

# Nuclear Power in Japan

## Part I

### The Fukushima Nuclear Crisis

September 17, 2021

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## Crisis Situation

### How the first 24 hours shaped Fukushima nuclear crisis

July, 2011

The first news was good. All three working reactors automatically came to an emergency shutdown when the shaking began. Within one minute, all control rods were inserted properly into the cores, stopping the nuclear reactions.

What came next changed everything.

The first wave hit the plant at 3:27 p.m. At 4 meters, it was easily blocked by the plant's breakwater, which stands 10 meters above sea level.

But the one that struck eight minutes later was off the scale. It flowed up and over the barrier, washed over a 10-meter water tank and tossed cars this way and that. Watermarks suggest the wave may have been as high as 15 meters.

Team A watched, horrified, as the plant deteriorated by the minute. A detailed operator's log, along with a handwritten timeline on the control room whiteboard, showed how quickly the units failed.

A scribbled notation said: "15"37' D/G 1B trip," indicating the unit 1 diesel generator went out. It was 3:37 p.m., just two minutes after the second wave had struck.

Then: "SBO." Station Blackout. The power was out.

Four minutes later, at 3:41 p.m., unit 2 lost power. Minutes after that, key instrument readings stopped.

In the dark, workers found a main power switchboard had been submerged and a main power line brought down by a mudslide. The basement of the unit 1 turbine building was filled with water. Two workers would later be found drowned in the basement of another turbine room.

Exactly what was happening inside the reactors remained a mystery. At 3:50 p.m., Team A wrote: "Water levels unknown." If not replenished, the water in the core would boil away and the rods would melt.

Two minutes later, Team A added an even more dire note on unit 2: "ECCS injection not possible." The emergency core cooling system, the last-ditch backup to keep the core from going dry, was down.

At about 5 p.m. TEPCO ordered power-source trucks to head to the plant from its branches nearby. However, the trucks were unable to make progress due to road damage and traffic jams.

TEPCO requested neighboring Tohoku Electric Power Co. to send some trucks. The Tohoku Electric trucks did not arrive at the plant until about 11 p.m., but faced with the dark, pools of tsunami water, missing manhole covers on the road, and debris everywhere hindering

progress, workers found hooking up the necessary power cables extremely difficult. Power was finally restored to the plant at about 3 p.m., but at 3:36 p.m. a massive hydrogen explosion in the No.1 reactor building destroyed the newly laid cables, cutting power once more.

By late afternoon, unit 1, with its power and cooling systems down, was spiraling out of control.

The heat from decaying radioactive elements in the fuel rods was growing. As the core overheated, it burned off its coolant water, exposing the 4-meter rods. In turn, steam from the evaporated water was building up inside the containment chamber.

As the heat and pressure rose, the uranium pellets inside the rods melted through their zirconium casings. When the zirconium reached 1,200 degrees, it reacted with the water, producing hydrogen.

This was obviously going to get worse before it got better.

Yukio Edano, the chief Cabinet secretary, is the face of the government. At 7:45 p.m., his job was to make an unprecedented statement to the nation — but make it sound routine and reassuring. "We have declared a nuclear emergency," he said from behind a podium in the news conference room at the prime minister's office. "Let me repeat that there is no radiation leak, nor will there be a leak."

He was wrong. Recently released Tepco documents reveal that radiation was detected at the plant perimeter at 5:30 p.m., but the utility apparently didn't fax those readings to the government until shortly after 9 p.m.

In the meantime, a 3-km evacuation zone around the plant was established. That later would become 10 km, then 20 km. In the end, more than 80,000 people would be forced to flee.

Fukushima No. 1's operators, meanwhile, were faced with a twofold response: Vent and flood. Venting to release pressure and prevent an explosion, flooding to keep things cool.

But venting would release radioactivity into the air. And flooding with seawater would ruin the equipment because of the salt.

Around 9 p.m., less than six hours after the tsunami, officials at the prime minister's office started to press Tepco to vent. Tepco hesitated.

Fukushima No. 1 was the utility's golden goose. Designed primarily by General Electric, it went online in 1971 and had kept the lights shining in Tokyo ever since. Unlike newer facilities, it was paid for, and it was generating profits with each megawatt it produced.

Tepco knew that venting radioactivity would cast doubt on the safety of the nuclear industry around the nation, and the world. But the options were dwindling.

The outage of primary and backup power — a scenario that exceeded planners' precautions — was severely hampering operations.

At 3:05 a.m., Minister of Economy, Trade and Industry Banri Kaieda trotted out Tepco executive Akio Komori for a public announcement of the plan to vent the unit 1 containment vessel. Seven minutes later, Edano took to the podium, this time to warn the public that the action would entail the release of radioactive isotopes. Again, he urged calm.

For those who knew what was happening, the urgency was mounting. The containment chamber around the core was bulging with pressure twice as high as its maximum operational limit and nearly matching the company's required venting standard.

"We kept telling Tepco to do it quickly, asking how come it wasn't happening," Edano recalled later.

Nearly four hours after the initial announcement, an exasperated Kaieda ordered Tepco to vent. It was 6:50 a.m.

Surging radiation forced workers to abort their attempt to open the valves manually. Then they tried to open them remotely and repeatedly failed, probably because of the power outage but possibly also a design flaw. The equipment had never been used in a real-world crisis.

Unit 1 was a ticking time bomb.

The TEPCO head office was supposed to back up Masao Yoshida, chief of the Fukushima No. 1 Nuclear Power Plant at the time, and his team at the nuclear power plant but did not offer help. Instead, the TEPCO headquarters simply conveyed messages from the prime minister's office, baffling the Yoshida team.

As the night wore on, the prime minister decided he had to go to Fukushima himself, at first light. His helicopter landed at 7:11 a.m. March 12.

His aide, Shimomura, a former TV journalist, was assigned to chronicle the event. He started filming as the group boarded a minibus bound for the emergency crisis headquarters.

It looked normal enough from the outside. Inside, though, was a madhouse. Dozens of workers raced back and forth, trying not to step on about 20 others either slumped to the floor or sleeping in blankets in the hallway.

Shimomura turned off the camera. This scene would not reassure the nation, or the world.

Escorted by Tepco officials, Kan strode past men so preoccupied or tired that they didn't even acknowledge the presence of their country's leader.

Kan, known for his short temper, fired questions at plant executives and pointed at diagrams of the reactors on a sheet of paper in front of them. He yelled at Tepco Vice President Sakae Muto and plant chief Masao Yoshida, his onsite escorts, demanding to know why the venting and seawater injection were not happening.

The discussions lasted only half an hour. At 8 a.m., Kan was on his way back to Tokyo.

By then, Tepco would later acknowledge, the core at unit 1 had mostly melted, and units 2 and 3 were not far behind.

At 2:30 p.m., workers burst into applause. Vapor was rising from the unit 1 stack and containment vessel pressures fell — confirmation that the venting was working. But within half an hour, they ran out of fresh water.

This was what Tepco had dreaded.

Fukushima No. 1 was built right next to the biggest source of water on the planet — the Pacific Ocean. Pumping water out of the ocean is an absolute last resort, however. The reactors would never be usable again.

Yet again, Tepco officials waffled. At 3:36 p.m., almost 24 hours to the minute after the second tsunami hit, the hydrogen inside unit 1 combined with oxygen already there and exploded in a fiery blast that blew off the roof and sent a plume of contaminated smoke and debris into the sky.

During a meeting on the night of March 12, Kan asked Haruki Madarame, chairman of the Nuclear Safety Commission at the time, about the possibility of recriticality if seawater were pumped into the plant's No. 1 reactor. But Madarame did not give a clear-cut answer. Ichiro Takekuro, then a fellow and senior adviser to the TEPCO leadership, listened to the dialogue between Kan and Madarame and telephoned Yoshida to tell him to stop pumping seawater into the reactor. But Yoshida did not heed the advice and kept pumping seawater.

In testimony later, Yoshida said Takekuro ordered him to follow the order without question. He also recalled that he never thought of stopping pumping in the seawater.

Kan harbored a growing sense of frustration over the alleged absence of essential information from the Nuclear and Industrial Safety Agency and TEPCO headquarters.

The decision to use seawater was unavoidable.

Blasts at units 2, 3 and 4 would follow in the coming days.

<http://search.japantimes.co.jp/cgi-bin/nn20110707f1.html>

<http://mdn.mainichi.jp/mdnnews/news/20110517p2a00m0na010000c.html>

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Kimio Ikeda, a 50-year-old electrical equipment expert, and three others mustered the courage at 6 p.m. to go and assess the situation.

It was getting dark. No one had approached the area since the tsunami had hit.

As they approached the reactor 1 turbine building, they found that the big steel doors of the large equipment service entrance had been crushed by the impact of the tsunami.

Inside, the sound of dripping water echoed in the dark. All of the electrical equipment was flooded.

But there was better news at the No. 2 reactor turbine building as one power switchboard still seemed to be functioning even though there was around 5 cm of water on the floor.

The only way to restore power was to connect the surviving switchboard with mobile generators, which Tepco's head office in Tokyo was preparing to send.

Other workers were trying to create a system to cool reactors using firetrucks, but only one out of the three fire engines at the plant could be used and workers also had to work all night to remove rubble and clear the way to get the truck into position.

But by the time water-spraying operations began at the No. 1 reactor, it was already 4 a.m. March 12, about 12 hours after the plant had lost power.

"Outside, there was so much radiation. It is amazing that they were all brave enough to do this. All of them came back contaminated," recalled Hiroyuki Ogawa, the 50-year-old head of Tepco's firefighting unit.

To check the pressure inside the No. 1 reactor, a small generator used for temporary lighting was used. But workers were stunned when they found at 11:50 p.m. that the pressure of the reactor's containment vessel had surpassed the maximum allowable level.

At 11 p.m., the radiation level outside the double-entry doors of the No. 1 reactor building had reached as high as 1.2 millisieverts per hour. Hearing of the situation, plant chief Masao Yoshida quickly prohibited workers from entering it.

By the early hours of March 12, reactor operators in the main control room for reactors 1 and 2 were exhausted. Big aftershocks rattled the room from time to time.

"The pressure of the No. 1 reactor's containment vessel was rising rapidly, so there was a need to reduce the pressure before the containment vessel broke," said Mitsuyuki Ono, 51, who was helping the operators on duty. "We all knew that venting was the only way."

Since workers in the control room could no longer remotely operate valves to execute the venting due to the loss of power, somebody had to go inside the reactor building, where the radiation level was rising, to manually open the valves.

As workers had been able to confirm that the No. 2 reactor's cooling system, which Ono had activated just before the tsunami triggered the power loss, was working, the focus of attention had turned to reactor 1.

Although venting was deemed inevitable, Ikuo Izawa felt guilty when he told others in the control room that he had received instructions from the emergency response headquarters to select members to carry out the job.

"I'm sorry," the 52-year-old leader of the operators on duty said, pausing before asking, "Can anybody go? I will go first."

Venting was considered "suicidal" as it would involve a release of radioactive substances into the environment, an action that operators had been taught to avoid at all costs.

No one spoke a word — until other senior operators, who were supporting the efforts, volunteered one after the other, while telling Izawa to stay in the control room to manage the situation.

[www.japantimes.co.jp/news/2014/09/02/national/response-stymied-loss-electricity/#.VAZ\\_9Ui-8aE](http://www.japantimes.co.jp/news/2014/09/02/national/response-stymied-loss-electricity/#.VAZ_9Ui-8aE)

### Kan-do attitude averted the meltdown of Japan

January 26, 2013

February 3, 2013

“When I heard that the plant had lost all electricity after the earthquake and tsunami, and that the ability to cool down the reactors had been lost, I felt my face freeze in shock. I knew that what followed was meltdowns.”

It wasn't hard to make calculations on the scale of the potential disaster. Add to the six reactors and seven pools for spent fuel rods at the No. 1 plant the four reactors and four pools at the nearby No. 2 plant and you get a potentially lethal radiation spill of tens of times the amount emitted at Chernobyl.

