The Fukushima Daiichi Nuclear Power Station Disas

Reflections on the Fukushima Daiichi Nuclear Accident Joonhong Ahn,Cathryn Carson,Mikael Jensen,Kohta Juraku,Shinya Nagasaki,Satoru Tanaka.2014-12-01 This book focuses on nuclear engineering education in the post-Fukushima era. It was edited by the organizers of the summer school held in August 2011 in University of California, Berkeley, as part of a collaborative program between the University of Tokyo and UC Berkeley. Motivated by the particular relevance and importance of social-scientific approaches to various crucial aspects of nuclear technology, special emphasis was placed on integrating nuclear science and engineering with social science. The book consists of the lectures given in 2011 summer school and additional chapters that cover developments in the past three years since the accident. It provides an arena for discussions to find and create a renewed platform for engineering practices, and thus nuclear engineering education, which are essential in the post-Fukushima era for nurturing nuclear engineers who need to be both technically competent and trusted in society.
Nuclear Disaster at Fukushima Daiichi Richard Hindmarsh.2013-08-21 Nuclear Disaster at Fukushima Daiichi is a timely and groundbreaking account of the disturbing landscape of the Fukushima Daiichi nuclear meltdown amidst an earthquake and tsunami on Japan’s northeast coastline on March 11, 2011. It provides riveting insights into the social and political landscape of nuclear power development in Japan, which significantly contributed to the disaster; the flawed disaster management options taken; and the political, technical, and social reactions as the accident unfolded. In doing so, it critically reflects on the implications for managing future nuclear disasters, for effective and responsible regulation and good governance of controversial science and technology, or technoscience, and for the future of nuclear power itself, both in Japan and internationally. Informed by a leading cast of international scholars in science, technology and society studies, the book is at the forefront of discussing the Fukushima Daiichi disaster at the intersection of social, environmental and energy security and good governance when such issues dominate global agendas for sustainable futures. Its powerful critique of the risks and hazards of nuclear energy alongside poor disaster management is an important counterbalance to the plans for nuclear build as central to sustainable energy in the face of climate change, increasing extreme weather events and environmental problems, and diminishing fossil fuel, peak oil, and rising electricity costs. Adding significantly to the consideration and debate of these critical issues, the book will interest academics, policy-makers, energy pundits, public interest organizations, citizens and students engaged variously with Fukushima itself, disaster management, political science, environmental/energy policy and risk, public health, sociology, public participation, civil society activism, new media, sustainability, and technology governance.
Fukushima and the Arts Barbara Geilhorn,Kristina Iwata-Weickgenannt.2016-08-05 The natural and man-made cataclysmic events of the 11 March 2011 disaster, or 3.11, have dramatically altered the status quo of contemporary Japanese society. While much has been written about the social, political, economic, and technical aspects of the disaster, this volume represents one of the first in-depth explorations of the cultural responses to the devastating tsunami, and in particular the ongoing nuclear disaster of Fukushima. This book explores a wide range of cultural responses to the Fukushima nuclear calamity by analyzing examples from literature, poetry, manga, theatre, art photography, documentary and fiction film, and popular music. Individual chapters examine the changing positionality of post-3.11 northeastern Japan and the fear-driven conflation of time and space in near-but-far urban centers; explore the political subversion and nostalgia surrounding the Fukushima disaster; expose the ambiguous effects of highly gendered representations of fear of nuclear threat; analyze the musical and poetic responses to disaster; and explore the political potentialities of theatrical performances. By scrutinizing various media narratives and taking into account national and local perspectives, the book sheds light on cultural texts of power, politics, and space. Providing an insight into the post-disaster Zeitgeist as expressed through a variety of media genres, this book will be of interest to students and scholars of Japanese Studies, Japanese Culture, Popular Culture, and Literature Studies.
Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants National Academies of Sciences, Engineering, and Medicine,Division on Earth and Life Studies,Nuclear and Radiation Studies Board,Committee on Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants.2016-06-06 The U.S. Congress asked the National Academy of Sciences to conduct a technical study on lessons learned from the Fukushima Daiichi nuclear accident for improving safety and security of commercial nuclear power plants in the United States. This study was carried out in two phases: Phase 1, issued in 2014, focused on the causes of the Fukushima Daiichi accident and safety-related lessons learned for improving nuclear plant systems, operations, and regulations exclusive of spent fuel storage. This Phase 2 report focuses on three issues: (1) lessons learned from the accident for nuclear plant security, (2) lessons learned for spent fuel storage, and (3) reevaluation of conclusions from previous Academies studies on spent fuel storage.
Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants National Research Council (U.S.). Committee on Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants,National Research Council,Nuclear and Radiation Studies Board,Division on Earth and Life Studies.2014-10-29 The March 11, 2011, Great East Japan Earthquake and tsunami sparked a humanitarian disaster in northeastern Japan. They were responsible for more than 15,900 deaths and 2,600 missing persons as well as physical infrastructure damages exceeding $200 billion. The earthquake and tsunami also initiated a severe nuclear accident at the Fukushima Daiichi Nuclear Power Station. Three of the six reactors at the plant sustained severe core damage and released hydrogen and radioactive materials. Explosion of the released hydrogen damaged three reactor buildings and impeded onsite emergency response efforts. The accident prompted widespread evacuations of local populations, large economic losses, and the eventual shutdown of all nuclear power plants in Japan. Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants is a study of the Fukushima Daiichi accident. This report examines the causes of the crisis, the performance of safety systems at the plant, and the responses of its operators following the earthquake and tsunami. The report then considers the lessons that can be learned and their implications for U.S. safety and storage of spent nuclear fuel and high-level waste, commercial nuclear reactor safety and security regulations, and design improvements. Lessons Learned makes recommendations to improve plant systems, resources, and operator training to enable effective ad hoc responses to severe accidents. This report's recommendations to incorporate modern risk concepts into safety regulations and improve the nuclear safety culture will help the industry prepare for events that could challenge the design of plant structures and lead to a loss of critical safety functions. In providing a broad-scope, high-level examination of the accident, Lessons Learned is meant to complement earlier evaluations by industry and regulators. This in-depth review will be an essential resource for the nuclear power industry, policy makers, and anyone interested in the state of U.S. preparedness and response in the face of crisis situations.
Fukushima and Beyond Christopher Hubbard.2016-04-22 The catalyst for this study was the Fukushima-Daiichi major nuclear accident of 11 March 2011. In this event, a severe earthquake and15 metre tsunami caused serious damage and equipment failures at Japan’s Fukushima 1 Nuclear Power Plant which were judged by the International Atomic Energy Agency to be equally as serious as the Soviet Chernobyl nuclear disaster of 1986. Against a background of nuclear hesitancy and reassessment, the prospect of including or excluding nuclear power in a low-carbon twenty-first century world is now increasingly critical. It is in this emerging scenario and context that this book presents a full suite of historical, contemporary and projected data. Its use of complementary and comparative country-based case studies provides ample opportunity for developing strongly illustrative analysis of policy effectiveness in diverse polities and markets. In this way, it combines clear, comprehensive and rigorously science-based evidence, analysis and interpretation of data, all

