

# 14. Japanese Women and Antinuclear Activism After the Fukushima Accident

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## Background

There is a long history of female and maternalist engagement in antinuclear activism in Japan and worldwide, dating back to the bombing of Hiroshima and Nagasaki in 1945. These female-driven movements arise at moments of disaster like nuclear reactor meltdowns and contamination from atomic bomb testing. In *Women Strike for Peace: Traditional Motherhood and Radical Politics in the 1960s*, Ann Swerdlow examines the ways in which American mothers organized and were largely responsible for the end of US atmospheric bomb testing (1993). Women's League for Peace and Freedom, from which Women Strike for Peace was an offshoot, also has a long history of involvement with movements to ban the bomb globally. There are many affiliate ban-the-bomb groups, many of which are women led (antinuclear bomb groups are generally antinuclear power as well). Swerdlow's book explores this history. When investigating women, radiation, and post-Fukushima activism, a range of scholarly and

creative work should be considered. “Young Mothers Looking for a Voice in Post-3.11 Fukushima,” by David J. Slater et al. (2014), and “Fukushima Women Against Nuclear Power, Finding A Voice in Tohoku,” by David Slater (2011), provide important background on women, activism, and Fukushima, specifically. Kendra Ulrich’s 2017 report on the nuclear disaster’s unequal impact on women and children provides a vital overview of the social, economic, and health repercussions of the nuclear accident. In *Radiation Brain Moms and Citizen Scientists: The Gender Politics of Food Contamination After Fukushima*, Aya Hirata Kimura looks at the double bind women in Japan face when providing their children with radiation-safe food (2016). Additionally, I have written extensively on gender and activism post-Fukushima, including “Radiophobia, Women, and Patriarchy” (2018), “Women and the Fukushima Disaster” (2017), “Invisible Victims” (2015b), “Aileen Mioko Smith: Anti-Nuclear Feminist” (2015a), and “In Japan, A Mother’s Movement Against Nuclear Power” (2012).

The work of evolutionary biologist, Tim Mousseau, is helpful to understanding the impact of gender and radiation on animals and insects in Chernobyl and Fukushima (2011, 2015). The analyses of the 2006 National Health Science report on radiation impacts on humans, by Arjun Makhijani and Mary Olson, provide important data on why gender matters when considering the question of women, children, radiation post-Fukushima and the disproportionate health impacts of the disaster (Makhijani 2008; Olson 2012, 2014). This vital data buttresses the concerns of women and mother activists, revealing that women and children are at much greater risk of harm from the Fukushima disaster than health officials publicly acknowledge. This analysis does not include impacts from internal contamination, which indicates potentially even higher rates of health concerns for children, women, and all adults post-disaster (Mary Olson, personal interview with Heidi Hutner, June 21, 2017). Remarkably, the question of unequal gender and health impacts in radiation disaster contexts has recently been taken into consideration in the Preamble to the 2017 UN Treaty to Prohibit the Use of Nuclear Weapons. Women have been at the forefront of these negotiations, and the UN conference in June 2017 on banning the bomb was chaired by a woman, Elayne G. Whyte Gómez, Costa

Rica's ambassador, who supports this gender and age-sensitive precautionary measure.

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## Case Study

On March 11, 2011, the Tohoku region of Japan was struck by an earthquake, measuring nine on the ten-point Richter scale . A violent tsunami ensued, resulting in power outages and the meltdown of three (out of the six) reactors at the Fukushima Daiichi Nuclear Power Plant . All three cores melted through the steel of the reactors and leaked into the containment vessels. Water contact with the zirconium-clad exterior of the fuel rods caused reactor units 1, 2, 3, and 4 to have hydrogen explosions and massive amounts of radiation were released into the atmosphere, including cesium, tritium, iodine, strontium, silver, plutonium, americium, rubidium, and the noble gases argon, xenon, and krypton. Twenty percent of the poisonous releases dispersed over mainland Japan, and 80 percent traveled offshore to the Pacific. Four thousand five hundred square miles were contaminated with radiation above Japan's (then) allowable exposure limit of 1 millisievert (mSv) per year. Not long after the accident, the Japanese government raised the acceptable yearly limit of radiation exposure to 20 mSv.<sup>1</sup>