“It was Tepco that, by all rights, should have had the raw data ... but no matter who I asked, no one knew who was making decisions, no one knew who was in charge. Everything was done in an atmosphere of anonymity.”

“The Nuclear and Industrial Safety Agency is responsible for dealing with nuclear accidents,” writes Naoto Kan, prime minister at the time of the disaster, “and yet they could give me nothing in the way of explanation or an estimation of what might transpire.”

“The first week after the accident was a nightmare,” he writes. “The consequences kept escalating. At 8 p.m. the first night, Reactor No. 1 experienced a meltdown. ... The next afternoon, a hydrogen explosion occurred there. Reactor No. 3 went into meltdown on the 13th, and on the 14th it too had a hydrogen explosion.

“I was at Tepco headquarters at 6 a.m. on the 15th when it was reported that a loud boom had been heard coming from Reactor No. 2; and at roughly the same time, Reactor No. 4 experienced a meltdown. ... I began to think that we might be facing the worst-case scenario.”

The worst-case scenario that haunted the prime minister was a domino effect of meltdowns inside reactors and fuel-rod pools as repair and maintenance became progressively too dangerous to undertake. The nightmare's terrorizing eventuality was the evacuation of millions of people from the greater Tokyo zone and the relocation of the organs of government.

“It was 3 a.m. when Minister of Economy, Trade and Industry Banri Kaeda came to the Residence with the news that Masataka Shimizu, president of Tepco, had put in a request to withdraw from the nuclear plant site.

“If I (had let this happen), 50 million people would have to be evacuated within a few weeks. ... The very announcement to evacuate would result in mass panic.”

[www.japantimes.co.jp/opinion/2013/01/26/commentary/read-all-about-it-how-kan-do-attitude-averted-the-meltdown-of-japan/#.UQ3AJ-jW4y5](http://www.japantimes.co.jp/opinion/2013/01/26/commentary/read-all-about-it-how-kan-do-attitude-averted-the-meltdown-of-japan/#.UQ3AJ-jW4y5)

[www.japantimes.co.jp/opinion/2013/02/03/commentary/citizens-lack-of-resolve-leaves-nuclear-door-wide-open-for-next-disaster/#.UQ3AqejW4y4](http://www.japantimes.co.jp/opinion/2013/02/03/commentary/citizens-lack-of-resolve-leaves-nuclear-door-wide-open-for-next-disaster/#.UQ3AqejW4y4)

### The ‘Yoshida Testimony’

August, 2011

The ‘Yoshida Testimony’ provided by plant manager Masao Yoshida conveyed the tense situation during the accident. It had become impossible to inject water into the Unit 2 reactor on the evening of March 14, and he directed workers to evacuate the plant. The following are his recollections of the situation:

“We had come to a situation where fuel was really exposed, but we could not lower pressure or pump in water. I thought then, though not for the first time, that we were going to die. I thought we were really going to die. With no water coming in, the Unit 2 reactor was going to melt. All the fuel was going to really override pressure in the containment vessel and escape outside. That would have been a worst-case accident with corresponding amounts of radioactive substances all spewed outside. That would no longer be a Chernobyl class – maybe not a ‘China Syndrome,’ but something like that. If that were to happen, we would have had to stop pumping water into the Unit 1 and Unit 3 reactors... I thought that the people who were there — I mean, people staying near the quake-proof control center building — would be the first to have their lives at risk... I think I said that workers at the site should take shelter, except for minimum staff... That was because I thought the radioactive substances would all come spewing out and eastern Japan would be finished.”

From a hearing on August 9, 2011

[Abolition of Nuclear Power — An Appeal from the Catholic Church in Japan](#)  
[Catholic Bishops’ Conference of Japan 2020 p. 127](#)

<https://www.cbcj.catholic.jp/2020/07/08/20963/>

[https://www.cbcj.catholic.jp/wp-content/uploads/2020/07/ABOLITIONofNUCLEAR\\_POWER\\_pdf\\_ver.pdf](https://www.cbcj.catholic.jp/wp-content/uploads/2020/07/ABOLITIONofNUCLEAR_POWER_pdf_ver.pdf)

### From the Catholic Bishops’ Statement

2020

The stricken nuclear power plant (NPP) suffered a total station blackout due to the earthquake and tsunami, and it became impossible to cool the fuel within the reactor pressure vessels. The necessity of opening vents if this condition continued was not made clear by the experts to the politicians until 9:00 p.m. on March 11th. Masao Yoshida, manager of the Fukushima Daiichi NPP, ordered Unit 1 to be vented at 12:06 a.m. on March 12th. At this point in time, the TEPCO Head Office and key politicians were aware that venting would be conducted at about 3:00 a.m. Yet it wasn’t until nearly 4:30 that it was reported to the politicians that the area around Unit 1, where venting was needed, would be off limits to

workers due to high levels of radiation. After 7:00 a.m., Prime Minister Kan boarded a helicopter for Fukushima, saying “Do (vent) it soon!” Plant manager Yoshida replied, “We’ll vent it. We’ll have the suicide squad handle it.”

Three teams of two people each were organized at the scene to open the valve by hand. The first team went out at 9:04 a.m., opened the valve 25% of the way, as planned, and returned. When the second team was heading out to the site, their dosimeters sounded the alarm, showing readings of over 90 millisieverts/hour (mSv/h), so they turned back. The third team refused even to try to go to the scene. In other words, TEPCO’s employees had never before even considered weighing the value of preventing an explosion at the NPP against the value of their own lives.

It was 3:36 p.m. on the 12th when the explosion occurred at the Unit 1 reactor building. The Unit 3 reactor building exploded at about 11 a.m. on the 14th. A radiation manager returning home from the site that day at 2:36 p.m. reported that radiation levels near the Unit 3 reactor reversible valve pit (the most important source of cooling water at a nuclear reactor) were from 400 to 500 mSv/h. Hearing this, plant manager Yoshida cried out in disbelief. TEPCO and the Nuclear and Industrial Safety Agency (NISA) had just raised the individual cumulative radiation dose during emergencies from 100 mSv to 250 mSv barely 30 minutes prior to that. Even with that revision, a worker in that environment at those radiations levels would reach the new limit in a mere 30 minutes. In addition, the Unit 2 reactor faced danger too that evening when it could not be vented to reduce pressure. At TEPCO, people were debating withdrawing, and they tried having a request sent by TEPCO President Shimizu to cabinet members.

The first attempt was made at about 7:00 p.m. on the 14th, when President Shimizu tried reaching Banri Kaieda, Minister of Economy, Trade and Industry, by mobile phone. The second time was later that day, near midnight, when the water level inside the Unit 2 reactor fell, and the pressure within the containment vessel exceeded its design limits. That was around that time that attempts to operate the valve failed there too.

To the first evacuation request, Minister Kaieda responded with “I would like you to stay there.” In response to the second request, cabinet members Kaieda, Edano and Hosono each refused to grant permission to evacuate, and finally Prime Minister Kan refused it, saying “Running away would be unthinkable.”

Meanwhile, at the scene, there had been more than 6,000 people present at the time of the earthquake, and on the night of the 14th there were still as many as 720, but of them 650 people were evacuated to the Fukushima Daini Nuclear Power Station, a good distance south, leaving only 70 workers. There is no way that 70 people could handle six nuclear reactors in the maelstrom of an accident. TEPCO had given up on responding to the accident and was abandoning the NPP.

Meltdowns occurred at Units 1, 2 and 3 at the Fukushima Daiichi NPP, and hydrogen explosions destroyed the reactor buildings of Units 1, 3 and 4. By several instances of sheer good luck, however, containment vessel destruction was avoided, together with loss of cooling water in the spent fuel pools. If either had occurred, the result would have been much greater releases of radioactive substances and total abandonment of the NPP by the workers. If a situation had developed in which abandoning the NPP became unavoidable, all of eastern

Japan would have been rendered severely contaminated. An estimated 50 million people would have needed to evacuate.

[Catholic Bishops' Statement, pp 121-122, 123-124](#)

**The explosive truth behind Fukushima's meltdown**  
August, 2011

The Independent has spoken to several workers at the plant who recite the same story: serious damage, to piping and at least one of the reactors, occurred before the tsunami hit. All have requested anonymity because they are still working at or connected with the stricken plant. Worker A, a maintenance engineer who was at the Fukushima complex on the day of the disaster, recalls hissing, leaking pipes.

"I personally saw pipes that had come apart and I assume that there were many more that had been broken throughout the plant. There's no doubt that the earthquake did a lot of damage inside the plant... I also saw that part of the wall of the turbine building for reactor one had come away. That crack might have affected the reactor."

The reactor walls are quite fragile, he notes: "If the walls are too rigid, they can crack under the slightest pressure from inside so they have to be breakable because if the pressure is kept inside... it can damage the equipment inside so it needs to be allowed to escape. It's designed to give during a crisis, if not it could be worse – that might be shocking to others, but to us it's common sense."

Worker B, a technician in his late 30s who also was on site at the time of the earthquake, recalls: "It felt like the earthquake hit in two waves, the first impact was so intense you could see the building shaking, the pipes buckling, and within minutes I saw pipes bursting. Some fell off the wall..."

"Someone yelled that we all needed to evacuate. But I was severely alarmed because as I was leaving I was told and I could see that several pipes had cracked open, including what I believe were cold water supply pipes. That would mean that coolant couldn't get to the reactor core. If you can't sufficiently get the coolant to the core, it melts down. You don't have to have to be a nuclear scientist to figure that out." As he was heading to his car, he could see that the walls of the reactor one building had started to collapse. "There were holes in them. In the first few minutes, no one was thinking about a tsunami. We were thinking about survival."

The suspicion that the earthquake caused severe damage to the reactors is strengthened by reports that radiation leaked from the plant minutes later. The Bloomberg news agency has reported that a radiation alarm went off about a mile from the plant at 3.29pm, before the tsunami hit.

The reason for official reluctance to admit that the earthquake did direct structural damage to reactor one is obvious. Katsunobu Onda, author of *Tepco: The Dark Empire*, explains it this way: A government or industry admission "raises suspicions about the safety of every reactor they run. They are using a number of antiquated reactors that have the same systematic

problems, the same wear and tear on the piping." Earthquakes, of course, are commonplace in Japan.

Mitsuhiko Tanaka, a former nuclear plant designer, describes what occurred on 11 March as a loss-of-coolant accident. "The data that Tepco has made public shows a huge loss of coolant within the first few hours of the earthquake. It can't be accounted for by the loss of electrical power. There was already so much damage to the cooling system that a meltdown was inevitable long before the tsunami came."

He says the released data shows that at 2.52pm, just after the quake, the emergency circulation equipment of both the A and B systems automatically started up. "This happens only when there is a loss of coolant." Between 3.04 and 3.11pm, the water sprayer inside the containment vessel was turned on. Mr Tanaka says that it is an emergency measure done only when other cooling systems have failed. By the time the tsunami arrived and knocked out all the electrical systems, at about 3.37pm, the plant was already on its way to melting down.

Tooru Hasuike, a Tepco employee from 1977 until 2009 and former general safety manager of the Fukushima plant, says: "The emergency plans for a nuclear disaster at the Fukushima plant had no mention of using seawater to cool the core. To pump seawater into the core is to destroy the reactor. The only reason you'd do that is no other water or coolant was available."

Before dawn on 12 March, the water levels at the reactor began to plummet and the radiation began rising. The Tepco press release published just past 4am that day states: "The pressure within the containment vessel is high but stable."

There was one note buried in the release that many people missed: "The emergency water circulation system was cooling the steam within the core; it has ceased to function."

At 9.51pm, under the chief executive's orders, the inside of the reactor building was declared a no-entry zone. At around 11pm, radiation levels for the inside of the turbine building, which was next door to reactor reached levels of 0.5 to 1.2 mSv per hour. In other words, the meltdown was already underway. At those levels, if you spent 20 minutes exposed to those radiation levels you would exceed the five-year limit for a nuclear reactor worker in Japan.