leading to conclusions and policy recommendations. Furthermore, it builds an understanding of the complexities and many challenges posed by the nuclear power option.

Meltdown Yoichi Funabashi.2019-01-29 The human drama, and long-term lessons, of the Fukushima nuclear disaster The Fukushima nuclear disaster in March 2011 presented an enormous challenge even to Japan, one of the world's most advanced and organized countries. Failures at all levels—of both the government and the private sector—worsened the human and economic impact of the disaster and ensured that the consequences would continue for many years to come. Based on interviews with more than 300 government officials, power plant operators, and military personnel during the years since the disaster, Meltdown is a meticulous recounting and analysis of the human stories behind the response to the Fukushima disaster. While the people battling to deal with the crisis at the site of the power plant were risking their lives, the government at the highest levels in Tokyo was in disarray and the utility company that operated the plants seemed focused more on power struggles with the government than on dealing with the crisis. The author, one of Japan's most eminent journalists, provides an unrivaled chronological account of the immediate two weeks of human struggle to contain man-made technology that was overwhelmed by nature. Yoichi Funabashi gives insights into why Japan's decisionmaking process failed almost as dramatically as had the Fukushima nuclear reactors, which went into meltdown following a major tsunami. Funabashi uses the Fukushima experience to draw lessons on leadership, governance, disaster resilience, and crisis management—lessons that have universal application and pertinence for an increasingly technology-driven and interconnected global society.

Radiological Issues for Fukushima’s Revitalized Future Tomoyuki Takahashi.2016-01-12 This book overviews environmental issues 4 years after the Fukushima nuclear accident, covering a wide range of areas related to radiation and radioactivity. The topics discussed are necessary to make clear the relationship between the results of research and Fukushima’s revitalized future. The chapters are divided into four parts: Part 1 presents the identification of radionuclides in soil and migration of radionuclides in the terrestrial environment; Part 2 describes the safety decontamination system and treatment of radioactive waste; Part 3 explains the development of the system of measurement of environmental radiation and evaluation of external exposure; and Part 4 discusses the identification of radionuclides in farm products, control of root uptake, identification of decreasing radionuclides by food processing, and evaluation of internal exposure. Since the accident at the Tokyo Electric Power Company's Fukushima Daiichi nuclear power station in 2011, gradual steps have been taken toward environmental recovery in the area. However, there are still many issues that need to be tackled in order to achieve the full revitalization of Fukushima. These issues encompass many different disciplines such as economics, psychology, and sociology. In this kind of situation, the role of science in relation to radiation and radioactivity is especially important. This book aims to contribute to planning countermeasures against nuclear disasters in the future. It will be of particular interest to governmental officials who are engaged with the Fukushima nuclear accident; researchers, including those in international sectors, who are interested in radiological issues; and those who need comprehensive and reliable information about the Fukushima accident.

A Body in Fukushima Eiko Otake,William Johnston.2021-05-11 On March 11, 2011 the most powerful earthquakes in Japan's recorded history devastated the north east of Japan, triggering a massive tsunami with waves as high as 130 feet and traveled as far as six miles inland. As a result, three reactors in the Fukushima Daiichi Nuclear Power Plant complex experienced level seven meltdowns. The triple disaster, known as 3.11, had 15,899 confirmed deaths with 3529 people still missing. On five separate journeys, Japanese-born performer and dancer Eiko Otake and historian and photographer William Johnston, visited multiple locations across the Fukushima prefecture. The powerful photographs, selected from tens of thousands that Otake and Johnston created, document the irradiated landscape and how Eiko placed her lone body in those spaces. Each photograph is a performance across time and space, rewarding a viewer's intent gaze. The book includes essays and commentary reflecting on art, disaster, grief, and violated dignity of an irradiated Fukushima.