It took nearly two months for the Japanese government to publicly admit the extent to which the radiation had been released. During that same period, the government changed their definition of acceptable radiation from 1 mSv to 20 mSv, thereby minimizing the number of evacuation zones. These two factors contributed significantly to citizen mistrust of the Japanese government's position regarding radiation safety. Many citizens believed that the elevation of radiation limits put their health at risk, causing alarm and concern around the accuracy of information dispensed by the media and governmental sources (Oya, Hanayo and Hideaki, Kimura, personal interview with Heidi Hutner, April 29, 2017). All 54 nuclear power plants in Japan were shut down immediately post-disaster, and, as of March, 2017, only three of the 45 operable reactors had come back online. Pro-nuclear factions continue to press for more reactor station restarts.

A surge in antinuclear sentiment and actions post-Fukushima was directly related to the fear of future nuclear meltdowns and a general

mistrust of both the nuclear industry and the government (Murphy 2014). Large numbers of women and mothers led and joined in antinuclear actions—countering the ideology of the pro-“nuclear village,” a triangle of nuclear vendors, bureaucracy, and Japan’s parliament. In doing so, Japanese women and mother activists challenge traditional concepts of female identity, in which they are expected to be submissive, conformist, and silent (Kingston 2013).

Mass antinuclear protests, often women and mother-led, took place around post-Fukushima Japan and Tokyo with as many as 60,000 to 170,000 protestors at one time. They marched to demand the cleanup of Fukushima, the lowering of radiation levels, and the permanent closure of nuclear reactors nationwide. Busloads of residents from Fukushima regularly descended upon Tokyo and formally “occupied” the space in front of the Ministry of Economy, Trade, and Industry (METI), constructing a tent city where protestors lived for months. For more than six years, activists protested (and continue to protest) in front of the Prime Minister’s home every Friday. While mass public displays of protest diminished in size by 2015, women and mothers continue to file lawsuits over the call to return families to contaminated areas, declaring it a human rights violation; they persist in their vigilance with citizen science radiation food protection, soil sampling, and medical oversight; and they carry on with activist efforts to keep nuclear reactors closed.

Kendra Ulrich reports that women and children have suffered “unequal” impacts from the nuclear disaster—including increased domestic abuse and violence, divorce, economic hardship, negative health impacts, and social isolation (2017). Fukushima mothers and their children are often ostracized—viewed as radiation-tainted, contemporary “Hibakusha” (Jacobs 2013), a term first used to describe survivors of the atomic bomb. Female survivors of Hiroshima and Nagasaki, in particular, experience extreme social exclusion. After many women gave birth to infants with birth defects within nine months of the bombings, female Hibakusha were labeled unfit for motherhood and marriage (Alexis-Martin 2015). Even second-generation Hibakusha remain outcasts and considered unfit to bear children. Recent (but separate) analyses of the 2006 National Academy of Science Health report by Arjun Makhijani and Mary Olson show that



women and children are most vulnerable to and suffer disproportionately from radiation exposure, and fetuses are most vulnerable of all (2008, 2012, 2014). Adult women are twice as likely to develop cancer from the same exposure to ionizing radiation as adult men, and children are at least five to seven times as likely to develop cancer from those same exposures, and fetuses are the most vulnerable of all (Makhijani, Olson). Epidemiologist Alice Stewart first discovered the effects of ionizing radiation on a fetus in the 1950s; her research determined that a single X-ray to the womb doubled a child's likelihood of developing cancer. However, radiation safety regulations are measured according to the white, adult male body—the standard “Reference Man.” Makhijani, Olson, and Hutner suggest this regulatory measurement poses a racial and gender injustice (2008, 2012, 2015b, 2018). The gender and racial injustice of the “Reference Man” safety standard has been confirmed in conference discussions at the UN and in global debates about nuclear power and weapons. More needs to be done on the racial inequities and impacts, but the gender and age inequity factors are on the UN policy table largely due to the efforts of Mary Olson, who has pressed for the rights of girls and women through her Gender and Radiation Project.

