu Groups' Opening Pages Screenshots

The Screenshot of *Protect Nagareyama, Higashifukai area Children from radiation group* weblog (http://blog.goo.ne.jp/nagareyama_higashifukaikodomo. Retrieved: September 27, 2017).

The Screenshot of *A society for promoting radiation-control measures for children of Nagareyama* weblog (http://blog.livedoor.jp/icdt/ Retrieved: September 27, 2017)

The Screenshot of *Protect Abiko children from radiation contamination group* weblog.

(https://ameblo.jp/abiko-mamorukai Retrieved: September 27, 2017)

The Screenshot of *Residents' group for radiation-control measures in Kamagaya* weblog

(http://kamagayashi.web.fc2.com/index.html Retrieved: September 27, 2017)

The Screenshot of *Children of Tōkatsu Network* weblog (https://tohkatsunet.wordpress.com Retrieved: September 27, 2017)

ホーム About Us Activity 『いまからできること！』疎開・避難者 アンケート・コ 検索
『茨城県南部と千葉県北西部での土壌汚染調査プロジェクト 』 記者会見
【緊急】復興庁がパブコメ募集中（8月8日締切） 御協力ください！
いまからできること『 汚染スポットで考える 子どもの健康 』 大勝院幼稚園 講演会 2013
こどものおと（子育て記録） こどもの健康調査についての勉強会 つながるトーク イラスト・ぬりえ
知ってください！関東汚染地域で起きていたこと 〜社会心理学者が分析〜 子どもたちの健康を見守る検査
東葛地域のイベントカレンダー 東葛地域の土壌汚染調査プロジェクト

こども東葛ネット
放射能からこどもたちを守ろう！

Feeds: 投稿 コメント

Save Children From Radiation

甲状腺エコー検査のお知らせ
10月 1, 2016 by tohkatsunet

原発事故から5年がすぎました。あらためて書きます。千葉県北西部は、福島原発から200km離れていますが、南下した放射性プルームが降雨で落ち、国も認める汚染地域（特措法上では汚染状況重点調査地域と明記）となり、除染もおこなわれました。
半減期が少ない放射性ヨウ素については事故当時のことはわかっていないままです。
「原発事故子ども被災者支援法」という法律が出来ながら、支援されるのは福島県のみ。千葉県北西部の５つの自治体が、甲状腺検査の助成をしていますが、国は自治体に対して、経済支援していません。
市民の有志と常総生活協同組合が「関東子ども健康調査支援基金」をたちあげ、関東汚染地域をまわり、毎月一回、甲状腺エコー検査をしています。
守ろう関東ネット、ネットワークする栃木、茨城、千葉、埼玉の母

固定ページ
About Us
Activity
『いまからできること！』疎開・避難者 アンケート・コーナー
『いまからできること！』疎開・避難者アンケート1 和歌山編
『いまからできること！』疎開・避難者アンケート2 本州・四国編
『いまからできること！』疎開・避難者アンケート3 九州

The Screenshot of *Environment and Energy. Kashiwa group* weblog (http://kankyoblog.seesaa.net Retrieved: September 27, 2017)

環境とエネルギー・柏の会
2011年3月世界は大きく変わりました。
子どもたちがのびのび生きていけるようにしたい、という想いでつながった私たち。
環境とエネルギー・柏の会
kankyo_kashiwa@yahoo.co.jp

QRコード

- 1 2 3 4 5 . 次の3件>>

2016年09月20日

今年も第３回「柏会場甲状腺エコー検査」を実施します

甲状腺エコ-検査@柏 申込みは１０月１日から

ちゅうい
柏市で助成金を出して実施している甲状腺超音波検査とは別の、市民による検診です！
主催：関東子ども健康調査支援基金
協力：環境とエネルギー・柏の会

初めて検診を受ける方は１０月１日から申し込みを受け付けます。
今まで柏で基金の検診を受けられた方は9月30日まで先行予約申込みができます
（ID番号を忘れずに書いて下さい）
（事前申し込みが必要です。当日申込みはできません）
定員になり次第締め切ります

検索
ウェブ 記事

<< 2016年09月 >>
日 月 火 水 木 金 土
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24

日時：１１月５日（土） AM１１時〜１２時30分 PM１時30分〜４時30分

1.5   Pamphlets Created by Kanto Network

Activists of the Kanto Network created pamphlets trying to explain various radiation-related issues in easy to understand way.