The Fukushima Effect Richard Hindmarsh,Rebecca Priestley.2015-12-07 The Fukushima Effect offers a range of scholarly perspectives on the international effect of the Fukushima Daiichi nuclear meltdown four years out from the disaster. Grounded in the field of science, technology and society (STS) studies, a leading cast of international scholars from the Asia-Pacific, Europe, and the United States examine the extent and scope of the Fukushima effect. The authors each focus on one country or group of countries, and pay particular attention to national histories, debates and policy responses on nuclear power development covering such topics as safety of nuclear energy, radiation risk, nuclear waste management, development of nuclear energy, anti-nuclear protest movements, nuclear power representations, and media representations of the effect. The countries featured include well established ‘nuclear nations’, emergent nuclear nations and non-nuclear nations to offer a range of contrasting perspectives. This volume will add significantly to the ongoing international debate on the Fukushima disaster and will interest academics, policy-makers, energy pundits, public interest organizations, citizens and students engaged variously with the Fukushima disaster itself, disaster management, political science, environmental/energy policy and risk, public health, sociology, public participation, civil society activism, new media, sustainability, and technology governance.

Environmental Contamination from the Fukushima Nuclear Disaster Teruyuki Nakajima,Toshimasa Ohara,Mitsuo Uematsu,Yuichi Onda.2019-08-15 Unique summary of the environmental impact of the 2011 disaster at the Fukushima Daiichi Nuclear Power Station, for researchers, nuclear engineers and policymakers.

Fukushima David Lochbaum,Edwin Lyman.2015-02-10 “A gripping, suspenseful page-turner” (Kirkus Reviews) with a “fast-paced, detailed narrative that moves like a thriller” (International Business Times), Fukushima teams two leading experts from the Union of Concerned Scientists, David Lochbaum and Edwin Lyman, with award-winning journalist Susan Q. Stranahan to give us the first definitive account of the 2011 disaster that led to the worst nuclear catastrophe since Chernobyl. Four years have passed since the day the world watched in horror as an earthquake large enough to shift the Earth's axis by several inches sent a massive tsunami toward the Japanese coast and Fukushima Daiichi nuclear power plant, causing the reactors' safety systems to fail and explosions to reduce concrete and steel buildings to rubble. Even as the consequences of the 2011 disaster continue to exact their terrible price on the people of Japan and on the world, Fukushima addresses the grim questions at the heart of the nuclear debate: could a similar catastrophe happen again, and—most important of all—how can such a crisis be averted?

Agricultural Implications of the Fukushima Nuclear Accident Tomoko M. Nakanishi,Keitaro Tanoi.2013-03-15 Following the Fukushima nuclear accident, a large volume of monitoring data has been collected about the soil, air, dust, and seawater, along with data about an immense number of foods supplied to the market. Little is known, however, about the effect of radioactive fallout on agriculture, information about which is vital. Although more than 80% of the damaged area is related to agriculture, in situ information specifically for agriculture is scarce. This book provides data about the actual movement and accumulation of radioactivity in the ecological system—for example, whether debris deposited on mountains can be a cause of secondary contamination, under what conditions plants accumulate radioactive cesium in their edible parts, and how radioactivity is transferred from hay to milk. Because agriculture is so closely related to nature, many specialists with different areas of expertise must be involved in answering these questions. In the case of rice, researchers in rice cultivation as well as in soil, hydrology, and radioactivity measurement are working together to reveal the paths or accumulation of radioactivity in the field. For this purpose, the Graduate School of Agricultural and Life Sciences of The University of Tokyo has diverse facilities available throughout Japan, including farmlands, forests, and meadowlands. Many academic staff members have formed groups to conduct on-site research, with more than 40 volunteers participating. This book presents the data collected from the only project being systematically carried out across Japan after the Fukushima accident.

Legacies of Fukushima Kyle Cleveland,Scott Gabriel Knowles,Ryuma Shineha.2021-04-02 It was an unlikely convergence of events. A 9.0 magnitude earthquake, the largest in Japanese memory and the fourth largest recorded in world history; a tsunami that peaked at forty meters, devastating the seaboard of northeastern Japan; three reactors in meltdown at the Daiichi nuclear power plant in Fukushima; experts in disarray and suffering victims young and old. It was, as well, an unlikely convergence of legacies. Submerged traumas resurfaced and communities long accustomed to living quietly with hazards suddenly were heard. New legacies of disaster were handed down, unfolding slowly for generations to come. The defining disaster of contemporary Japanese history still goes by many different names: The Great East Japan Earthquake; the 2011 Tōhoku Earthquake and Tsunami; the Fukushima Daiichi Nuclear Disaster; the 3.11 Triple Disaster. Each name represents a struggle to place the disaster on a map and fix a date to a timeline. But within each of these names

hides a combination of disasters and legacies that converged on March 11, 2011, before veering away in all directions: to the past, to the future, across a nation, and around the world. Which pathways from the past will continue, which pathways ended with 3.11, and how are these legacies entangled? Legacies of Fukushima places these questions front and center. The authors collected here contextualize 3.11 as a disaster with a long period of premonition and an uncertain future. The volume employs a critical disaster studies approach, and the authors are drawn from the realms of journalism and academia, science policy and citizen science, activism and governance—and they come from East Asia, America, and Europe. 3.11 is a Japanese legacy with global impact, and the authors and their methods reflect this diversity of experience. Contributors: Sean Bonner, Azby Brown, Kyle Cleveland, Martin Fackler, Robert Jacobs, Paul Jobin, Kohta Juraku, Tatsuhiro Kamisato, Jeff Kingston, William J. Kinsella, Scott Gabriel Knowles, Robert Jay Lifton, Luis Felipe R. Murillo, Başak Saraç-Lesavre, Sonja D. Schmid, Ryuma Shineha, James Simms, Tatsujiro Suzuki, Ekou Yagi.

The Fukushima Daiichi Nuclear Power Station Disaster Mindy Kay Bricker.2014 Following the disaster at the, the public is showing increased interest in nuclear safety. This important book is based on an independent report on the Fukushima Daiichi nuclear power plant disater in Japan in March 2011. The overall goal is to provide a factual assessment of the nuclear power industry, as well as to raise questions about safety and security.