Sometime between 4 and 6am, on 12 March, Masao Yoshida, the plant manager decided it was time to pump seawater into the reactor core and notified Tepco. Seawater was not pumped in until hours after a hydrogen explosion occurred, at roughly 8pm. By then, it was probably already too late.

Later that month, Tepco went some way toward admitting at least some of these claims in a report called "Reactor Core Status of Fukushima Daiichi Nuclear Power Station Unit One". The report said there was pre-tsunami damage to key facilities, including pipes.

"This means that assurances from the industry in Japan and overseas that the reactors were robust is now blown apart," said Shaun Burnie, an independent nuclear waste consultant who works with Greenpeace. "It raises fundamental questions on all reactors in high seismic risk areas."

As Mr Burnie points out, Tepco also admitted massive fuel melt 16 hours after loss of coolant, and seven or eight hours before the explosion in Unit One. "Since they must have

known all this, their decision to flood with massive water volumes would guarantee massive additional contamination – including leaks to the ocean."

No one knows how much damage was done to the plant by the earthquake, or if this damage alone would account for the meltdown. But certainly Tepco's data and eyewitness testimony indicates that the damage was significant.

As Mr Hasuike says: "Tepco and the government of Japan have provided many explanations. They don't make sense. The one thing they haven't provided is the truth. It's time they did."

[www.independent.co.uk/news/world/asia/the-explosive-truth-behind-fukushimas-meltdown-2338819.html](http://www.independent.co.uk/news/world/asia/the-explosive-truth-behind-fukushimas-meltdown-2338819.html)

### Plant Workers

One by one, the first voices began to emerge from the darkness. "Help! Help! Anybody here?" was the first thing one man heard. He listened to colleagues crying, stumbling in the dark as they searched for a way out.

He clung to the walls, then ran down the stairs of the No 4 reactor at Fukushima 1 plant as it shook to the repeated impact of the earthquake. There he met about 40 colleagues. Some were drenched in water from the spent fuel tanks, which contain highly radioactive material. They had thrown off their protective clothing and stood shivering in their underwear.

"Those who refused to flee, those who are facing the disaster, are TEPCO and its related companies. Please do not forget that point. I am proud that I am a member of Tokyo Electric Power working with colleagues who were not concerned about their own lives."

One operator told his family: "I thought I would never see you all again. I was inside the plant when the earthquake hit. Violent shaking was followed by a high tsunami. Fuel and equipment were carried away. Nature is terrible. Earthquake and tsunami - what a terrible combination."

Another spoke of his desolation as one expensive safety system after another failed. "We had to start up the ECCS [emergency core cooling system]. We collected everything we could think of, things like our own cars' batteries and compact power generators, the kind of thing noodle stalls use. Still, the ECCS did not recover. It was a very bitter disappointment that we could not get power from the outside."

One anonymous contract worker was inside the reactor building when the quake struck. Because he was performing normal building maintenance, he had felt no need of protective clothing. "It was such a powerful jolt I could hardly stand," he says. "I was thrown from side to side." He heard loud crashes as cranes and equipment collapsed.

According to his account there was chaos in the moments after the quake.

The main lights went out and emergency lighting came on. Over a tannoy, a manager told the workers to stay where they were. But the tremor had cracked the seals on pipes across the

ceiling and water began to pour down. A man yelled: "This could be dangerous water. Let's get out of here!"

The workers ran for their lives. But for the families of the men and women fighting to stave off an even worse catastrophe, the impact strikes closer to home. The wife of one plant worker spoke of her life turning upside down when the quake hit her company-owned housing inside the Fukushima 1 complex.

"A violent quake hit me, which caused the cupboards to fall down," she says. "Our rooms were thrown into a mess in an instant. I tried to call my husband but could not reach him until midnight. He just said 'safe'.

"But after that it was impossible to speak to him. It wasn't until Tuesday that I had a text message from my husband saying simply: 'Need drinking water. My condition has turned bad.' "

An undisclosed number of workers have had decontamination treatment. One man was exposed to a dose of 100 millisieverts, a level that can cause cancer. The prognosis for them is bad, according to Donald Bucklin, for 10 years medical director of the Palo Verde nuclear plant in Arizona. "These people, I think, are doing the moral equivalent of throwing themselves on a hand grenade," he says.

<http://www.theaustralian.com.au/saving-a-reactor-with-car-batteries/story-fn84naht-1226025003364>

### Ordinary People

Some are stuck in their homes, fearful of radiation, heeding government warnings to stay indoors, cut off without electricity or phone service. Others want to leave but have no gasoline. Still more, those whose homes were ruined, wait helplessly for evacuation at crowded shelters. All face dwindling supplies of heating fuel, food and water.

A week after an earthquake and tsunami devastated their communities, the plight of the thousands still stranded in areas near the stricken reactors — many too old or infirm to move — has underscored what residents say is a striking lack of help from the national government to assist with the evacuation of danger zones or the ferrying of supplies to those it has urged to stay inside.

The task has fallen to local governments and even private companies and organizations that have made limited but heroic efforts to help those left behind, adding to the burden of coastal communities already overwhelmed by tens of thousands of people left homeless and the search for bodies, which the nuclear evacuations have now made impossible.

Residents reached by telephone said the order by the government to evacuate a 12-mile radius around the Fukushima Daiichi Nuclear Power Station, as well as the request for those who live 12 to 18 miles away to stay indoors, has turned communities like Minamisoma into virtual ghost towns, populated mostly by the unwilling and the unlucky.

One is Masahiro Sakashita, who had prepared for the worst from the very beginning, but knew he could not leave. The director of the Fukujuen elderly care center, just 15 miles from one reactor, he sent his younger employees home as Japan's battle to prevent nuclear catastrophe started, telling them to flee.

He and 19 other senior staff members stayed behind to keep caring for the center's 100 or so mostly bedridden residents, the oldest of whom is 102. He said they were cut off from the outside world, with electricity and delivery of food and other supplies disrupted. "I figured that at most we had enough food and water to last five, maybe six days," said Mr. Sakashita, who spoke by phone from Minamisoma. "We were going to stay with them to the end."

The end came Friday, when a similar care center in distant Yokohama, near Tokyo, volunteered to take in Fukujuen's residents after seeing their plight reported on television and sent six buses to rescue them.

Minamisoma has been using buses to begin evacuating the tsunami survivors and other residents to areas farther away from the nuclear plant. Other cities have helped by sending buses, as have some local companies.

One is the Shima Company, an auto-scraping business in Minamisoma, which hired buses to take more than 170 of its employees and their families to the city of Yamagata, 55 miles away.

With the help of other cities and the Fukushima prefectural government, Minamisoma has also moved all the tsunami survivors in 8 of its 29 shelters to other areas. At Haramachi No. 1 Elementary School, buses came Thursday to take about 300 survivors and other nearby residents to Gunma Prefecture, outside Tokyo.

The principal, Atsuo Takano, who runs the school's shelter, said that the school had begun to fill again with new refugees, those driven from their homes because they ran out of food and fuel. While he has sent his own family to an inland city for safety, he said he would keep working until the last person in the school's shelter was safely evacuated.

"Of course I'm worried, but I am responsible for this school," he said. "They told us that nuclear power was 100% safe, but we see now that nothing can ever be 100% safe."

Hatsuko Arakawa, 78, said that despite the fact that her city, Iwaki, was outside the area covered by the government order to stay indoors, delivery trucks refused to enter. As a result, she said, she felt marooned in her home, with no more propane for her heater and dwindling supplies of rice and water. She endures the winter cold by spending the entire day wrapped in a futon.

Misao Saito, 59, said he stayed in Soma, a small port city 27 miles north of the nuclear plant, because of his parents, who are too old and infirm to flee. He said his 80-year-old father had a bad leg, while his mother, 85, suffered from mild dementia. They now live together in an elementary school that was turned into a shelter after the tsunami damaged their home.

Saito, a fisherman, said he had no way to make a living because the waves destroyed Soma's fishing harbor.

Some of those who remained said they did so by choice. One asked that her full name not be used because she feared discrimination in the future because of the nuclear crisis, just as survivors of the 1945 atomic bombings were ostracized out of a misplaced fear that they could spread radiation sickness.

[http://www.nytimes.com/2011/03/19/world/asia/19stranded.html?\\_r=2&hp](http://www.nytimes.com/2011/03/19/world/asia/19stranded.html?_r=2&hp)  
[http://www.nytimes.com/2011/03/19/world/asia/19stranded.html?pagewanted=2&\\_r=2&hp](http://www.nytimes.com/2011/03/19/world/asia/19stranded.html?pagewanted=2&_r=2&hp)

### The buses never arrived

July, 2014

On the day of the earthquake and tsunami on March 11, 2011, Takeshi Tanabe fled with his wife and 2-year-old son to an elementary school near their home with nothing but the clothes on their backs. He had heard no news of the problems at the nuclear plant, but at the school Tanabe learned that buses would be carrying him and the other evacuees to the city of Tamura, around 40 kilometers to the west.

However, the buses never arrived. The next day around 150 people were loaded onto 15 Self-Defense Forces trucks and evacuated. Two hours after they left, the building of the nuclear plant's No. 1 reactor exploded.

Everywhere the trucks went, the evacuation shelters were full. Finally, at around 2 a.m. on March 13, a place that could take them was found. The path the trucks had taken as they traveled for over 12 hours coincided with where radioactive material from the plant had spread.

[mainichi.jp/english/english/features/news/20140716p2a00m0na014000c.html](http://mainichi.jp/english/english/features/news/20140716p2a00m0na014000c.html)

### “The plant couldn't be that dangerous”

2011

Tsushima district in Namie, Fukushima Prefecture, is located in the mountains approximately 30 kilometers northwest of the Fukushima No. 1 nuclear power plant.

On March 12, the day after the nuclear accident, 10,000 people fled to the Tsushima District from the coastal area that lies within a 10-km radius of the nuclear power plant. Residents took people into their homes, since there was not enough room at the elementary and junior high schools, community centers and temples.

One after another, people began arriving at Mizue Kanno's home throughout the day. By evening, 25 people had gathered. Although many were relatives and acquaintances, there were also strangers among them.

Her new house had recently been built after having torn down the family's 180-year-old, traditional Japanese home. It has an impressive gate, expansive grounds and a large room measuring 20 tatami mats (approx. 33 square meters). It was just right for accepting evacuees, and the yard was filled with evacuees' cars.

"I don't know what happened at the nuclear power station, but if we evacuate this far, then we should be OK." Everyone looked relieved for the moment.

Kanno, 59, cooked two pressure cookers full of rice and made an evening meal of rice balls and miso soup with pork and vegetables. People who fled with only the clothes on their backs assembled in the large room and began eating.

Following dinner, everyone introduced themselves and formed rules for living together:

- \* To prevent the toilet from getting clogged, toilet paper should be thrown away in the cardboard box placed next to the toilet.
- \* Everyone should help cook and serve meals.
- \* Do not hesitate to be open with one another.

The people split into groups and slept in two rooms. Kanno handed out all the futons she had. Then, Kanno stepped outside, where she noticed a white van that had stopped in front of her house. Inside were two men wearing white protective clothing. They turned toward her and shouted, but she couldn't make out what they were saying.

"What? What's the problem?" Kanno asked.

"Why are you here?! Please, get away from here."

Kanno was shocked.

"Flee? But this is an evacuation shelter."

The two men got out of the car. Both were wearing gas masks.

"Radioactive materials are spreading."

They spoke in a grave tone and with a sense of urgency.

National road No. 114 that runs past her house was bumper to bumper with cars at a standstill, full of people who couldn't get into evacuation shelters. The two men also shouted to the people who had gotten out of their cars, "Quickly, get back into your cars!"

The two men then drove off in the direction of Fukushima city.

The government had said that areas outside of a 10-km radius were safe. Why, then, were those two men wearing protective clothing and gas masks as well? Who exactly were they?

Kanno was puzzled, but at any rate she hurried back to the house and told the evacuees about the men in protective clothing.

A discussion began.

"If it really is dangerous, there should be some information from the town or the police. Let's see what happens."