In *Radiation Brain Moms and Citizen Scientists*, Aya Hirata Kimura looks at the double bind of mothers in post-Fukushima Japan. If mothers question the governments' commitment to radiation safety, they are labeled as “radiation brain moms” —hysterical women who don't understand science (2016). Cindy Folkers (2017) (Hutner and Folkers) argue that the marking of concerned mothers as “radiophobic” erases their legitimate health questions. Such attacks on women date back to the 1950s in the USA when the American government wanted to assure the general public that atmospheric bomb testing was safe. Folkers (Hutner and Folkers) suggest that calling concerned women radiation brain moms or radiophobic normalizes radiation dangers and potentially silences women and others (2017, 2018). Executive director of *Green Action Japan*, Aileen Mioko Smith states, “In general, men don't take radiation dangers as seriously as do the women—men worry more about finances, while women worry about their children's safety—where they play and what they eat. This may be because it's the women who have to deal with the day-to-day of the children's needs” (Aileen

Mioko Smith, Skype interview, February 22, 2014). The antinuclear female-driven counter-culture movement reflects the deep social impact of the nuclear disaster : shifting female gender roles and a rising nascent feminism . The differing gender views regarding nuclear power and radiation safety often result in what is commonly referred to as an “atomic divorce” (Ulrich 2017).

Japanese women’s antinuclear activism began long before Fukushima, originating with the Hibakusha and the global women’s antinuclear peace movement. In particular, as Toshiro Higuchi points out, the tragic bomb testing of Bikini Atoll in 1954, in which the Japanese *Lucky Dragon* commercial fishing boat was accidentally contaminated, led to an important awakening of women’s antinuclear activism and environmental awareness in Japan. The Atoll disaster called attention to the environmental health threat of ionizing radiation on fish populations, a key food source for the Japanese. Higuchi argues that the *Lucky Dragon* fish contamination was an important moment of awakening regarding radiation safety in Japan, and mothers (the food keepers) spearheaded the antinuclear actions in response. The Bikini Atoll event led to the ban-the-bomb petition , signed by 1,500 housewives. Unwilling to stop there, these women gathered 170,000 signatures opposing the use of nuclear weapons and took on the role of global nuclear peacekeepers (Higuchi 2008). The Hibakusha have also served as symbolic global nuclear peacekeepers and spokespersons for world peace. Since the Fukushima disaster, the Hibakusha have become outspoken opponents of nuclear power as well—a population growing in numbers as post-Fukushima antinuclear activists self-identify as “Hibakusha” (Ogawa 2013). The Hiroshima and Nagasaki Hibakusha refer to the Fukushima disaster survivors as the “third Hibakusha.” The original Hibakusha and the many “ban-the-bomb” groups speak of the need to abolish nuclear power and directly link the dangers of nuclear weapons with nuclear power (Fig. 14.1).



**Fig. 14.1** Women's ban-the-bomb March in New York City, June 17, 2017

Thirty-two years before Fukushima, the Three Mile Island partial nuclear meltdown in Pennsylvania drew the attention of Japanese women activists. Aileen Mioko Smith , co-author of *Minamata: The Story of the Poisoning of a City, and the People Who Choose to Carry the Burden of Courage* (1975), an account of how 100,000 people contracted Minamata disease from methyl mercury-contaminated fish in Minamata Bay, came to the USA to interview 250 residents of Three Mile Island area for six months after the March 1979 accident. In Mioko Smiths' research, she found that the locals living near the Three Mile Island nuclear plant had strange ailments and many of their animals had become sick. Yet, Mioko Smith states, this information regarding the meltdown was not recorded in the mainstream US press. Mioko Smith became alarmed as she considered the many nuclear power plants in Japan and the intense seismic activity there. She then decided to return to Japan and do all that she could to shut the Japanese nuclear plants