Meltdown: Earthquake, Tsunami, and Nuclear Disaster in Fukushima Deirdre Langeland.2021-02-23 Deirdre Langeland's Meltdown explores for middle grade readers the harrowing story of the deadly earthquake, tsunami, and nuclear meltdown that caused the 2011 Fukushima power plant disaster On March 11, 2011, the largest earthquake ever measured in Japan occurred off the northeast coast. It triggered a tsunami with a wall of water 128 feet high. The tsunami damaged the nuclear power plant in Fukushima triggering the nightmare scenario--a nuclear meltdown. For six days, employees at the plant worked to contain the meltdown and disaster workers scoured the surrounding flooded area for survivors. This book examines the science behind such a massive disaster and looks back at the people who experienced an unprecedented trifecta of destruction.

On the Brink Ryūshō Kadota.2014 March 11, 2011. The T hoku earthquake struck just before three on a Friday afternoon. Massive earthquake damage was followed by tsunami rising to heights of 40 meters that swept 10km inland, scouring the land of homes, school, communities, and people. The earthquake and tsunami alone were disasters of incredible proportion, resulting in over 15,000 deaths, over 100, 000 buildings destroyed, and economic losses estimated as high as $235 billion by the World Bank. And that was only the natural disaster. The manmade disaster began the same day, as the tsunami swept over the seawall of the Fukushima Daiichi Nuclear Power Plant, flooding the facility and destroying much of its equipment, including its onsite emergency power generators. Cut off from all external power sources, the reactors and spent fuel-rod assemblies began to overheat. Three reactors suffered meltdowns. Hydrogen gas explosions blew apart the outer containment buildings on three reactors. And the world watched as Japan struggled to bring the situation under control before the worst scenario came to pass. Despite further natural and manmade obstacles, the men and women at the plant succeeded in their efforts, gradually bringing the reactors under control, restoring power, and edging back, one inch at a time, from the very brink of disaster. This is their story, based on extensive interviews with the people who fought and won that battle, and especially with Masao Yoshida, the man who drove them all to get the job done. Here at last is the inside story of what they faced, what resources and information they had to work with, and why they made the decisions they did.

Melting Sun: The History of Nuclear Power in Japan and the Disaster at Fukushima Daiichi Andrew Leatherbarrow.2022-02-10 Almost 24 hours to the minute since the tsunami hit Fukushima Daiichi, Unit 1 exploded. The building wrenched apart, sending shards of irradiated concrete and metal knifing through the air in all directions. The reactor's massive heavy-duty gantry crane bent like a twig and collapsed onto the refuelling floor control room, crushing everything that wasn't expelled in the blast. Outside, chunks of debris rained down on the fire crew, injuring five and shredding the hoses they had just laid. Among the injured was the plant's own fire chief, whose arm snapped when a piece of steel hurtled through the window. In March 2011, a 15-metre tsunami wiped out long stretches of Japanese coastline, killing thousands. Flooded cooling systems at the Fukushima Daiichi nuclear power plant failed as hundreds of men and women battled to save three reactors from destruction in what became the most expensive industrial accident of all time. Melting Sun spans 150 years of little-known history to retell how Japan evolved from the first victim of atomic energy to its most passionate supporter. It is a story of innovation and determination, but also of collusion, deception, overconfidence, failure and, ultimately, death. From a nuclear ship stranded at sea after leaking radiation on its maiden voyage, to the unimaginable final days of two men treated for extreme over-exposure, to Fukushima itself - the only accident comparable with the infamous Chernobyl disaster.

Radiation Monitoring and Dose Estimation of the Fukushima Nuclear Accident Sentaro Takahashi.2014-02-07 This book provides comprehensive research findings related to the environmental monitoring of radiation, levels of radioactive nuclides in various environments and dose estimation in residents after the Fukushima nuclear power plant accident caused severe environmental contamination with radioactive nuclides. At the beginning of the book, a technical review written by a leading researcher of nuclear reactor technology explains what happened at the power plant. The review is followed by a commentary from a former member of the International Commission on Radiological Protection, providing the reader with easily understandable information about the concept of radiation dosage. In the main part of the book, a series of scientific reports presents valuable data on the radiation surveys of the environment, environmental radioactivity, transfer models and parameters of radioactive nuclides and dose assessment among residents. These reports present a wide range of findings from the research carried out in a variety of activities by large governmental organizations as well as by small private groups and individuals. The reader thus will find a large collection of valuable and interesting data related to the environmental contamination by radioactive nuclides after the Fukushima accident. Although earlier reports on this issue have been made public, this book is the only publication to fully depict the actual situation by providing comprehensive data obtained by diverse organizations and individuals.

Beyond Fukushima Kōichi Hasegawa.2015 'It finally dawned on us. The government was unreliable. Politicians and bureaucrats were unreliable. The media was untrustworthy. The brutal reality hit us that we had to protect ourselves ... otherwise bury our heads in the sand and give up althogether.' Written in the immediate aftermath of the Great East Japan Earthquake and accident at the Fukushima Daiichi Nuclear Power Station of March 2011, Koichi Hasegawa presents a compelling account of the events of 3/11 against the backdrop of the history and geopolitics of the nuclear industry worldwide. He argues passionately for denuclearization and is highly critical of the Japanese Governmnet in terms of its response to the Fukushima nuclear disaster.--Back cover.