Everyone had finally gotten settled in and was reluctant to move.

However, in the middle of the night the situation suddenly changed. Several buses arrived at the community center, which served as an evacuation shelter. One of the evacuees noticed the arrival and told everyone the bus drivers had said they were "moving the evacuees."

At the time, the town of Namie was shuttling residents within a 20-km radius who were late in evacuating to the Tsushima district. Kanno was unaware of that fact but had concluded that the area was unsafe. She woke her sleeping guests and a discussion began again.

Most did not want to leave, but one woman noted that, "If everyone stays, then Mrs. Kanno's family can't leave." That settled it.

"Let's drive as long as the gas lasts."

After midnight, two young couples left with a newborn baby who had just been born in February and their small children.

Though at first the couples were reluctant to flee on mountain roads so late at night, Kanno gave them rice balls, saying, "At least get the children out of here."

The next morning on March 13, another discussion ensued after breakfast. A young couple with children who had said the night before they wouldn't leave, decided they would go for their children's sake. An older woman lent the couple her car.

"Since I'm alone, I'll catch the bus at the evacuation center."

By evening, all 25 people had re-evacuated to other locations such as Fukushima, Koriyama and Minami-Soma.

Kanno told others who had sought shelter in a nearby house about the men in protective clothing. One laughed saying, "I worked at TEPCO. The nuclear power plant we built could never be that dangerous."

The man had fled not from the nuclear accident, but from the tsunami. Kanno felt relieved. She and her oldest son, Junichi, 27, decided not to flee.

At that time, readings at locations approximately 10 km from the Tsushima district using instruments measuring up to 30 microsieverts per hour were going off the meter.

[ajw.asahi.com/article/0311disaster/fukushima/AJ2011111516540](http://ajw.asahi.com/article/0311disaster/fukushima/AJ2011111516540)

## Workers' Conditions

### Workers hard to find

April, 2011

TEPCO is facing great difficulties in finding workers.

The job description indicates only that the work is at a nuclear plant in Fukushima Prefecture. There is no information about danger. Those who answer these offers are likely to have few other job opportunities.

People who live in precarious conditions are exposed to high levels of radiation, doing the most dirty and dangerous jobs in the nuclear plants, then sent home. Those who fall ill will not even appear in the statistics.

Since contract laborers move from one nuclear plant to another, depending on the maintenance schedule of the various reactors, they lack access to their individual cumulative dose for one year or for many years. NISA compiles only the cumulative dose for each nuclear plant.

Temporary workers who, for example, use mops to clean the reactors, or who deal with used protective clothing, receive the strongest doses.

One worker told of workers wrapping themselves in plastic bags, for lack of appropriate protective suits. A worker was irradiated when he was working on the site while wearing small rubber boots.

TEPCO confirms that, due to the tsunami, a large number of dosimeters were damaged. Out of 5000, there remain no more than 320. The manufacturer has virtually no more stock, and Toshiba has sent only 50.

The Japanese minister of health decided to raise the legal dose to be received by workers. In Japan, legislation has endorsed the standard of 20 mSv per year for workers, stipulating that the dose can be calculated as an average over a five year period, with a maximum at a given time of 100 mSv during any two years. But as of March 19, TEPCO asked to boost the maximum dose to 150 mSv, and the Ministry of Health went further, raising it to 250 mSv.

The letter that the Ministry sent the next day to the chiefs of Labor Bureaus to inform them of the decision justifies it on the grounds of the state of emergency, ignoring the safety of the workers. This could be a measure to avoid workers applying for compensation or, at least, limit the number of workers who apply for compensation. Stated differently, it has the effect of legalizing illness and deaths from nuclear radiation, or at least the state's responsibility for them. Usually, in case of leukemia, a one year exposure to 5 mSV is sufficient to obtain occupational hazards compensation. The list of potential applicants could be very long in light of the number of workers already on the job, or who are likely to be recruited to dismantle the reactors. The project proposed by Toshiba to close down and safeguard the reactors would take at least 10 years.

On March 31, the Nuclear Safety Agency (NSA) announced that 21 workers had received doses above 100 mSv, but that none had exceeded 250, as if this meant they could escape without too much harm.

TEPCO and other electric power companies have always refused to disclose the list of their subcontractors.

Workers are sleeping on the hard soil and have only two meals per day; drinking water is rationed.

<http://inteldaily.com/2011/04/dying-for-tepco-fukushima's-nuclear-contract-workers/Catholic-Bishops-p-47>

### **Few workers tested for internal radiation exposure**

May, 2011

Nearly two months after the start of the crisis at the Fukushima No. 1 nuclear power plant, only 10 percent of workers there had been tested for internal radiation exposure caused by inhalation or ingestion of radioactive substances, due to a shortage of testing equipment available for them.

<http://www.yomiuri.co.jp/dy/national/T110518006065.htm>

### **Nuclear plant workers suffer internal radiation exposure after visiting Fukushima**

May, 2011

The government has discovered thousands of cases of workers at nuclear power plants outside Fukushima Prefecture suffering from internal exposure to radiation after they visited the prefecture.

<http://mdn.mainichi.jp/mdnnews/news/20110521p2a00m0na021000c.html>

### **Labor ministry inspects Fukushima nuke plant over exposed workers**

June, 2011

The Japanese labor ministry inspected the crisis-hit Fukushima No. 1 Nuclear Power Plant to investigate the causes of the complex's workers being exposed to radiation exceeding the maximum allowable emergency limit.

<http://mdn.mainichi.jp/mdnnews/news/20110607p2g00m0dm091000c.html>

### **Nine workers exposed to radiation above standard**

June, 2011

The utility said June 20 that another worker was found to have been exposed to more than 250 millisieverts of radiation, the government's safety standard. That means nine workers

have been exposed to radiation levels above the standard since the crisis started. If the pre-quake standard of 100 millisieverts is used, 124 workers have been exposed to high radiation levels.

<http://www.asahi.com/english/TKY201106210158.html>

### Nuclear Workers and Fukushima Residents at Risk: Cancer Expert on the Fukushima Situation

July, 2011

By Hokkaido Cancer Center director Nishio Masamichi, a radiation treatment specialist.

1. Nishio accuses the authorities of prioritizing their own convenience over the lives of nuclear workers. Nishio argues that raising the exposure limit from 100 mSv to 250 mSv can have serious health effects. He also states that reports of poor food and sleeping conditions for workers show that "... they are not even being treated like human beings."
2. The JSDF helicopters that dropped water on the Fukushima Daiichi reactors and spent fuel pools in the days after March 11 were outfitted with the types of radiation shields used in hospital x-ray rooms. Nishio says that this was akin to "putting on a lead helmet in order to protect yourself from radiation from space". The planners, he argues, did not even understand the difference between airborne radiation from a nuclear accident and radiation used in the controlled environment of hospital treatment.
3. Referring to "protective" suits is a misnomer bordering on fraud in Nishio's view since nothing can offer total protection from radiation exposure.
4. A lack of nutrition and rest can make workers more susceptible to radiation symptoms. Nishio speculates that having the workers sleep together in gymnasium-like barracks with no privacy is simply designed to keep them from running away. Just 30 minutes from the site, he points out, there are empty hotels which could offer those on the front line a quiet, secure place to rest and recuperate.
5. He accuses TEPCO of being up to the old tricks of the nuclear industry: giving dispatch and temporary workers broken radiation monitors, giving them monitoring devices only when they are working despite high levels of radiation throughout the site, and so on.
6. Without accurate assessment of internal radiation exposure through "whole body monitoring", there is no way to tell how much exposure workers are actually suffering.
7. Measures must also be taken to gauge different types of exposure (i.e. alpha rays from plutonium and beta rays from strontium).
8. Around 5000 workers have worked at the site since March. This number is high, but if radiation release continues, 100 or even 1000 times that number may be needed over time.
9. The MOX fuel in reactor number 3 is particularly dangerous but Nishio doubts that special measures to protect workers are being taken.

10. “Peripheral Blood Stem Cell Harvest” treatment has been put forward by doctors as a way to minimize the chances of bone marrow deterioration among workers, but this was turned down by the Nuclear Safety Commission of Japan. Nishio asserts that this is evidence that they simply do not grasp the severity of the situation.

11. Apart from the iodine that they are being given, workers should also be taking Radiogardase (Prussian blue insoluble capsules). Not working to bring together the best preventative medicine, Nishio asserts angrily, is an example of “graveyard governance”.

<http://www.japanfocus.org/events/view/100>

### **Working conditions bad**

November, 2011

Hiroyuki Watanabe, a member of the Iwaki Municipal Assembly, has interviewed about 20 nuclear plant workers and some have told him conditions were extremely bad. Some even claimed they had only a verbal contract for the job.

Many were sent by subcontractor dispatch companies that do not provide job or health insurance, which is illegal.

The workers are often abandoned by personnel companies once their cumulative radiation exposure exceeds the legal limits.

"For example, one worker kept working at the Fukushima No. 1 plant for more than 10 years. Even after the accident, he kept working and he was fired after his dose exceeded 40 millisieverts," Watanabe said. "He had once falsified his exposure records so he would not lose his job."

[www.japantimes.co.jp/text/nn20111112a3.html](http://www.japantimes.co.jp/text/nn20111112a3.html)

### **Temporary workers face more radiation**

December, 2011

Temporary workers at the Fukushima plant in 2010 faced radiation levels 16 times higher than did employees of the plant's owner-operator, Tokyo Electric Power Co., because contractors are called in for the most dangerous work, according to the government's industrial safety agency.

[www.latimes.com/news/nationworld/world/la-fg-japan-nuclear-gypsies-20111204,0,500190,full.story](http://www.latimes.com/news/nationworld/world/la-fg-japan-nuclear-gypsies-20111204,0,500190,full.story)

### **Gov't not adding up nuclear workers' radiation doses when not at work**

January, 2012

The health ministry has not added up the radiation doses received by workers at the crippled Fukushima Daiichi nuclear power plant while they were evacuated or are not at work.

And the Ministry of Health, Labor and Welfare will not add up radiation doses while workers engage in decontamination efforts around the badly damaged plant, which will intensify in the near future.

The ministry currently keeps track of only the radiation doses for nuclear workers when they engage in work.

[mdn.mainichi.jp/mdnnews/news/20120122p2g00m0dm065000c.html](http://mdn.mainichi.jp/mdnnews/news/20120122p2g00m0dm065000c.html)

### **Kyushu men sent to Fukushima nuke plant under falsified labor deals**

February, 2012

Laborers from as far as Kyushu have been dispatched there under illegal labor deals and forced to work inside at least one of the crippled plant's highly contaminated reactor buildings.

A man in his 40s from Nagasaki carried lead sheets weighing some 20 kilograms each up as high as the sixth floor of one building. The lead sheets were installed inside the plant's No. 1 reactor building to block radiation.

He said he was paid 11,000 yen per day despite being promised 14,000 yen, and had also been assured he would not have to enter the reactor buildings.

[Mainichi Japan February 6, 2012](#)

### **Workers at Fukushima plant toil away in deadly conditions**

March, 2012

“I can clearly say it’s not safe at all,” said one worker in his 50s, a subcontractor who has been working on the plant’s cooling system since September. “There are many spots where radiation levels are extremely high,” he told AFP.

The man said subcontractors like him were treated like animals. In the height of summer with the mercury rising to 38 degrees Celsius, workers had to go for up to three hours at a time without water because they were unable to take off their masks.

There have been deaths on site.

TEPCO says at least 167 workers are no longer able to work in nuclear plants because their lifetime radiation exposure has topped 100 millisieverts—the upper limit for workers.

[www.japantoday.com/category/national/view/workers-at-fukushima-plant-toil-away-in-deadly-conditions](http://www.japantoday.com/category/national/view/workers-at-fukushima-plant-toil-away-in-deadly-conditions)

### **Lead shields masked radiation readings up to 30%**

August, 2012

Lead radiation shields forced on workers at the stricken Fukushima No. 1 nuclear power plant to cover their dosimeters masked radiation readings by about 30 percent.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201208090060](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201208090060)

### Another worker 'forgets' to wear dosimeter

August, 2012

An employee of a subcontractor worked at the stricken Fukushima No. 1 nuclear power plant on Aug. 10 without wearing a personal dosimeter, plant operator Tokyo Electric Power Co. said.