down (Smith, personal interview, February 22, 2014). Mioko Smith eventually formed the group, *Green Action Japan*, and worked on multiple antinuclear campaigns. In 1988, Mioko Smith gathered four million signatures in request of a ban on nuclear power. Over several decades, she rallied for the moratorium on MOX fuel use in commercial plants and led countless nuclear rallies, petitions, sit-ins, and appeals before corporate and political boards. The Fukushima story is a feminist one, Mioko Smith says, as the nuclear industry in Japan is overwhelmingly male dominated and all decisions are in the hands of men. She states that these men who control the nuclear village do not listen to the women's demands or concerns. Still, she does not give up hope and persists in her many projects to protect the children and people of Japan (Aileen Mioko Smith, personal interview, February 22, 2014).

An organic farmer and mother of five, Sachiko Sato is an important example of post-Fukushima female radicalization. Sato became an activist after the 2011 accident when her family lost their "Yanamani" farm due to radiation contamination. They were forced to permanently abandon their home, community, and entire way of life. The impact on Sato's family was severe—her youngest child Mina (12) suffered from depression and anxiety, her older daughter divorced, and she too divorced. The family divided and spread to various locations in Japan. Their thriving educational organic farm, which Sato and her family had built over 30 years, was closed in April 2011, and Sato had to kill their 250 chickens—all contaminated. In order to survive economically and support her children, Sato stayed in Fukushima City after the disaster, where she works in a facility for the disabled and elderly. To protect her children from radiation exposure, Sato sent them to live several hours away from where she worked and resided. Since then, protecting the children and people of Fukushima has been her life purpose—setting up private medical testing facilities, doing citizen science, growing safe food, creating safe food outlets, protesting, speaking publicly, and moving children to safe facilities.

Kaori Izumi (now deceased) is another example of Japanese female radicalization. She had been living in Italy prior to the Fukushima accident, but when she saw what was happening in Japan on TV with the nuclear explosions, she decided to return home to help with

antinuclear actions (Izumi, personal interview with Heidi Hutner, November 9, 2012). Izumi, along with Mioko Smith, was part of the protest group to camp out in front of METI for ten months and ten days. This time period—considered by the Japanese to be the period of a human gestation—was intended to draw attention to the harmful impact of radiation to the fetus in the womb. Izumi partially financed the legal battle to prevent the Tomari Nuclear Power Plant from reopening, and she created radiation-safe nature camps to where children were evacuated from contaminated areas. Izumi worked to protect these children while she suffered through terminal cancer, spending her final days as an activist. Izumi, Sato, and Mioko Smith traveled to New York in September 2011 to speak out as a Japanese delegation about the need to shut down nuclear power plants worldwide. They participated in a large rally in front of the UN and spoke at the Ethical Culture Society in Manhattan. They met with various concerned citizen groups in Westchester, New York, to share their stories of Fukushima and the disaster's impact on Japan (Fig. 14.2).



**Fig. 14.2** Ikuko Nitta speaks at a public meeting about the dangers of radioactive rubble in Japan, 2011. Her sign says: “I evacuated Fukushima”

The story of Ikuko Nitta —a divorced, single mother of three— offers another vital account of female radicalization post-Fukushima. Nitta lived in Fukushima at the time of the accident, and she fled with her children three days after the disaster to Wakayama. After the move, Nitta’s 12-year-old son suffered severe anxiety and social isolation; he was bullied for being a “Fukushima boy” (Nitta, e-mail correspondence and personal interview with Heidi Hutner , April 23, 2017). The whole family experienced radiation health symptoms—nausea, vomiting, nosebleeds, and the cracking and peeling of their skin. Two of Nitta’s children tested positively for (internal) cesium 137 contamination (only two of the three were tested). “Japan is a conformist culture,” Nitta explains, “and I wasn’t comfortable with speaking up. Yet, I had to speak out” (Ikuko Nitta, personal interview with Heidi Hutner, April 23, 2017). Her first step was food safety. However, sending children with home-prepared meals to school is not acceptable in Japan.