A Study of the Fukushima Daiichi Nuclear Accident Process Michio Ishikawa.2015-08-12 Written by an expert in the field, this book is perfect for those who would like to know what happened at the Fukushima Daiichi Nuclear Power Plant. Part 1 of the book studies how core melts occurred in Fukushima Daiichi units 1, 2, and 3, respectively, based on evidence from the Three-Mile Island core melt accident and fuel behavior experiments performed in the 1970s under the cooperation between the United States, Germany, and Japan. This information explains the accident processes without contradicting data from Fukushima, which was published in the TEPCO report. The hydrogen explosions in units 1, 3, and 4 are also explained logically in conjunction with the above core melt process. Part 2 clarifies how the background radiation level of the site doubled: The first rise was just a leak from small openings in units 1 and 3 associated with fire-pump connection work. The second rise led to direct radioactive material release from unit 2. Evacuation dose adequacy and its timing are discussed with reference to the accident process, and the necessity for embankments surrounding nuclear power plants to increase protection against natural disasters is also discussed. New proposals for safety design and emergency preparedness are suggested based on lessons learned from the accident as well as from new experiences. Finally, a concept for decommissioning the Fukushima site and a recovery plan are introduced.

The Fukushima Daiichi Nuclear Accident Atomic Energy Society of Japan.2014-10-16 The Magnitude 9 Great East Japan Earthquake on March 11, 2011, followed by a massive tsunami struck TEPCO’s Fukushima

Daiichi Nuclear Power Station and triggered an unprecedented core melt/severe accident in Units 1 – 3. The radioactivity release led to the evacuation of local residents, many of whom still have not been able to return to their homes. As a group of nuclear experts, the Atomic Energy Society of Japan established the Investigation Committee on the Nuclear Accident at the Fukushima Daiichi Nuclear Power Station, to investigate and analyze the accident from scientific and technical perspectives for clarifying the underlying and fundamental causes, and to make recommendations. The results of the investigation by the AESJ Investigation Committee has been compiled herewith as the Final Report. Direct contributing factors of the catastrophic nuclear incident at Fukushima Daiichi NPP initiated by an unprecedented massive earthquake/ tsunami – inadequacies in tsunami measures, severe accident management, emergency response, accident recovery and mitigations – and the underlying factors - organizational issues, etc., have been clarified and recommendations in the following areas have been made. - Nuclear safety fundamentals - Direct factors of the accident - Organizational aspects - Common items (R&D, International cooperation, human resources management) - Post-accident management/recovery from the accident.

The Fukushima Daiichi Nuclear Power Station Disaster The Independent Investigation on the Fukushima Nuclear Accident.2014-03-05 When the Nuclear Safety Commission in Japan reviewed safety-design guidelines for nuclear plants in 1990, the regulatory agency explicitly ruled out the need to consider prolonged AC power loss. In other words, nothing like the catastrophe at the Fukushima Daiichi Nuclear Power Station was possible—no tsunami of 45 feet could swamp a nuclear power station and knock out its emergency systems. No blackout could last for days. No triple meltdown could occur. Nothing like this could ever happen. Until it did—over the course of a week in March 2011. In this volume and in gripping detail, the Independent Investigation Commission on the Fukushima Nuclear Accident, a civilian-led group, presents a thorough and powerful account of what happened within hours and days after this nuclear disaster, the second worst in history. It documents the findings of a working group of more than thirty people, including natural scientists and engineers, social scientists and researchers, business people, lawyers, and journalists, who researched this crisis involving multiple simultaneous dangers. They conducted over 300 investigative interviews to collect testimony from relevant individuals. The responsibility of this committee was to act as an external ombudsman, summarizing its conclusions in the form of an original report, published in Japanese in February 2012. This has now been substantially rewritten and revised for this English-language edition. The work reveals the truth behind the tragic saga of the multiple catastrophic accidents at the Fukushima Daiichi Nuclear Power Station.It serves as a valuable and essential historical reference, which will help to inform and guide future nuclear safety and policy in both Japan and internationally.

My Nuclear Nightmare Naoto Kan.2017-01-10 Naoto Kan, who was prime minister of Japan when the March 2011 Fukushima nuclear disaster began, has become a ubiquitous and compelling voice for the global antinuclear movement. Kan compared the potential worst-case devastation that could be caused by a nuclear power plant meltdown as tantamount only to 'a great world war. Nothing else has the same impact.' Japan escaped such a dire fate during the Fukushima disaster, said Kan, only ‘due to luck.’ Even so, Kan had to make some steely-nerved decisions that necessitated putting all emotion aside. In a now famous phone call from Tepco, when the company asked to pull all their personnel from the out-of-control Fukushima site for their own safety, Kan told them no. The workforce must stay. The few would need to make the sacrifice to save the many. Kan knew that abandoning the Fukushima Daiichi site would cause radiation levels in the surrounding environment to soar. His insistence that the Tepco workforce remain at Fukushima was perhaps one of the most unsung moments of heroism in the whole sorry saga.—The Ecologist On March 11, 2011, a massive undersea earthquake off Japan’s coast triggered devastating tsunami waves that in turn caused meltdowns at three reactors in the Fukushima Daiichi Nuclear Power Plant. Ranked with Chernobyl as the worst nuclear disaster in history, Fukushima will have lasting consequences for generations. Until 3.11, Japan’s Prime Minister, Naoto Kan, had supported the use of nuclear power. His position would undergo a radical change, however, as Kan watched the nuclear disaster at the Fukushima No. 1 Power Plant unfold and came to understand the potential for the physical, economic, and political destruction of Japan.In My Nuclear Nightmare, Kan offers a fascinating day-by-day account of his actions in the harrowing week after the earthquake struck. He records the anguished decisions he had to make as the scale of destruction became clear and the threat of nuclear catastrophe loomed ever larger—decisions made on the basis of information that was often unreliable. For example, frustrated by the lack of clarity from the executives at Tepco, the company that owned the power plant, Kan decided to visit Fukushima himself, despite the risks, so he could talk to the plant’s manager and find out what was really happening on the ground. As he details, a combination of extremely good fortune and hard work just barely prevented a total meltdown of all of Fukushima’s reactor units, which would have necessitated the evacuation of the thirty million residents of the greater Tokyo metropolitan area.In the book, first published in Japan in 2012, Kan also explains his opposition to nuclear power: I came to understand that a nuclear accident carried with it a risk so large that it could lead to the collapse of a country. When Kan was pressured by the opposition to step down as prime minister in August 2011, he agreed to do so only after legislation had been passed to encourage investments in alternative energy. As both a document of crisis management during an almost unimaginable disaster and a cogent argument about the dangers of nuclear power, My Nuclear Nightmare is essential reading.