An employee of another TEPCO subcontractor is known to have also worked at the Fukushima plant without a dosimeter on Aug. 3.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201208110044>

### Workers used lead plates to cover dosimeters

August, 2012

In July, the Asahi Shimbun reported that subcontracted workers, at the behest of their boss, used lead plates to cover the dosimeters to keep radiation dose readings at lower levels. A number of other tricks were later unveiled, such as leaving dosimeters in cars parked within plant grounds.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201208140073](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201208140073)

### 3,000 May Not Have Used Dosimeters

September, 2012

Over 3,000 people may have worked at Fukushima No. 1 nuclear power plant without carrying dosimeters in the early days of the crisis. For 17 days from March 15, 2011, there is no record of dosimeters having been lent out to 3,077 workers at the plant, out of the 7,766 who worked there during the period.

Without the correct dosage data, workers may not be able to receive sufficient compensation or relief measures.

[jen.jiji.com/jc/eng?g=eco&k=2012090400414](http://jen.jiji.com/jc/eng?g=eco&k=2012090400414)

[ajw.asahi.com/article/0311disaster/fukushima/AJ201209040060](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201209040060)

### Most Fukushima nuke plant workers ineligible for free cancer checks

November, 2012

Of the many thousands of workers who have risked radiation exposure at the crippled Fukushima No. 1 nuclear power plant, only a paltry 3.7 percent are eligible for free cancer screenings provided by the government and Tokyo Electric Power Co.

The low rate is because the government and plant operator TEPCO limited the scope of free screenings to those who were exposed to radiation of more than 50 millisieverts between March 11, 2011, and mid-December 2011.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201211220056](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201211220056)

### **Worker wants new government to secure safety at Fukushima plant**

December, 2012

“Many people work without seeing a doctor because they fear they might be told not to come anymore from the next day,” he said. “It is a distortion caused by the layers of subcontractors involved. I want the government to protect us.”

[ajw.asahi.com/article/0311disaster/fukushima/AJ201212090052](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201212090052)

### **8 companies face order to stop illegal labor practice**

December, 2012

The government will order eight companies to end an illegal dispatch arrangement that allowed a subcontractor to instruct workers to labor under dangerous conditions at the stricken Fukushima nuclear plant. The decision means the ministry has effectively acknowledged that an illegal structure of multilayer contractors threatened the safety of workers. TEPCO has consistently denied any illegal setup.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201212100065](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201212100065)

### **Workers ordered to cover dosimeters with lead plates**

December, 2012

The president of a construction company ordered workers to cover their dosimeters with lead plates to keep radiation dose readings artificially low during pipe work. The workers were not allowed to continue working at a nuclear plant if their dose readings exceeded safety levels.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201212100065](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201212100065)

### **TEPCO admits to shady hiring practices at Fukushima nuclear plant**

December, 2012

The head of the utility behind Japan’s nuclear crisis acknowledged Monday that hundreds of workers at the contaminated Fukushima Daiichi plant were mobilized through a shady hiring system.

In a recent TEPCO survey of some 2,400 contract workers, dozens said they were instructed to falsify affiliations, while some complained they never received a written contract.

In the survey, taken in September and October, about half said they were being paid by different companies than the ones that hired them — an indication of illegal labor contracts. Nearly 90% said their employers were ranked from second to fourth in the hierarchy of subcontractors. About one-quarter said their employers never notified them of their radiation exposure details.

The hiring problem has intensified since last year's disaster, and some workers have come forward and complained that their salaries have been siphoned off or allowances not given.

[www.japantoday.com/category/national/view/tepcO-admits-to-shady-hiring-practices-at-fukushima-nuclear-plant](http://www.japantoday.com/category/national/view/tepcO-admits-to-shady-hiring-practices-at-fukushima-nuclear-plant)

### TEPCO fails to submit dose data on 21,000 plant workers

February, 2013

Tokyo Electric Power Co. failed to submit radiation dose data to an industry database, compromising the health of 21,000 people who worked at the Fukushima No. 1 nuclear plant after the March 2011 disaster.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201302280086](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302280086)

### Workers sent to disaster areas committed suicide after questioning own usefulness

March, 2013

On Jan. 3 this year, a local government worker who had been dispatched from western Japan to the tsunami-hit town of Otsuchi in Iwate Prefecture was found hanged in a temporary housing unit in the neighboring city of Miyako.

The death followed the July 2012 suicide of another worker from Morioka who came to assist the Iwate Prefecture city of Rikuzentakata in its recovery.

Both workers had been placed in positions outside their field of expertise, and had apparently doubted how useful they were.

[mainichi.jp/english/english/newsselect/news/20130305p2a00m0na016000c.html](http://mainichi.jp/english/english/newsselect/news/20130305p2a00m0na016000c.html)

### Fukushima workers treated water leaks without dosimeters

April, 2013

Fourteen workers treated radioactive water leaking at the crippled Fukushima No. 1 nuclear plant without wearing personal dosimeters as required, Tokyo Electric Power Co. said April 19.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201304200045](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201304200045)

### Nagasaki firms warned for sending workers to stricken nuke plant

May, 2013

The Nagasaki Labor Bureau has warned three local staff agencies for illegally dispatching more than 500 plumbing workers to the crisis-hit Fukushima No. 1 nuclear plant last year.

Labor laws ban ‘multiple dispatches’, in which hired people end up working at places never mentioned in their initial contracts. Some workers also were paid less than they were promised.

[www.japantimes.co.jp/news/2013/05/12/national/nagasaki-firms-warned-for-sending-workers-to-stricken-nuke-plant/#.UZAi8oJf5qB](http://www.japantimes.co.jp/news/2013/05/12/national/nagasaki-firms-warned-for-sending-workers-to-stricken-nuke-plant/#.UZAi8oJf5qB)

### Workers falsely registered

May, 2013

A December 2012 survey of workers that the company released found 48 percent were from companies not signed as contractors with the utility and the workers were falsely registered under companies that weren't employing them.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201305230104](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201305230104)

### Records underestimate radiation exposure in Fukushima workers

July, 2013

The test records of 479 workers at the crippled Fukushima No. 1 nuclear power plant contained false documentation on the amount of internal radiation they were exposed to, the Ministry of Health, Labor and Welfare said July 5.

The records of 452 of them have since been revised upward by a maximum of 48.9 millisieverts, according to health officials. The records of the rest were revised downward.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201307060066](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201307060066)

### 68% of firms handling decontamination in Fukushima violated labor laws

July, 2013

Sixty-eight percent of firms engaged in decontamination work in Fukushima Prefecture (264 out of 388 Fukushima workplaces) in the wake of the prefecture's nuclear disaster were found to have violated labor-related laws during a recent survey.

Seventy percent of the misconduct involved violations of the Labor Standards Act, including 108 cases of unpaid overtime, 90 cases of undocumented payrolls and 82 cases of failure to present working conditions.

The remaining 30 percent involved violations of the Industrial Safety and Health Act. Failure to conduct research on radiation dosages prior to decontamination work was reported in 20 cases, followed by 16 cases of failure to provide workers with proper education on radiation and 14 cases of failure to monitor radioactive contamination levels after decontamination work had finished.

[mainichi.jp/english/english/newsselect/news/20130726p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20130726p2a00m0na008000c.html)

**9,640 Fukushima plant workers reach radiation level for leukemia compensation**  
August, 2013

Nearly 10,000 people who worked at the stricken Fukushima No. 1 nuclear plant are eligible for workers' compensation if they develop leukemia, but few are aware of this and other cancer redress programs.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201308050104](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308050104)

**Fukushima contractor sanctioned by labor regulators over Tokai work**  
December, 2013

Labor regulators have sanctioned a construction firm involved in the decommissioning of the Fukushima nuclear power plant for improperly employing workers to repair another nuclear plant, also damaged by the 2011 earthquake.

The practice of having workers hired by a broker but managed by another company is banned under Japanese law to protect workers from having their wages skimmed and to clarify who is responsible for their safety.

[www.japantoday.com/category/crime/view/fukushima-contractor-sanctioned-by-labor-regulators-over-tokai-work](http://www.japantoday.com/category/crime/view/fukushima-contractor-sanctioned-by-labor-regulators-over-tokai-work)

**Toshiba warned over illegal working hours at Fukushima plant**  
December, 2013

A labor standards inspection office warned Toshiba Corp. and 17 other companies over workers illegally exceeding 10 hours of labor a day at the Fukushima No. 1 Nuclear Power Plant, it has been learned.

According to Toshiba and its subsidiary Toshiba Plant Systems & Services Corp., from July through October this year it made employees work at the plant for over 10 hours a day. Since the workers' dosimeters were set to ring alarms after nine and a half hours of duty, the workers would return the dosimeters before the alarms went off and newly rent them before returning to duty.

[mainichi.jp/english/english/newsselect/news/20131212p2a00m0na010000c.html](http://mainichi.jp/english/english/newsselect/news/20131212p2a00m0na010000c.html)

### Fukushima water tanks: leaky and built with illegal labor

December, 2013

Storage tanks at the Fukushima Daiichi nuclear plant like one that spilled almost 80,000 gallons of radioactive water this year were built in part by workers illegally hired in one of the poorest corners of Japan.

The Okinawa crew was recruited by Token Kogyo, an unregistered broker, and passed on to work at the Fukushima plant under the direction of Tec, a larger contractor which reported to construction firm Taisei Corp.

[www.japantoday.com/category/national/view/fukushima-water-tanks-leaky-and-built-with-illegal-labor](http://www.japantoday.com/category/national/view/fukushima-water-tanks-leaky-and-built-with-illegal-labor)

### Man suffers internal radiation exposure at Fukushima nuclear plant

January, 2014

A worker at the crippled Fukushima No. 1 Nuclear Power Plant has been confirmed to have suffered internal exposure to radiation, plant operator Tokyo Electric Power Co. (TEPCO) has announced.

[mainichi.jp/english/english/newsselect/news/20140121p2a00m0na001000c.html](http://mainichi.jp/english/english/newsselect/news/20140121p2a00m0na001000c.html)

### 142 workers' radiation exposure higher than reported by Tepco

March, 2014

The labor ministry said Tuesday that the internal radiation exposure of 142 workers involved in emergency operations at the crippled Fukushima No. 1 nuclear power plant was higher than reported by plant operator Tokyo Electric Power Co.

After recalculating data provided by Tepco, the Health, Labor and Welfare Ministry found that a male employee was exposed to 180 millisieverts, exceeding the 100-millisievert level that is said to raise the risk of cancer. The man's exposure was initially reported to be around 90 millisieverts.

[www.japantimes.co.jp/news/2014/03/26/national/142-workers-radiation-exposure-higher-than-reported-by-tepco/#.UzKG9fa0FGE](http://www.japantimes.co.jp/news/2014/03/26/national/142-workers-radiation-exposure-higher-than-reported-by-tepco/#.UzKG9fa0FGE)

### Four subcontractor employees to sue Tepco for dangerous-work benefits

September, 2014

Four workers engaged in the decommissioning of reactors at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear plant plan Wednesday to file a lawsuit demanding the utility pay a total of ¥91.4 million in "dangerous-work" benefits. The plaintiffs claim the subcontractor, their direct employer, orally explained that the dangerous-work benefit would be paid but only a token amount was paid to one of them.

[www.japantimes.co.jp/news/2014/09/02/national/four-subcontractor-employees-sue-tepco-fukushima-1-dangerous-work-benefits/#.VAVHZ0i-8aE](http://www.japantimes.co.jp/news/2014/09/02/national/four-subcontractor-employees-sue-tepco-fukushima-1-dangerous-work-benefits/#.VAVHZ0i-8aE)

**Fukushima No. 1 plant workers kept in the dark over hazard pay**  
October, 2014

Almost a year after Japan pledged to double hazard pay at the stricken Fukushima No. 1 nuclear plant, workers are still in the dark about how much extra they are getting paid — if anything — for cleaning up the worst nuclear disaster since Chernobyl.