継続的な検診で子どもの未来を見守る

人間ドックやがん検診のように「病気でもないのに検査をする」のはなぜでしょう？それは、「早期発見、早期治療のため」に他なりません。甲状腺エコー検査も同じことです。

これまで日本では、甲状腺の専門医でさえ発症例が少ないために、子どもの甲状腺はほとんど診たことがないという状況でした。しかし、未曾有の原発事故が起こった今、特に国の「汚染状況重点調査地域」となったこの地域で、子ども達の健康を継続的に見守ることが最優先であり、必要なことではないでしょうか。

汚染地域の自治体の中には、医師会と協力して甲状腺エコー検査を始めたところもあります。そこで協力してくれるのは、地元の心ある医師達です。甲状腺の専門ではなかったり、子どもの甲状腺を診たことがない医師でも、持っているエコー検査技術でのう胞や結節の疑いのあるものを見つけ出してくれます。それがスクリーニングです。

スクリーニング検査の結果、甲状腺の異常かもしれないという疑いがあった場合、専門医に診てもらうことができます。こういった体制が平等に整うこと・・・それが安心への第1歩になるのではないでしょうか？

今後、そういった心ある医師達は、経験をもとに私たちや将来の子ども達の強い味方となってくれることでしょう。さらに、長期にわたって子ども達を見守る検診体制を整えるためには、自治体や行政にも働きかけて、医師・自治体・私たちが共に協力しあっていくことが必要なのです・・・、

*** 関東のホットスポット ***

子どもたちの健やかな未来のために
継続的な甲状腺検査を

もう放射線量は低くなったんだし、大丈夫なのでは？

いいえ、被曝は足し算です。たとえ低線量でも、初期被曝※とこれから毎年うける被曝を、生涯足していくのです。また、初期被曝が実際にどれほどのものだったのかについては、いまだに解明されていません。

※2011・3・11におきた福島第1原発事故直後の放射性物質が多かった時期の被曝

2011.3.18
茨城県H市のほうれん草
ヨウ素131:
54100 ベクレル/kg

2011.3.24
茨城県H市の水道水
ヨウ素131:
124.9 ベクレル/kg

【食品・飲料水の基準値】厚生労働省

	食品	飲料水
当時（暫定基準）	500 ベクレル/kg	100 ベクレル/kg
現在（2012.4〜）	100 ベクレル/kg	10 ベクレル/kg

原発事故の直後はほうれん草も水道水も放射性物質がたくさん入っていたのね!?

特に自覚症状はないけど…これから先の健康は大丈夫かしら？

関東のホットスポットで暮らす子どもたちの健康に留意し、長期にわたって検査を継続していくことが、これからの私たちに出来ることなのです。

甲状腺検査についての情報を見てみよう！

①

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①東北及び関東の放射能への不安を抱える地域にお住まいの小学5年生〜中学3年生10名と高校生以上のボランティアを対象とした短期保養

②一週間の合宿でお芝居を創り上げ、発表会をします。ミヒャエルエンデの「モモ」をモチーフにみんなで創作、劇・ダンス・歌のレッスン、手作り楽器など本格的な内容です。全く初めてのお子さんでも大丈夫です。地元の子ども達も一緒に出演します。食事はできるだけ県内産にこだわっています。宿泊はお寺の和室で男女明のごろ寝、練習もお寺で発表会は本堂で行います。

☆ご希望の方は、地元医師による甲状腺検査と血液検査も受けて頂けます。

③事務局の私自身、東京から避難移住しました。石川県内にはたくさんの保養団体があり、「311こども石川ねっと」という連絡会では県内避難者の会、避難者への支援団体、行政等と連携して保養のほか、移住のお手伝いもしています。石川県の野菜や魚などの産直販売ができる支援者もいます。お気軽にご相談くださいね。