Impacts of the Fukushima Nuclear Accident on Fish and Fishing Grounds Kaoru Nakata,Hiroya Sugisaki.2015-07-10 This book presents the results from the Japanese Fisheries Research Agency’s 3-year intensive monitoring of radionuclides in a variety of fish, plankton, benthos, and their living environments after the Fukushima Daiichi Nuclear Power Plant (FNPP) accident in March 2011. The book reveals the dynamics of contamination processes in marine and freshwater fish, mediated by the contamination of water, sediments, and food organisms; it also clarifies the mechanisms by which large variations in the level of contamination occurs among individual fish. Most importantly, the book includes a large amount of original measurement data collected in situ and for the first time assesses diffusion of radiocesium across the Pacific using both in situ data and a numerical simulation model. Also introduced are several new approaches to evaluate the impact of the release of radionuclides, including the measurement of radiation emission from an otolith section to identify the main period of contamination in fish. The FNPP accident represents a rare instance where the environmental radioactivity level was elevated steeply through atmospheric fallout and direct discharge of radioactive water into the sea over a short period of time. Replete with precise scientific data, this book will serve as an important resource for research in fields such as fishery science, oceanography, ecology, and environmentology, and also as a solid basis for protecting fisheries from damage resulting from harmful rumors among the general public.

Health Effects of the Fukushima Nuclear Disaster Kenji Kamiya,Hitoshi Ohto,Masaharu Maeda.2022-04-30 Health Effects of the Fukushima Nuclear Disaster provides a multidisciplinary retrospective on the health consequences on the population the first decade after the Fukushima nuclear disaster. Sections 1 and 2 of the book begins with an introduction and an overview of the developments surrounding the Fukushima accident. Section 3 discusses topics such as the physical health impact of radiation exposure as well as diseases that resulted from long-term evacuation. Section 4 examines the psychological factors and the social impact of the disaster and how their combined influence affected the physical and mental wellness of the population. The book concludes with Section 5 which covers the mitigation strategy for treatment and care of psychological health issues resulting from the disaster. The book contains expert contributions from those who have first-hand experience in the recovery efforts and are still actively researching the impact of the disaster. Health Effects of the Fukushima Nuclear Disaster provides readers with a coherent, multi-dimensional narrative about the physical, psychosocial, and psychological aspects of the decade-long aftermath of the Fukushima nuclear disaster. Provides information based on evidence obtained through scientific methods such as long-term epidemiological surveys and case studies Examines the indirect health impact, especially psychosocial effects, caused by technological disasters like nuclear accidents Includes contributions from experts in the field who participated in the recovery efforts and are currently researching the health impact of the Fukushima disaster

Mental Health and Social Issues Following a Nuclear Accident Jun Shigemura,Rethy Kieth Chhem.2015-11-25 This book focuses on mental health issues arising in the wake of the Fukushima nuclear disaster. Three years after the 11 March 2011 Great East Japan Earthquake, tsunamis, and Fukushima Daiichi nuclear accident, roughly 130,000 individuals continue to face enormous burdens as a result of mandatory evacuation.

Many evacuees still live in temporary housing, and returning home remains a distant dream as they wait for the decontamination of the danger zone to be completed. However, the plant recovery process is still evolving, and the complete cleanup will take decades. Beyond all of these hardships, many evacuees are also mourning the loss of their loved ones. The compound disaster with its many uncertainties poses and will continue to pose serious emotional and social challenges. People affected by the nuclear disaster have been facing serious psychological challenges from ongoing fear of radiation exposure. Furthermore, there is continuing debate between various stakeholders on the options for disaster responses. This situation in turn produces adverse public responses, such as discrimination and stigmatization of the evacuees and scapegoating of the authorities and nuclear plant workers. Mental Health and Social Issues Following a Nuclear Accident addresses these issues and their impacts, pursuing both evidence-based and narrative-based approaches. It also contrasts the Fukushima findings with those of other nuclear disasters, namely, Three Mile Island and Cher nobyl.

The Fukushima Nuclear Power Plant Disaster and the Future of Renewable Energy Naoto Kan.2018-01-15 In a speech delivered in Japanese at Cornell University, Naoto Kan describes the harrowing days after a cataclysmic earthquake and tsunami led to the meltdown of three reactors at the Fukushima Daiichi Nuclear Power Plant. In vivid language, he tells how he struggled with the possibility that tens of millions of people would need to be evacuated. Cornell Global Perspectives is an imprint of Cornell University's Mario Einaudi Center for International Studies. The works examine critical global challenges, often from an interdisciplinary perspective, and are intended for a non-specialist audience. The Distinguished Speaker series presents edited transcripts of talks delivered at Cornell, both in the original language and in translation.