Only one of the more than three dozen workers interviewed by Reuters from July through September said he received the full hazard pay increase promised by Tepco. Some workers said they got nothing.

[www.japantimes.co.jp/news/2014/10/08/national/nuclear-workers-kept-in-dark-about-fukushima-hazard-pay/#.VDUcxOe-\\_dQ](http://www.japantimes.co.jp/news/2014/10/08/national/nuclear-workers-kept-in-dark-about-fukushima-hazard-pay/#.VDUcxOe-_dQ)

**Construction firm exec arrested for sending teen to help Fukushima cleanup**  
February, 2015

Aichi Prefectural Police arrested a construction firm executive on Wednesday for sending a 15-year-old boy to help clean up radioactive waste outside the wrecked Fukushima nuclear plant.

Japan's labor law prohibits people under 18 from working in radioactive areas.

The boy said his former employer had lowered his wages to just ¥3,000 a day and hit him when he did not work hard enough. Workers cleaning up villages in Fukushima are supposed to receive a special hazard allowance equivalent to about ¥9,000 a day from the government, in addition to their wages.

<http://www.japantimes.co.jp/news/2015/02/18/national/crime-legal/construction-firm-exec-arrested-for-sending-teen-to-help-fukushima-cleanup/#.VOVeJnYkdHA>

**100 people worked in plant without radiation knowledge**  
April, 2015

Roughly 100 people worked in a former no-go zone near the crippled Fukushima No. 1 Nuclear Power Plant between December 2012 and March 2013 without knowledge that their work was subject to a special radiation dose limit.

<http://mainichi.jp/english/english/newsselect/news/20150403p2a00m0na015000c.html>

**Gov't committee recommends more than doubling plant workers' max radiation dose**  
April, 2015

The maximum radiation dose for staff doing emergency work at the Fukushima No. 1 nuclear plant should be hiked from 100 millisieverts to 250 millisieverts, an expert government panel stated in a report.

<http://mainichi.jp/english/english/newsselect/news/20150418p2a00m0na003000c.html>

### **Worker injuries double at Fukushima plant**

May, 2015

One worker died and 63 others were injured in industrial accidents at the Fukushima No. 1 nuclear power plant in fiscal 2014, double the casualty figure from a year earlier, the plant operator said.

Tokyo Electric Power Co. said April 30 that about half of the injured workers in fiscal 2014 had worked at the crippled plant for less than six months, indicating that inexperience was a key factor behind the rise in labor accidents during decommissioning and other work.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201505010037>

### **Former laborer sues TEPCO, blaming radioactive debris for his cancer**

September, 2015

A 57-year-old man is suing Tokyo Electric Power Co. and a contractor on grounds he developed multiple cancers from radiation exposure while performing cleanup work around the crippled Fukushima No. 1 nuclear power plant.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201509020039>

### **Fukushima 'decontamination troops' often exploited, shunned**

March, 2016

The ashes of half a dozen unidentified laborers ended up at a Buddhist temple in this town just north of the crippled Fukushima nuclear plant. Some of the dead men had no papers, others left no emergency contacts. Their names could not be confirmed and no family members had been tracked down to claim their remains.

<http://www.japantoday.com/category/national/view/fukushima-decontamination-troops-often-exploited-shunned>

### **Braving danger and radiation for 11,000 yen a day**

April, 2016

Shortly after replying to an ad, a man was contacted by a subcontractor.

“We have a job to measure workers' radiation levels,” the man was told. “It does not entail exposure to high levels of radiation.” But when he attended a briefing held by a first-tier

subcontractor several days later, he learned that the initial job description was far different from what he had been told.

“As you know, you will be working in an area where radiation levels are high. That's because the mixers for contaminated water are there,” the official said. “You will be able to stay in the area for five to 10 minutes, no longer.”

<http://www.asahi.com/ajw/articles/AJ201604050034.html>

### Man's leukemia deemed result of his work at Fukushima plant

August, 2016

The labor ministry said a man who developed leukemia by helping in clean-up efforts at the crippled Fukushima No. 1 nuclear power plant is entitled to work-related compensation.

<http://www.asahi.com/ajw/articles/AJ201608200036.html>

### 465 suspected of working illegally at Fukushima nuke plant in 2015

November, 2016

465 workers at the disaster-stricken Fukushima No. 1 nuclear plant may have been employed under ‘disguised contracts’. Under a "disguised contract," people are given work without official employment or are made to work under the instruction of parties other than those who place the original orders, obscuring the party responsible for their safety.

The president of a construction company that undertakes decommissioning work at the Fukushima No. 1 plant told the Mainichi Newspaper that the company was making workers dispatched by another firm work at the plant by disguising them as its own regular employees. "I'm aware it constitutes disguised contract work, which is illegal. But it's a common practice."

Meanwhile, TEPCO's public relations section, when asked whether its questionnaires can uncover the realities of work conditions for those engaged in decommissioning work at the plant, said, "We see no problems with them."

<http://mainichi.jp/english/articles/20161122/p2a/00m/0na/012000c#csidxbe43d7b4bbeef3284ecbfa077c89ef7>

### Gov't certifies Fukushima TEPCO employee's leukemia as work-related illness

December, 2017

The leukemia that developed in a Tokyo Electric Power Co. (TEPCO) employee in his 40s working on the aftermath of the damaged Fukushima No. 1 Nuclear Power Plant was certified as a work-related illness by the Ministry of Health, Labor and Welfare.

This marks the third case of receiving work-related illness certification for developing leukemia in the aftermath of the nuclear disaster.

<http://mainichi.jp/english/articles/20171214/p2a/00m/0na/001000c>

### Workers exploited

February, 2018

Contractors advertise high wages to attract workers, but then subtract things like room and board, utility fees, clothing and equipment. And it's been known for years that the hazard compensation was more or less a racket gamed by the contractors standing between Tepco, which distributes the compensation, and the workers, who are supposed to be the beneficiaries. There can be up to six layers of contractors between Tepco and a worker, and each layer may take a cut of the compensation.

<https://www.japantimes.co.jp/news/2018/02/17/national/media-national/media-reports-de-romanticize-clean-up-work-fukushima-nuclear-power-plant/>

### Vietnam trainee, exploited in Fukushima, eyes return to Japan

March, 2019

Nguyen Duc Canh's concerns about working in a deserted northeastern Japanese town were compounded after a boss handed him an unexpected "bonus." "It's a danger allowance," the boss said.

Canh became convinced that he had unwittingly engaged in decontamination work. He had not been told about the hazardous nature of the work.

<http://www.asahi.com/ajw/articles/AJ201903100003.html>

### COVID-19 spreading among workers on Fukushima plant, related projects

August, 2021

Coronavirus infections are spreading rapidly among workers at the Fukushima Daiichi Nuclear Power Station and those involved in Ministry of the Environment projects including decontamination and interim radioactive waste storage facilities works.

<https://mainichi.jp/english/articles/20210820/p2a/00m/0bu/042000c>

### Systematic falsification of health records

September, 2021

A man named Yokota, the local head of a small firm hiring subcontract workers for Japan's reactor manufacturers such as General Electric and Hitachi, explained how he had himself been complicit in systematic falsification of health records, using a fake 'no abnormality detected' stamp.

<https://apjff.org/2021/17/Jobin.html>



## Evacuees

### In Japan's Danger Zone, the Stranded Await the Merciful March, 2011

Some are stuck in their homes, fearful of radiation, heeding government warnings to stay indoors, cut off without electricity or phone service. Others want to leave but have no gasoline. Still more, those whose homes were ruined, wait helplessly for evacuation at crowded shelters. All face dwindling supplies of heating fuel, food and water.

Others are still waiting for rides to safer areas.

A week after an earthquake and tsunami devastated their communities and set off the worst nuclear accident since Chernobyl, the plight of the thousands still stranded in areas near the stricken reactors — many too old or infirm to move — has underscored what residents say is a striking lack of help from the national government to assist with the evacuation of danger zones or the ferrying of supplies to those it has urged to stay inside.

The task has fallen to some local governments and even private companies and organizations that have made limited but heroic efforts to help those left behind, adding to the burden of coastal communities already overwhelmed by tens of thousands of people left homeless and the search for bodies, which the nuclear evacuations have now made impossible.

Masahiro Sakashita had prepared for the worst from the very beginning, but knew he could not leave. The director of the Fukujuen elderly care center, just 15 miles from one reactor, sent his younger employees home.

He and 19 other senior staff members stayed behind to keep caring for the center's 100 or so mostly bedridden residents, the oldest of whom is 102. He said they were cut off from the outside world, with electricity and delivery of food and other supplies disrupted. "I figured that at most we had enough food and water to last five, maybe six days," said Mr. Sakashita. "We were going to stay with them to the end."

The end came Friday, when a similar care center in distant Yokohama, near Tokyo, volunteered to take in Fukujuen's residents after seeing their plight reported on television and sent six buses to rescue them.

[http://www.nytimes.com/2011/03/19/world/asia/19stranded.html?\\_r=2&hp](http://www.nytimes.com/2011/03/19/world/asia/19stranded.html?_r=2&hp)

### Fifth move for family March, 2011

Around 1,300 people who evacuated Futaba amid the disaster at the nearby nuclear power plant started moving from their temporary shelter at Saitama Super Arena to a school building in Kazo, Saitama Prefecture, on Wednesday. Among the evacuees is Rei Hiwatashi, 15, who had just graduated from a junior high school when the disaster hit. The transfer to Kazo is the fifth move for her family since then.

<http://search.japantimes.co.jp/cgi-bin/nn20110331a7.html>

### 102-year-old Fukushima man facing evacuation commits suicide

April, 2011

A 102-year-old man, apparently deeply troubled at the prospect of being forced to leave his home close to the crippled Fukushima No. 1 Nuclear Power Plant, has committed suicide.

<http://mdn.mainichi.jp/mdnnews/news/20110414p2a00m0na001000c.html>

### Local associations disband, go dormant

August, 2011

Their members forced into temporary housing units or living in other prefectures, many neighborhood associations in areas devastated by the Great East Japan Earthquake have been dissolved or stopped functioning.

Administrative districts usually decide such questions as which schools local children will attend and where to set up voting stations for elections.

<http://www.yomiuri.co.jp/dy/national/T110805005867.htm>

### Evacuees abandoned

December, 2011

On March 27 Nanasawa and Omori from NHK drove to the mountainous area of Namie in the rental car.

Near Hirusone Tunnel, the reading on an instrument that could measure up to 20 microsieverts/h went as high as it could go. They were certain no one would be around, but when they approached a house they found people at home. Surprised, Nanasawa asked why they were still there. The answer was, "There haven't been any instructions from the town."

Masakatsu Amano, 70, lived outside of the 20 km and believed the area to be safe. He had heart problems and did not think he could go to an evacuation shelter. He lived with his wife and dog. His phone was not working, so he was unable to contact anyone.

Amano told them that there were about 10 people who sought shelter in the nearby Akougi community hall. It was already nightfall. The men found 12 evacuees living at the meeting hall. Evacuees were skeptical. "Are you really from NHK?" The dosimeters that the two men had were showing higher and higher readings. Though they told the 12 evacuees that the radiation levels were high at that location, they refused to believe them.

Each of them had different circumstances to deal with. There were those who could not evacuate to a shelter because they had pets. At the gymnasium next door, there was a couple living in a space blocked off with cardboard. The wife had trouble with her legs and could

use only a portable toilet, so they could not live with the others. The husband had run out of heart medication.

Omori murmured, "These people have been abandoned." These 12 people had nowhere to go, and had to find food for themselves because it was not an official shelter.

The following day on March 28, Kimura measured radioactivity in the parking lot of Akougi community hall and found it to be 80 microsieverts per hour. He was taken aback. That level of radioactivity was not safe. He entered the hall, removed his mask and explained the danger. The radioactivity inside was also high, measuring 25-30 microsieverts.