保養に行きたいけど迷っている方へ…

温かい気持ちで受け入れて下さる方々が待ってます
今の場所から離れて、保養先で、思いっきりリフレッシュしてみませんか？
子ども同士も新しいお友だちが出来たり、お母さんも日頃の不安を解消できると思いますよ
子どもの満面の笑みをアルバムに追加しましょう！

①どんなタイプの保養か
②昨年は？今年の予定は？
③受入側の思い

そうだ!! 保養に行こう

ホットスポットで暮らす私たちが いま、子どもたちにできること・・・

原発事故から3年、みなさんの周りの放射線量はどのくらいですか？

下がってきてるみたいだけど…

まだまだ高い所もあちこちにある

子どもたちは・・・
吸ったり　食べたり　浴びたり

放射性物質は目に見えないけど・・・

免疫力が低下しています

理由は…
つねに子どもの体（細胞）は放射能と戦っている・・・

体を休ませることが必要です…
環境のよい所で　リフレッシュ〜
それが「保養」です！

①

1.6 Abiko Group Meeting in October 26, 2014

1.7 Interview Questions (English)

1. Where did you live when the Great East Japan Earthquake on March 11, 2011 happened?

2. When did you start your activity and what triggered your action? Why did you decide to get involved?

3. How did you learn that the place where you lived had been contaminated? How did you obtain the information? How did you feel at that time?

4. Do you think that you have achieved some results through the course of your action?

5. Do you think that your activity has been effective so far?

6. Did you have any civil action experience before the accident?

7. Did you have any interest in politics before the accident?

8. What do you think should be done from now on? What do you think is the best solution for this problem?

9. What difficulties have you encountered so far? How did you overcome them?

10. Could you please introduce me to other members of the Kanto Network from Nagareyama, Kashiwa or Matsudo Cities?

1.8 Interview Questions (Japanese)

1. 東日本大震災の起きた2011年3月11日時点で、どちらにお住まいでしたか。
2. いつから、どんなきっかけで活動を始めましたか。どうして？
3. お住まいが汚染されていることをどうやって知りましたか。どのように情報を得ましたか。その時、何を感じましたか。
4. 会の活動をしてきたことに効果がありましたか。
5. 今までやってきたことに効果がありましたか。
6. 事故前に団体活動の経験はありましたか。
7. 事故前に政治に関心を持ちましたか。
8. これからどうするべきだと思いますか。一番良い解決方法はなんでと思いますか。
9. あなたが今までにどんな困難に直面しましたか。その困難をどのように乗り越えましたか。
10. 流山、柏、松戸などにご紹介できる関東ネットのメンバがいれば紹介していただけないでしょうか。

1.9 "Save Children" Groups' List

List of groups that were connected with Tokatsu groups and whose title or self explanation included issues related to children protection.

1. 鎌ケ谷市放射能対策　市民の会
2. ICDT（流山のこどもたちのために放射線対策をすすめる会）
3. 松戸の未来を取り戻す会
4. 柏の子どもたちを放射能汚染から守る会
5. こども　いのち：#子ども被災者支援法　ブログ
6. 放射能からこどもを守ろう関東ネット
7. 環境とエネルギー・柏の会
8. 母子疎開ネットワーク「hahako」
9. 長期保養・疎開情報「ほよ～ん相談会」
10. 311受入全国協議会
11. 子どもを放射能から守る全国ネットワーク（子ども全国ネット）
12. 子どもたちを放射能から守る福島ネットワーク
13. 放射能から子ども達を守ろうみさと
14. 会津放射能情報センター 放射能から子どものいのちを守る会・会津
15. 子どもたちを放射能から守る・八尾の会 日本のすべての子どもたちを守るため、政府の放射能拡散政策を跳ね返そう！！
16. 震災復興プロジェクト 放射性廃棄物処理の正しい戦略と方法を知ってください。
17. 福島の子どもたちを守る法律家 ネットワーク（SAFLAN）
18. Save Child 市川
19. あかつぶ缶バッジ作戦委員会
20. 我孫子の子どもたちを放射能汚染から守る会
21. 子どもたちを放射能から守る 埼玉ネットワーク
22. 5年後10年後こどもたちが健やかに育つ会
23. 大地と子どもを守る会
24. こども　いのち：#子ども被災者支援法　ブログ
25. 放射能からこどもを守ろう 関東ネット
26. こども東葛ネット
27. 流山・東深井地区のこども達を放射能から守る会　故郷流山のために、保護者が子ども達にできることがあるはず