Low-Dose Radiation Effects on Animals and Ecosystems Manabu Fukumoto.2019-11-14 This open access book summarizes the latest scientific findings regarding the biological effects of the Fukushima Daiichi Nuclear Power Plant (FNPP) accident in 2011. Various cases of changes in animals and organisms have been reported since the FNPP accident. However, it is often unknown whether they are actually due to radiation, since the dose or dose-rate are not necessarily associated with the changes observed. This book brings together the works of radiation biologists and ecologists to provide reliable radioecology data and gives insight into future radioprotection. The book examines the environmental pollution and radiation exposure, and contains valuable data from abandoned livestock in the ex-evacuation zone and from wild animals including invertebrates and vertebrates, aqueous and terrestrial animals, and plants that are subjected to long-term exposure in the area still affected by radiation. It also analyzes dose evaluation, and offers new perspectives gained from the accident, as well as an overview for future studies to promote radioprotection of humans and the ecosystem. Since the biological impact of radiation is influenced by various factors, it is difficult to scientifically define the effects of low-dose/low-dose-rate radiation. However, the detailed research data presented can be combined with the latest scientific and technological advances, such as artificial intelligence, to provide new insights in the future. This book is a unique and valuable resource for researchers, professionals and anyone interested in the impact of exposure to radiation or contamination with radioactive materials.

The Fukushima Daiichi Nuclear Power Station Disaster Independent Investigation Commission on the Fukushima Nuclear Accident.2014-01-01 When the Nuclear Safety Commission in Japan reviewed safety-design guidelines for nuclear plants in 1990, the regulatory agency explicitly ruled out the need to consider prolonged AC power loss. In other words, nothing like the catastrophe at the Fukushima Daiichi Nuclear Power Station was possible--no tsunami of 45 feet could swamp a nuclear power station and knock out its emergency systems. No blackout could last for days. No triple meltdown could occur. Nothing like this could ever happen. Until it did--over the course of a week in March 2011. In this volume and in gripping detail, the Independent Investigation Commission on the Fukushima Nuclear Accident, a civilian-led group, presents a thorough and powerful account of what happened within hours and days after this nuclear disaster, the second worst in history. It documents the findings of a working group of more than thirty people, including natural scientists and engineers, social scientists and researchers, business people, lawyers, and journalists, who researched this crisis involving multiple simultaneous dangers. They conducted over 300 investigative interviews to collect testimony from relevant individuals. The responsibility of this committee was to act as an external ombudsman, summarizing its conclusions in the form of an original report, published in Japanese in February 2012. This has now been substantially rewritten and revised for this English-language edition. The work reveals the truth behind the tragic saga of the multiple catastrophic accidents at the Fukushima Daiichi Nuclear Power Station.It serves as a valuable and essential historical reference, which will help to inform and guide future nuclear safety and policy in both Japan and internationally.

Fukushima Disaster Danielle Smith-Llera.2018-01-01 A massive tsunami caused by the strongest earthquake to ever hit Japan triggered the world's worst nuclear crisis since the Chernobyl accident 25 years earlier. The monster waves that crashed into the Fukushima Daiichi nuclear plant in March 2011 killed 15,000 people and caused nuclear reactor meltdowns that threatened the lives of thousands more. The waves receded long ago, but the devastating effects of the nuclear accident still linger.

The Fukushima Daiichi Accident International Atomic Energy Agency.2015 Consists of a Report by the IAEA Director General and five technical volumes. This publication provides a description of the accident and its causes, evolution and consequences, based on the evaluation of data and information from a large number of sources available at the time of writing.

Unravelling the Fukushima Disaster Mitsuo Yamakawa,Daisaku Yamamoto.2016-11-10 The Fukushima disaster continues to appear in national newspapers when there is another leakage of radiation-contaminated water, evacuation designations are changed, or major compensation issues arise and so remains far from over. However, after five years, attention and research towards the disaster seems to have waned despite the extent and significance of the disaster that remains. The aftermath of Fukushima exposed a number of shortcomings in nuclear energy policy and disaster preparedness. This book gives an account of the municipal responses, citizen's responses, and coping attempts, before, during, and after the Fukushima crisis. It focuses on the background of the Fukushima disaster, from the Tohoku earthquake to diffusion on radioactive material and risk miscommunication. It explores the processes and politics of radiation contamination, and the conditions and challenges that the disaster evacuees have faced, reflecting on the evacuation process, evacuation zoning, and hope in a post-Fukushima environment. The book will be of great interest to students and scholars of disaster management studies and nuclear policy.

Station Blackout Charles A. Casto.2018-12-04 The nuclear safety expert shares a gripping, blow-by-blow account of how he led the response to the 2011 nuclear disaster in Fukushima, Japan. On March 11, 2011, fifty minutes after a magnitude 9.0 earthquake hit eastern Japan, a forty-five-foot high tsunami engulfed the nuclear power plant known as Fukushima Daiichi, knocking out electrical power and all the reactors' safety systems. Three reactor cores experienced meltdowns in the first three days, leading to an unimaginable nuclear disaster. The Tokyo Electric Power Company called Dr. Chuck Casto for help. In Station Blackout, Casto, the foremost authority on responding to nuclear disasters, shares his first-hand account of how he led the collaborative team of Japanese and American experts who faced the challenges of Fukushima. A lifetime of working in the nuclear industry prepared him to manage an extreme crisis, lessons that apply to any crisis situation.