"I showed them the measurements, and for the first time everyone understood. Police and staff from the town hall had told them it was dangerous, but had not shown them actual measurements. They understood when I showed them the figures, and it helped a lot that I'm an expert."

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201112310048>

### Decontamination delayed in Iitate

July, 2013

Though residents want to return home as soon as possible, the village government is trapped in a dilemma, as some residents are demanding more thorough decontamination than is currently planned.

[the-japan-news.com/news/article/0000385184](http://the-japan-news.com/news/article/0000385184)

### Clean-up costly, complex & may fail

August, 2013

"First they said they wouldn't come back unless we decontaminated. So we did that and told them they could come back," he said. "But then it was about jobs or that they didn't want to come back because they have children."

[ajw.asahi.com/article/0311disaster/fukushima/AJ201308150021](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308150021)

### Debate begins for governments over Ishiba's no-return remark

November, 2013

Local communities have been stunned by the suggestion from Shigeru Ishiba, secretary-general of the Liberal Democratic Party, that the government should clearly define areas where evacuees can never return, as debate begins over the heretofore taboo issue.

[ajw.asahi.com/article/0311disaster/recovery/AJ201311040066](http://ajw.asahi.com/article/0311disaster/recovery/AJ201311040066)

### Fukushima evacuees' housing units crumbling

November, 2013

At the temporary housing complexes in Fukushima Prefecture that serve as homes for those displaced by the Great East Japan Earthquake and ensuing nuclear disaster, degradation of the buildings is becoming a serious issue.

Most of the units are well over 2 years old, and some are suffering from damaged floors and walls that are falling apart. Requests for repairs now exceed 300 cases a month.

[www.japantimes.co.jp/news/2013/11/17/national/fukushima-evacuees-housing-units-crumbling/#at\\_pco=tcb-1.0&at\\_tot=8&at\\_ab=-&at\\_pos=1](http://www.japantimes.co.jp/news/2013/11/17/national/fukushima-evacuees-housing-units-crumbling/#at_pco=tcb-1.0&at_tot=8&at_ab=-&at_pos=1)

### Temp housing occupancy still runs high 1,000 days after

December, 2013

Makeshift housing units set up after the quake and tsunami were still marking an occupancy rate of over 80% in the three hardest-hit prefectures of Iwate, Miyagi and Fukushima as the 1,000th day passed after the disaster. The result is believed to stem from slow progress in clearing highland to construct homes as well as building public housing for disaster victims

[mainichi.jp/english/english/newsselect/news/20131204p2g00m0dm017000c.html](http://mainichi.jp/english/english/newsselect/news/20131204p2g00m0dm017000c.html)

### Families separated

April, 2014

More than 60% of the nuclear refugee families are living in separate places or have divorced. Many have sent their children to live elsewhere. <sup>[1]</sup><sub>[SEP]</sub>

[www.japantoday.com/category/national/view/fukushima-farmers-seek-aid-for-radiation-zone-cattle](http://www.japantoday.com/category/national/view/fukushima-farmers-seek-aid-for-radiation-zone-cattle)

[mainichi.jp/english/english/newsselect/news/20140429p2a00m0na009000c.html](http://mainichi.jp/english/english/newsselect/news/20140429p2a00m0na009000c.html)

### Solidarity turns to resentment in host city

August, 2014

Property prices in Iwaki, about 60 km south of the wrecked nuclear plant, have jumped as evacuees forced from homes in more heavily contaminated areas snatch up apartments and land. Hundreds of workers, who have arrived to work in the nuclear clean-up, crowd downtown hotels.

Longtime residents have come to resent evacuees and the government compensation that has made the newcomers relatively rich in a blue-collar town built on coal mining and access to a nearby port.

[www.japantimes.co.jp/news/2014/08/31/national/fukushima-fallout-solidarity-turns-resentment-city-hosting-evacuees/#.VAR1Jki-8aE](http://www.japantimes.co.jp/news/2014/08/31/national/fukushima-fallout-solidarity-turns-resentment-city-hosting-evacuees/#.VAR1Jki-8aE)

## Insight from a Fukushima evacuee

January, 2015

"To be honest, I'm just exhausted," he said. "(After the accident), I just fled, right? But it wasn't like I lived here (in temporary housing) from the beginning. I stayed with relatives, going from place to place. Then I haggled over whether my house in the village was going to be decontaminated or not, and then over where the contaminated soil was going to be temporarily stored. After that, there was controversy over the installation of an incinerator for debris. Now we're arguing over compensation. In all honesty, whether or not to oppose nuclear power is irrelevant to me right now."

Evacuation orders for Kawauchi have been lifted, save for one small section, but only 600 of the 2,700 villagers have returned. When residents who are in the village at least four days a week are included in the tally, the number comes out to about 1,400. The village mayor has expressed enthusiasm for building infrastructure and bringing in private companies to encourage residents to return, but both efforts have been slow-going. People are still concerned about radiation exposure in the village, the levels of which, according to national guidelines, are within "acceptable" levels.

"The government might say it's safe, but doctors who've returned to work have left their families behind elsewhere, and some university professors have said publicly that they would never come to Fukushima. That confirms our suspicions," the man said. "As for whether thyroid cancer is increasing, who really knows? I know some people in their 40s and 50s have recently taken tests and received B2 results (the presence of nodes or cysts, indicating a need for further tests), and they've decided to leave the village."

With the lifting of Kawauchi's evacuation order, TEPCO has stopped the monthly 100,000-yen per person compensation payments to village residents. This development has hit the villagers hard, but the man says that the perception that TEPCO is reluctant to compensate victims is mistaken.

"TEPCO is dealing with compensation responsibly," he said. "In fact, many millionaires have emerged as a result of compensation for lost land and businesses. The problem is the difference between the treatment of those who were under government orders to evacuate and those who evacuated of their own accord, even if they suffered similar damage."

<http://mainichi.jp/english/english/perspectives/news/20150107p2a00m0na003000c.html>

## Population drain continues in 20 disaster-hit municipalities

March, 2015

Nearly 5,000 households in Miyagi, Iwate and Fukushima prefectures that lost their homes to the 2011 Great East Japan Earthquake and tsunami have resettled in municipalities outside their hometown, a Mainichi Shimbun survey has shown.

<http://mainichi.jp/english/english/newsselect/news/20150309p2a00m0na013000c.html>

### Fukushima needs to reverse depopulation

March, 2015

Of the 3,000 or so people who lived in Kawauchi before the nuclear disaster, some 1,600 have so far returned. Only 20 percent of those aged 40 or under are back in Kawauchi.

Young villagers have landed jobs in urban areas, where they took shelter. Children have also gotten used to schools to which they were transferred.

Without young people, it remains difficult to manage a local government and envisage a future for a local community, no matter how magnificent the infrastructure to be built under reconstruction measures.

<http://ajw.asahi.com/article/views/opinion/AJ201503190009>

### Influx of displaced people stirs resentment

March, 2015

In places like Iwaki City, south of the evacuation zone, the influx of displaced people seeking new homes and jobs has stirred resentment among residents.

<http://www.japantoday.com/category/national/view/japan-makes-a-start-on-sharing-lessons-from-nuclear-crisis>

### 'Voluntary' evacuees face unclear future

April, 2015

Immediately after the outbreak of the Fukushima No. 1 Nuclear Power Plant disaster, the Disaster Relief Act was applied to the entirety of Fukushima Prefecture, making emergency temporary housing facilities available to all Fukushima prefectural residents. Soon afterward, however, evacuation designations for individual municipalities were put into place, and residents were classified into those whose homes were within designated "no-go zones," referred to as "mandatory evacuees," and those whose homes were not in designated "no-go zones," referred to as "voluntary evacuees." In other words, this differentiation between so-called mandatory and voluntary evacuees was made after the residents had already fled their homes.

Because the Fukushima Prefectural Government for the most part made housing within the prefecture available to mandatory evacuees only, many voluntary evacuees live in appropriated housing outside of Fukushima.

If the provision of emergency temporary housing were to be discontinued, mandatory evacuees have several options to choose from, including moving to disaster recovery public housing. Voluntary evacuees, meanwhile, do not meet the requirements for moving into public housing, although many of them are reluctant to return home out of concerns over radiation exposure. Termination of the emergency temporary housing program would thus lead directly to unclear prospects for so-called voluntary evacuees.

TEPCO has expressed reluctance to cover the rental fees of voluntary evacuees  
As one central government official said, "It all comes down to the fact that no one wants to be held accountable."

<http://mainichi.jp/english/english/newsselect/news/20150417p2a00m0na006000c.html>

**Unclear guidelines prevent evacuees from keeping pets in many Tohoku municipalities**  
September, 2015

Only 20 out of 42 municipalities in Iwate, Miyagi and Fukushima prefectures have adopted guidelines on allowing evacuees staying at shelters to keep pets with them.

[http://www.japantimes.co.jp/news/2015/09/09/national/unclear-guidelines-prevent-evacuees-from-keeping-pets-in-many-tohoku-municipalities-survey/#.Ve\\_f43skeQk](http://www.japantimes.co.jp/news/2015/09/09/national/unclear-guidelines-prevent-evacuees-from-keeping-pets-in-many-tohoku-municipalities-survey/#.Ve_f43skeQk)

**3/11 evacuees' refusal to vacate temporary housing causes reconstruction headache**  
September, 2015

At least 900 temporary housing units in 20 municipalities in the disaster-hit prefectures of Iwate, Miyagi and Fukushima have not been vacated or demolished even though residents no longer have a dire need to stay in them, according to a survey.

If those dwellings are not razed, local governments cannot use the land to reconstruct their communities. But some residents have financial, emotional and other reasons preventing them from moving out, causing a headache for municipal officials.

When a Sendai official called on some families to ask why they hadn't moved into the new complex, they said they were scared because the new housing had been built at a site that had been flooded by the tsunami.

<http://www.japantimes.co.jp/news/2015/09/10/national/social-issues/311-evacuees-refuseal-vacate-temporary-housing-causes-reconstruction-headache/#.VfEw8HskeQk>

**Nuclear evacuees surveyed about living in public housing later became non-eligible**  
December 5, 2015

The Fukushima Prefectural Government has announced 4,890 planned public housing units for nuclear disaster evacuees, but even when combined with around 2,800 such residences for tsunami survivors, the number of residences covers only 17 percent of the around 43,700 Fukushima households that remained without a permanent home as of the end of last year.

<http://mainichi.jp/english/articles/20151205/p2a/00m/0na/013000c>

**Suicides rise among evacuees**  
December 28, 2015

Disaster-related suicides in Fukushima Prefecture have surged this year, with prolonged evacuation from the nuclear accident and uncertainty about returning home or leading normal lives suspected as the main causes.

[http://ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201512280026](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201512280026)

**‘Voluntary’ Fukushima evacuees denounce end of free housing, new assistance plan**  
February, 2016

The Fukushima prefectural government is maintaining its plan to terminate the free housing program for ‘voluntary’ evacuees from the nuclear disaster despite a barrage of criticism and complaints expressed during an explanatory meeting.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201602080054>

**11 residents died unnoticed in 1 year**  
March, 2016

Residents dying alone in reconstruction housing complexes created for survivors of the Great East Japan Earthquake has become a problem, with 11 residents in three tsunami-hit prefectures dying unnoticed over a one-year period.

<http://mainichi.jp/english/articles/20160304/p2a/00m/0na/015000c>

**Cost of rebuilding increases**  
March, 2016

About 125,000 homes were completely destroyed... The main reason some 8,000 families changed their minds about rebuilding is money. Because so much building is going on in the area, and many large construction companies are now starting work on projects for the 2020 Tokyo Olympics, the cost of building materials and construction workers has skyrocketed. Before the quake, in certain parts of Miyagi Prefecture the average cost of building a house was ¥90,000 per tsubo (3.3 square meters). It is now almost ¥500,000 per tsubo.