Nevertheless, Nitta insisted that her children be allowed to bring their meals to school; she tested their food with a geiger counter and purchased ingredients from reliable sources. Nitta's experience is echoed in the stories documented in *Radiation Brain Mom* and Ian Nash's documentary *A2-B-C*, a film exploring the challenges of mothers and children living safely in the post-Fukushima era (2013). In Nash's film, the mothers worry about radiation food safety and safety in the school playgrounds because of ionizing radiation hotspots located adjacent to these areas; many of these mothers directly confront and battle with school authorities.

Nitta also became involved in the campaign to stop the burning of radioactive rubble in Japan—debris that had been scattered by the tsunami and reactor explosions. Nitta had moved to the Wakayama prefecture to escape the contamination in Fukushima, but once there, the prime minister announced that radioactive rubble would be burned all over the country as a way of dispersing the pollutants. Nitta, her colleague Cathy Iwane, and others petitioned and spoke in opposition to the planned incineration. Both Nitta and Iwane ended up leaving Japan with their children when their activist efforts did not succeed, as they feared for their children's safety. Iwane moved to the USA where she continued with her activism. In California, she helped to successfully shut down the failing San Onofre Nuclear Generating Station, just outside of San Diego. Nitta moved with her children to Malaysia, and then Canada, where she joined up with other Japanese evacuees.

Tomoi Zeimer, a Japanese mother living in New York City in the USA, took up activism post-Fukushima as well. Having adopted a baby from the Fukushima region, Zeimer felt she had to do "something to help" her "family at home" after the disaster. Zeimer's parents and two sisters still live in Japan, and her baby's biological teen mother resides in the Fukushima area (personal interview with Heidi Hutner, April 23, 2017). Zeimer led the international campaign to stop Japan's burning of radioactive materials. She acquired thousands of signatures and the petition was delivered to Japanese embassies in London, New York, and several European cities. With Yuko Tonohora, Zeimer also organized a large antinuclear rally in New York City to commemorate the second anniversary of the Fukushima accident. Hundreds marched up Fifth

Avenue with members of Occupy in tow, carrying signs, images of pregnant Japanese women, and hand-sewn banners. The pictures of pregnant mothers called overt attention to the dangers that women and children face in nuclear disaster contexts (Fig. 14.3).



**Fig. 14.3** Tomoi Zeimer with her daughter Yael, born near Fukushima. Zeimer led the action to stop the burning of radioactive rubble in Japan (Photo by Olivia fine 2011. All rights reserved)

Antinuclear activism is a legacy that has been passed down through multiple generations of Japanese children. Sachiko Sato's youngest daughter Mina, for example, was drawn to antinuclear advocacy after her own post-disaster journey. Initially, Mina felt tremendous loss and grief over losing the family farm community and way of life. After Mina completed middle school, she was sent to a Christian boarding school far away from Fukushima City where Sato, her mother, felt she could study and live safely—radiation-free. At first Mina cried and refused to go. Mina felt abandoned and resented her mother's constant attention to the problems of the disaster and her caring for other children