Rebuilding Fukushima Mitsuo Yamakawa,Daisaku Yamamoto.2017-01-20 Five years after the one of the worst nuclear accidents in history, Fukushima now only occasionally headlines national and international media. However, the disaster is far from over, as evidenced by a hundred thousand people from Fukushima still in the state of evacuation, rising levels of radiation in streams and rivers, and failing attempts to control the leakage of radioactive materials at the Fukushima Daiichi Nuclear Power Plant. Despite these dismal conditions, efforts to recover and rebuild livelihoods in the afflicted regions of Fukushima did start immediately after the outset of the accident. Rebuilding Fukushima gives an account of how citizens, local governments, and businesses responded to and coped with the crisis of Fukushima. It addresses principles to guide reconstruction and international policy environments in which the current disaster is situated. It explores how reconstruction is articulated and experienced at different spatial scales, ranging from individuals to communities and municipalities, and details recovery efforts, achievements, and challenges in the realms of public transportation, agriculture and food production, manufacturing industries, retail sectors, and renewable-energy industries. This book also critically investigates the nature of the current reconstruction policy schemes, and seeks to articulate what may be required in order to achieve more sustainable and equitable (re)development in afflicted regions and other nuclear host regions. Drawing on extensive fieldwork and local surveys, this volume is one of the first books in English that captures the knowledge and insights

of native Japanese social scientists who dealt with the complexities of nuclear disaster on a day-to-day basis. It will be of great interest to students and scholars of disaster-management studies and nuclear policy.
Radiation Disaster Medicine Koichi Tanigawa,Rethy Kieth Chhem.2013-12-02 While many books are available on disaster medicine, none is specifically devoted to the role of physicians in the management of patients exposed to radiation leakage from a damaged nuclear power plant. Radiation Disaster Medicine aims to fill this void based on the response to the Fukushima nuclear accident. Each chapter addresses principles and practices of radiation medicine within the specific context of that accident. Topics covered include the role of physicians in radiation disasters, the concepts of external and internal exposure, prehospital and hospital response, disaster behavioral health, and radiation emergency response from the perspective of national and international institutions. Most of the contributors are active educators and researchers in radiation medicine with first-hand experience in dealing with prehospital triage and management of patients within secondary and tertiary care hospitals in Japan.
Nuclear Meltdown, USA Chanan Tigay.2012-03-11 Sitting near four significant fault lines on the coastline of California, Diablo Canyon is just one of 65 nuclear power plants in the United States. After the nuclear meltdown in Fukushima, Japan, Americans are now asking, Could it happen here? This e-book original, based on an in-depth investigation commissioned exclusively for Prevention magazine by the award-winning photojournalist team of Chanan Tigay and Colin Finlay, explores the risks--to our planet and ourselves--of the plant and its impact on the people who live and work in the happiest place in America.
Fukushima D. Elliott.2012-10-30 The Fukushima nuclear disaster in March 2011 led Japan, and many other countries, to change their energy policies. David Elliott reviews the disaster and its global implications, asking whether, despite continued backing by some governments, the growing opposition to nuclear power means the end of the global nuclear renaissance.
Nuclear Power Plant Emergencies in the USA Dean Kyne.2017-01-28 Managing nuclear power emergencies is significantly different from managing other types of emergencies, including fire, flood, and other disasters because nuclear disaster management requires special technical skills and a rigid protocol which outlines detailed steps and procedure before an evacuation announcement could be made. It was evident that the impacts from a nuclear power core-meltdown accident were immerse, irreversible, and inevitable, as evident by evaluating the three historic core-meltdown accidents, namely Three Mile Island in 1997, Chernobyl in 1986, and Fukushima Daiichi in 2011. The three options for minimizing the risks associated with NPPs are suggesting elimination of all NPPs in operation in the United States, transforming inevitable risks to evitable risks, and transforming the current radiological plan into an effective emergency management plan. Being the latter option is the only viable one, this book provides a comprehensive understanding on effectively managing nuclear power emergencies in the U.S. The book presents detailed analysis on effectively managing nuclear power emergencies. In an attempt to illustrate minimizing the risks, factual answers to the key questions surrounding managing nuclear disasters are outlined. What are the risks associated with the nuclear power plants (NPP)? What are the problems associated with managing nuclear power core-meltdown accidents in the three historic accidents? Where are the geographical locations of the 99 commercial reactors in the U.S? Who are those exposed to potential risks associated with the NPPs? How could a projection of radioactive plume dispersion pathway be carried out using a spatial computer code, such as the Radiological Assessment Systems for Consequence Analysis (RASCAL) in case of a core-meltdown accident? Where would the radioactive plume go given weather conditions? Who are more likely to be exposed to the high level radiation dose during the core-meltdown accident? What are the issues with the current radiological emergency plan?
Impacts of Fukushima Nuclear Accident on Freshwater Environments Seiya Nagao.2021-11-16 This book examines the impacts of radionuclides released from the 2011 Fukushima Daiichi Nuclear Power Plant (FDNPP) accident on inland aquatic environments. The focus is on the dynamics of radiocesium in inland aquatic environments. The book comprises three parts: migration behavior of radiocesium in river and lake environment, accumulation of radiocesium into organisms in freshwater, and integrated environmental analysis in a lake system and a forest-freshwater system. Many studies on the dynamics of radionuclides have been published after the FDNPP accident, especially of radiocesium (134Cs 137Cs) in land and marine environment. The key features of this book are the new data of freshwater environment including transport of radionuclides in river and lake watershed, and accumulation of radiocesium in freshwater fishes and insects. Another feature of this book is that it summarizes the dataset of a model lake, Lake Akagi-Onuma, from geochemical and biological approaches. Readers will learn the actual dispersion behavior of radionuclides released from the Fukushima accident and their impacts on freshwater environments since the accident in 2011. The book presents valuable information for assessing the impacts of the FDNPP accident on ecosystem and human health, which are also useful in developing countermeasures for similar accidents and environmental contaminations.

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