28. 関東子ども健康調査支援基金

29. 子どもたちを放射能から守る千葉ネットワーク

30. 常総市の子ども達を守る会

31. 放射線被ばくから子どもを守ろう！船橋の会

32. 放射能汚染から子どもを守ろう＠つくば

33. 放射能汚染から子どもを守ろう＠竜ヶ崎

34. 放射能汚染から子どもを守ろう＠守谷

35. 松戸の未来を取り戻す会

36. 柏の子どもたちを放射能汚染から守る会

1.10 List of Organizations

List of organizations, events, and places mentioned in the text and links to their Internet webpages

1. The National Parents Network to Protect Children from Radiation http://kodomozenkoku.com
2. Kanto Network to Protect Children from Radiation. - http://kodomokanto.net
3. Joso Consumer Club - https://www.coop-Jōso.jp
4. Consumer Club Nijinomachi - http://chiba-seikatsuclub.coop/toukatsu/2009/01/
5. Safe Fukushima Children Lawyers' Network - http://www.saflan.jp
6. *Fukushima, Rokkashyo, Message to the Future* Documentary - http://rokkashomirai.com
7. The 10th Tokyo Peace Film Festival - http://www.peacefilm.net/Film_Festival/tpff2013.html
8. Ibaraki Prefecture Government, page dedicated to the everyday radiation monitoring - http://www.pref.ibaraki.jp/seikatsukankyo/kanshise/kikaku/hosyasengyomu.html
9. The Ibaraki Prefecture Radiation Telemeter Internet Display Office - http://www.houshasen-pref-ibaraki.jp/index.html
10. Kantō kodomo kenkō tyōsa sien kikin [the Support Fund for Health Checks of Kanto Region Children] http://www.kantokodomo.info
11. The Friends of the Earth - http://www.foejapan.org/en/
12. OurPlanet –TV - http://www.ourplanet-tv.org/?q=node/287
13. Safecast - https://blog.safecast.org
14. East Japan Soil Measurement Project - http://minnanods.net
15. Citizens' Nuclear Information Center - http://www.cnic.jp

1.11 Titles of Study Meetings

Trends	Title of the Study Meeting
原爆と平和	「原爆から原発」〜映画と講演のつどい〜　映　画　「ヒバクシャ　世界のおわりに」、「内部被ばくを生き抜く」。上映後、鎌仲ひとみ監督の講演あり　「ひろしま」監督：関川秀雄　上映後、当時監督補の小林大平氏の長男で映画プロデューサーの小林一平氏に映画「ひろしま」について講演
	「原発事故と平和」っていう講演会
原発の未来	原発は必要？　放射能汚染はいつまで続くの・・〜共に知ろう・考えよう〜
	〜正しく知って子どもを守ろう！〜『放射能って何!?』放射能の基本からエネルギーまで原発がなくても大丈夫！「ロウソク生活」なんてあり得ない！データを示しながら分かりやすく解説してくれます
	原発さよなら！3・4千葉集会
原発事故を通して町ずくり	−放射線から子どもたちを守る、私たちにできること−（1）原発事故後の放射能による健康問題とその対策について、（2）そのことを通じての町づくりのお話をしていただきます。
地域と生きる	自然エネルギーって、地域で、近所の人とつくれるって本当？東葛で暮らしていくために、できることを話そう！
	「東京湾いのちの物語」〜海の記憶　私たちに引き継がれてきた大切なもの〜トーク&ミニライブ開催します。
	『味噌フェス！2014』この手で生み出す力、ワイワイ集まりケラケラ笑う人の力、伝承された食文化の力が活力となること、子どもたちがこの時代を生きる力、免疫力になること感じましょう。
放射線と健康	放射線の人体への影響
	「甲状腺被曝をめぐる放射能リテラシー 福島原発事故後の子どもの健康をめぐって」
	いまからできること『汚染スポットで考える子どもの健康』
保養・避難	〜保養報告会〜映画上映後は、環境とエネルギー・柏の会の座間が体験した夏休みの保養体験をもとに保養報告会！保養経験者の方、保養に興味のある方、保養って何？という方も！
健康のための対策	放射能に負けない体を作る
安全んな食	「放射能汚染と食べものの安全」　　拡大する食品の放射能汚染！内部被曝は避けられないの？・日本の基準は緩すぎませんか？・安全な食べものは？・私たちに何ができるの？
	「食の安全と放射能−放射性物質汚染問題と私たちの暮らしや食品に係るリスクコミュニケーション」という講演会
	こどもたちと なにを どう食べていくの？「みんなの食べかたじてん」富山洋子さんと語ろう