harmful by the accident. Finally, Mina agreed to go away. When in boarding high school, Mina wrote letters to her mother about the difficulty of the transition from her life on their family farm where, following her mother through the “green field[s],” she had been the “happiest person on earth.” After the Fukushima disaster, Mina wrote, “everything had broken.” Mina explained that she hoped to build her own organic farm like the family’s lost farm, Yanamani. One day, at Mina’s school mass, in a session where the teens were encouraged to speak about themselves to the group, she had an awakening. Mina recognized that she had to face the reality of radiation dangers and she spoke out. She told her classmates that she realized it was a “sin” to ignore the dangers of the Fukushima disaster, and the problems of radiation contamination must be faced head-on. Mina then knew she had to continue to communicate this information publicly and help others, and so she, too, became an antinuclear activist. In a public antinuclear event in 2014, Mina described the Fukushima disaster as “a black rain like Hiroshima” and she called on her audience to take action. Mina pointed out that as “long as there are nuclear power plants in Japan, no Japanese [person] should be ignorant... The black rain may fall upon you or on the beautiful Mount Fuji” (Sato, Mina, personal correspondence with Sachiko Sato, dates May 1, 2014; October 12, 2014).

Today, many years after the Fukushima disaster, activist women in Japan continue to work in opposition to nuclear power, support the decommissioning of nuclear weapons, and seek world peace. Groups like The Hibakusha Project , Peace Boat , Green Action Japan , Women of Fukushima Against Nukes , International Campaign to Abolish Nuclear Weapons (ICANW), Reaching Critical Will, and many women- and mother-led NGOs both in Japan and globally persist in their efforts to protect the environment and humans from radiation contamination. They link nuclear power with nuclear weapons and see the industry as a danger to all life on earth. As David J. Slater argues in “Fukushima Women against nuclear power, finding a voice in Tohoku,” women play a vital role in antinuclear activism, and they are uniquely positioned to do so (2011). The multiple nuclear disasters in Japan have altered Japanese female identity in substantial ways. Like the seismic activity beneath Japan’s surface, such shifts are not always fully visible or

comprehensible, that is, until they erupt and embedded gender systems are changed (Fig. 14.4).



**Fig. 14.4** Women (including Aileen Mioko Smith ) celebrating at the end of “a sit” in front of METI in Tokyo on November 5, 2011. The ball of yarn had been woven by the women of Fukushima and was encircled first around the METI building and then made into the ball, as a symbol of the birth of a new earth. The text in the photo states, “We will Protect the Fukushima Children,” “Women Don’t Need Nuclear Power;” and “Women will change the world”

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## Lessons Learned

To be sustainable and equitable, we must consider the full bearing of a technology and its long-term impacts on all humans and the environment—including women, children, and all biotic life. Evolutionary biologists, such as Mousseau, find significant genetic damage in animals, especially in female animals, from radiation exposures post-Fukushima and Chernobyl. It is too early to know the full extent of health and environmental impacts in humans after the Fukushima disaster, but children are developing precancerous and cancerous thyroid tumors even at this early date and studies show that radiation exposures cause irreparable genetic damage, particularly in the fetuses, babies, children, and women (McCullough et al. 2007; Wo

and Viswanathan 2009; Brent 2008; Olson 2012, 2014; Makhijani 2008). Long before March 2011, the work of women in radiation science and health who warned of its dangers had been ignored, as in the case of Dr. Alice Stewart. Gayle Greene's *The Woman Who Knew Too Much* explores the lifelong repression of Stewart's important radiation research (2001). The world knows of Rachel Carson's warnings about DDT in *Silent Spring*, but she also cautioned strongly against the dangers of ionizing radiation and its bioaccumulative impacts (2002). Additionally, there has been a gender gap favoring men in the perception of nuclear technology (Solomon et al. 1989). As we have seen in the work of Kimura, Folkers, Hutner, and others, the concerns expressed by Japanese women about radiation safety are often labeled as "radiophobic." We must be careful to consider the ideological underpinnings of this term, as there is a patriarchal history of marking women as hysterical and scientifically uninformed as a way of silencing their oppositional viewpoints (Folkers 2017) (Hutner and Folkers 2018). As Kendra Ulrich's work shows, the unequal impacts of radiation disaster(s) on women and children in terms of domestic violence, economics, psychosocial, and family structures ("atomic divorce") must be justly accounted for in considering nuclear energy safety and viability (Ulrich 2017). In Japan, 90 percent or more of the stakeholders and decision-makers in the nuclear village and government are men. As Mioko Smith, peace studies advocates, and stakeholders and delegates at the conference to ban the bomb at the UN state, women deserve an equal voice in nuclear energy, power, and waste decision-making.

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## Challenges and Barriers

Changing patriarchal power structures and social systems remains a challenging process, but Japanese women are being vocal. Activists such as Mioko Smith go before nuclear planning boards and address their politicians regularly, yet their viewpoints go unheeded. The nuclear village, both in Japan and across the world, remains a powerful entity. Since the bombing of Hiroshima and Nagasaki, women have fought against the use of nuclear power and nuclear weapons worldwide. Hibakusha, mothers for peace, antinuclear activists, health



professionals (such as Physicians for Social Responsibility), and scientists all state that nuclear weapons and nuclear power byproducts harm humans and threaten life on earth. Mothers and others argue that we have a moral responsibility to do no harm (or do as little harm as possible) to future generations. Nuclear radiation technology and its byproducts remain dangerous for hundreds of thousands of years and have long-term generational genetic impacts, and we have yet to find a means to safely dispose of radioactive waste. Addressing and solving truly safe waste disposal must be a focal point for the future of this industry. Many nuclear reactors today are situated in geologically unstable locations and near large population centers; they pollute communities and release harmful amounts of ionizing radiation and toxic contaminants. These releases potentially increase children's cancer rates and a range of other diseases in people of all ages—but especially women and children (Tilman, Alfred R., personal interview with Heidi Hutner, June 21, 2017; Ian Fairlie 2014). Nuclear accidents happen, yet nations are not prepared for such accidents. The Fukushima catastrophe is ongoing with no end in sight. The continued work of women scientists, historians, and advocacy groups may help with educating and raising awareness. Today, gender and racial inequities around nuclear radiation are being considered by the United Nations as a result of women's efforts. Until we understand how to safely manage radiation waste produced by power plants and bomb factories, until we know how to prevent and safely manage nuclear accidents, we must consider taking the precautionary path. In terms of nuclear energy consumption, women activists such as Mioko Smith and her large Japanese cohort suggest that we use alternative, safer means to produce power—wind, solar, geothermal, and hydropower. For Japan and all nuclear nations, embracing a precautionary approach to energy use requires a shift in thinking about our ethical responsibility to protect future generations. In this environmental and sustainable rethinking, an ecofeminist philosophical and environmental justice ethic may be helpful. Ecofeminist proponents suggest that all beings—women, children, the underprivileged, and people of all racial backgrounds—deserve a seat at the political, energy, and environmental decision-making table. Environmental historian and ecofeminist scholar Carolyn Merchant calls this shared politics a



“partnership ethic” (2013). Knowing human and biotic health systems are interconnected, the needs of all biotic life must be equally considered. If we poison the land, water, and air, we poison the human population as well. As this study of women and Fukushima has shown, the safety of women and children must be given (at least) equal consideration in the politics of nuclear radiation and energy in Japan. The denial of women’s access to energy policymaking in Japan marks nuclear power as a feminist issue.

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## Footnotes

1 A sievert, or SI, is the unit of radiation defined as producing the same biologic effect of high energy X-rays. One sievert is equivalent to 100 rem. 1 sievert, if absorbed all at once, will cause severe illness; 8 sieverts will cause death. Japan's allowable safety limits have been set to millisieverts (mSv) . Twenty mSv and under are now considered officially safe by the Japanese government for long-term exposure; although prior to the nuclear accident, that number had been 1 mSv. According to *Physicians for Social Responsibility* , 20 millisieverts is equivalent to one thousand chest X-rays per year, or three chest X-rays every day per year. Exposure to 20 millisieverts over a lifetime will produce cancer in one in every six people (Helfand et al. 2011). Dr. Alice Stewart , the British epidemiologist, discovered that a single X-ray to the womb doubled the fetus' chance of acquiring cancer as a child (in the 1950s); she argued there is no safe dose of radiation (Greene 1999).