	「医学不要論」著者　内海聡先生講演会　－医者いらずの生き方～薬害、食害などの社会毒から家族を守る方法～－なぜ現代の日本人に病気が多いのか。添加物や農薬などの食害や、薬、ワクチンなどの薬害、放射能などを含めた社会毒の実態と、その対策法について書籍、Facebook等で有名な内海 聡先生が全てを語ります。食による放射能防御やデトックスの重要性など、ぜひ放射能対策の意識の高い方、そうでない方にも聞いていただきたい内容です。
底線量被曝の危険性	ホットスポットにおける低線量被ばく・内部被ばくの危険性
放射能とメディア	子どもと学ぶ放射能とメディア
	『様々なメディアから「真実」を読み解こう！』～元報道ディレクター、水島宏明氏が語る現実～
	番組講座『教えて！サバイバル・災害時の運命を決める情報の選び方』首都直下地震や富士山噴火など、大規模災害時に役立つ情報リテラシーについての講演イベント
汚染調査・測定	「茨城県南部・千葉県北西部の土壌汚染調査プロジェクト」記者会見
	「わかる！きける！放射能測定講座」
	市の貸し出しする放射線測定器(HORIBA 製　Radi　PA-1000)を使って正しく計測する方法を学ぼう！と題し、放射線計測勉強会
市民科学	市民科学者養成講座測定結果を読むための基礎を学ぶ－スペクトルとは？下限値とは？不確かさとは？－
	市民による土壌調査プロジェクトから見えてきたこと～子どもの健康を考えるつどい＆ママ達の土壌調査報告会～茨城県から千葉県北西部の子育て世代のママといっしょに、安心安全の暮らしのために、食と環境にこだわる常総生活協同組合。
	松戸の教育を考える市民フォーラム　　　大人の責任として、子どもの未来を守りたい～母たちの活動・今まで、そして今後～
除染	根戸小・校庭除染工事説明会
法案	「原発事故子ども・被災者支援法」　　原発事故の影響から子どもを守るため、今年の6月に成立しました。支援対象地域に指定されると、被災した子ども達の健康調査を始めとする、様々な行政サービスを受けられることになる、とっても大事な法律ですが、知名度は今ひとつ。具体的な中身や「支援対象地域」については、私たちの意見を踏まえ、政府がこれから決定していくことになっています。この「支援法」について、法テラス茨城の和田恵弁護士と、茨城大学の原口弥生先生をお招きして、わかりやすく説明していただきます。
海外の経験	チェルノブイリから学んだ、放射線から子どもを守るための提言
	ドイツの経験と福島の今～
	ベラルーシの子どもたちが伝える低線量被曝の姿～
	医師が見たチェルノブイリのいま「事故後のチェルノブイリ・ドイツの環境政策」視察報告