<http://www.japantimes.co.jp/community/2016/03/05/how-tos/tohoku-literally-still-waiting-move/>

**Death toll of evacuees tops 2,000**  
March, 2016

In the five years since the accident started at the Fukushima No. 1 nuclear plant, 2,024 evacuees, including the hard-drinking man, have officially died of causes, often psychological, related to the 2011 triple disasters. That death toll exceeds the 1,604 Fukushima residents who were directly killed by the Great East Japan Earthquake and tsunami.

[http://ajw.asahi.com/article/0311disaster/life\\_and\\_death/AJ201603080015](http://ajw.asahi.com/article/0311disaster/life_and_death/AJ201603080015)

### **Elderly 3/11 victims most likely to live in public housing**

March, 2016

Elderly people in the Tohoku region are disproportionately stuck in special public housing five years on from the Great East Japan Earthquake and tsunami.

Financial institutions often refuse to offer housing loans to elderly people, leaving them with no option but to stay in public housing. They also opt to remain in public housing because they think it is not worth investing much money to rebuild their homes because they have limited life expectancy.

<https://sanrikufukkou.com/2016/03/10/five-years-after-elderly-311-victims-most-likely-to-live-in-public-housing/>

### **Fukushima's 'caldrons of hell' keep questions unanswered**

May, 2016

“What should we do?” a 59-year-old woman, evacuated from Okuma, which co-hosts the crippled nuclear power plant, to Koriyama, also in Fukushima Prefecture, asked me when I interviewed her about a year ago. “Should we go on with our new life here, or should we return to our hometown? My thoughts remain in limbo, and I cannot get around to making up my mind.”

<http://www.asahi.com/ajw/articles/AJ201605190001.html>

### **Only 28% of Fukushima children returning to former schools**

September, 2016

Only 28 percent of children are returning to their public elementary and junior high schools in five towns and villages in Fukushima Prefecture following the lifting of evacuation orders imposed after the 2011 nuclear disaster. The majority of schoolboys and girls are opting to stay out of their hometowns due to anxiety over radiation exposure and resettlement at evacuation sites.

<http://mainichi.jp/english/articles/20160910/p2a/00m/0na/001000c>

### **Thousands of Fukushima evacuees face hardship as housing subsidies are to be slashed**

January, 2017

Nearly six years after Noriko Matsumoto and her children fled Fukushima Prefecture, fearing for their health from the nuclear disaster, they are confronted by a new potential hardship — the slashing of vital housing subsidies.

Matsumoto is among nearly 27,000 people who left areas not designated as mandatory evacuation zones, spooked by high levels of radiation after reactor meltdowns at the Fukushima No. 1 plant unleashed by the powerful earthquake and tsunami of March 11, 2011.

Now, as the Fukushima Prefectural Government prepares to slash unconditional housing assistance on March 31, many face the painful choice of returning to areas they still fear are unsafe, or reconciling to financial hardship, especially families scattered across different sites, such as Matsumoto's.

“Because both the national and the local governments say we evacuated ‘selfishly,’ we’re being abandoned — they say it’s our own responsibility,” Matsumoto, 55, told a news conference, her voice trembling. “I feel deep anger at their throwing us away.”

<http://www.japantimes.co.jp/news/2017/01/17/national/thousands-fukushima-evacuees-face-hardship-housing-subsidies-slashed/>

**Only 13% of evacuees in 5 Fukushima municipalities have returned home as of Jan. January, 2017**

Only 13 percent of the evacuees from the 2011 Fukushima nuclear disaster in five municipalities in Fukushima Prefecture have returned home after evacuation orders were lifted, local authorities said Saturday. Some residents may be reluctant to return to their homes due to fear of exposing children to radiation, the authorities said.

<http://mainichi.jp/english/articles/20170129/p2g/00m/0dm/047000c#csidx78faa939d69a2fcb738e2b86d48007a>

**Reluctant to return**  
March, 2017

Few people want to return. Some have already made lives for themselves elsewhere and see a lack of opportunity in their old communities.

Many also remain suspicious of the government's assurances that radioactivity has dropped to a safe level.

A reporter implied that the government is manipulating numbers in an attempt to persuade evacuees to return to their homes.

<http://www.japantimes.co.jp/news/2017/03/18/national/media-national/asking-tough-questions-fukushima/>

**Six years after - women and children still suffer most**  
2017

The resettlement plans create a dilemma for those who refuse to go back to their former homes but are dependent on financial support, especially single mothers. After the disaster, a

lot of women separated from or even divorced their husbands, who chose to stay in contaminated regions because of their work, and evacuated with their children.

<http://www.dw.com/en/six-years-after-fukushima-women-and-children-still-suffer-most/a-37871135>

### Evacuation orders lifted for three more Fukushima areas but residents slow to return

March, 2017

Japan on Friday lifted its evacuation orders for the village of Iitate and two other areas that had been enforced due to the nuclear disaster at the Fukushima No. 1 nuclear power station.

<http://www.japantimes.co.jp/news/2017/03/31/national/evacuation-orders-lifted-three-fukushima-areas-residents-slow-return/>

### Most evacuation orders end save for no-go zones

March, 2017

More than six years after the nuclear accident, evacuation orders for areas in two towns and one village in Fukushima Prefecture were lifted after midnight on March 30.

The number of residents affected tops 32,000.

<http://www.asahi.com/ajw/articles/AJ201703310049.html>

### Temporary disaster housing has an unforeseen permanence

April, 2017

The 2011 Great East Japan Earthquake left 110,000 people in three prefectures without shelter. About 53,000 prefabricated housing units were built in accordance with a national law that covers emergency disaster housing. This law states that residents will not stay in these units for more than two years. However, as the sixth anniversary of the disaster arrived on March 11, 35,000 people were still living in these makeshift apartments.

<http://www.japantimes.co.jp/community/2017/04/02/how-tos/temporary-disaster-housing-unforeseen-permanence/>

### Travel ban lifted on route to town near plant

September, 2017

At 6 a.m. a 27-kilometer section of National Route 114 was finally reopened to the public, giving evacuated residents direct access to the eastern part of Namie, a town that lies just north of the crippled Fukushima No. 1 nuclear power plant.

<http://www.asahi.com/ajw/articles/AJ201709200053.html>

### Fukushima town to allow overnight stays for 1st time since nuke plant meltdowns

April, 2018

Citizens of one part of Okuma town in the Fukushima nuclear disaster evacuation zone will be able to return home for overnight stays beginning on April 24, the municipal government decided on April 11.

<http://mainichi.jp/english/articles/20180412/p2a/00m/0na/018000c>

### Japan rejects U.N. call to stop returns

October, 2018

Japan's government has rejected calls from a U.N. rights expert to halt the return of women and children to areas affected by the Fukushima nuclear disaster over radiation fears. U.N. special rapporteur Baskut Tuncak warned that people felt they were "being forced to return to areas that are unsafe, including those with radiation levels above what the government previously considered safe."

<https://japantoday.com/category/national/japan-rejects-un-call-to-stop-returns-to-fukushima>

### 80% of local heads in nuke disaster areas can't meet population goals

September, 2018

About 80 percent of 45 administrative district heads inside six municipalities in Fukushima Prefecture with areas rendered difficult to live in because of the nuclear accident said it is impossible for enough evacuated residents to return to meet population goals at "reconstruction hub areas" set by those local governments.

<https://mainichi.jp/english/articles/20180906/p2a/00m/0na/026000c>

### Government must help rebuild Fukushima evacuees' lives

April, 2019

Eight years on since the nuclear disaster, 40,000 former residents of areas around the nuclear plant still live away from their homes. The figure is one-quarter of its peak level.

But the statistics have been criticized for failing to give a true picture of the problem. Critics say the data is distorted by questionable government criteria for recognizing evacuees. They point out that the prefecture stopped treating people living in makeshift housing as evacuees when it terminated providing such temporary housing for free.

The most pressing issue for evacuees at the moment is housing. The Fukushima prefectural government and some local municipalities discontinued at the end of March most of their programs to provide free housing to evacuees from the areas where the evacuation order has been lifted as well as housing support for voluntary evacuees.

As a result, dozens of families have been left without housing. The local governments should take a more flexible stance in making such decisions. They should, for example, allow evacuees struggling with serious problems such as diseases to live in their current homes under the same conditions.

Behind the moves to cut housing support to evacuees is the policy of the central and prefectural governments of placing the top priority on encouraging them to return home.

<http://www.asahi.com/ajw/articles/AJ201904080024.html>

## Evacuees Experience of Discrimination

Adults

### Evacuees refused by hotels

March, 2011

People who evacuated from the area surrounding the reactors were being refused rooms in hotels.

<http://search.japantimes.co.jp/cgi-bin/fd20110327pb.html>

### Double discrimination

March, 2011

A man from Saitama said he came up to Iwaki to bring his mother, who lives there, back with him. He's afraid of two things: One, the reaction of his own neighbors in Saitama to his mother's presence, and, two, the reaction of his mother's neighbors in Iwaki, who, after she eventually returns, may ostracize her for "abandoning the community."

<http://search.japantimes.co.jp/cgi-bin/fd20110327pb.html>

### Evacuations create bitterness in quake-hit communities

March, 2011

There are murmurings that those who choose to leave will no longer be welcome in their communities even if they come back.

<http://www.asahi.com/english/TKY201103280150.html>

### Drivers refused by gas stations

April, 2011

An employee driving a car with Fukushima plates was turned away from gas stations in the Tokyo metropolitan area.

<http://www.yomiuri.co.jp/dy/national/T110421006295.htm>

### **Municipal government asks for proof of radiation screening** April, 2011

The Tsukuba municipal government in Ibaraki Prefecture reportedly asked people moving from Fukushima Prefecture to submit official documents that show they had undergone radiation screenings.

<http://www.yomiuri.co.jp/dy/national/T110421006295.htm>

Children

### **Discrimination at school 1** 2011

Kids from Fukushima now attending school in another prefecture introduced themselves to their new class and the other kids fled.

[NHK radio](#)

### **Discrimination at school 2** April, 2011

A primary school boy from Minami-Soma, Fukushima Prefecture, who had transferred to a school in Chiba Prefecture took a seat in front of the teacher's desk but no one sat next to him.

A primary school girl, who evacuated from Minami-Soma to Gunma Prefecture, is refusing to go to school after her new classmates at a Gunma school would not go near her and made nasty remarks behind her back.

<http://www.yomiuri.co.jp/dy/national/T110421006295.htm>

### **Discrimination at school 3** November, 2016

A bully said to a student who evacuated from the Fukushima, "You are getting compensation (for the nuclear disaster), aren't you?" and demanded money from the student. The boy paid from 50,000 to 100,000 yen in total to around 10 people over about 10 occasions.

<http://mainichi.jp/english/articles/20161110/p2a/00m/0na/005000c>

### **Discrimination at school 4**

November, 2016

Children asked a junior high school boy how much compensation money his family had received. They told him that his family must live in a nice home for free just because they were evacuees.

<http://www.asahi.com/ajw/articles/AJ201611270040.html>

**Mother of bullied Fukushima evacuee reveals details of abuse to court**

November, 2017

The mother of a student who evacuated to Tokyo disclosed to the Tokyo District Court that the student had been bullied from elementary school and was told, "You'll probably die from leukemia soon."

<http://mainichi.jp/english/articles/20170112/p2a/00m/0na/005000c#csidx94b981304609fb2a00507471f661dd0>

## Safety

### Mayors near nuke plant torn between threat, jobs

April, 2011

The mayors of towns and villages around the Fukushima No. 1 nuclear power plant said they hosted the plant only because of promises of safety by the central government.

<http://search.japantimes.co.jp/cgi-bin/nn20110406a5.html>

### “I am angry”

March, 2011

"We believed the word from the company top brass that it has the world's highest levels of technology," a relative of a worker inside the plant says. "We assumed that the company had countermeasures against radiation after an accident. Are the government and company going to leave the people at the site to their fates? I am angry, even more so, because I used to trust their goodwill."

<http://www.theaustralian.com.au/saving-a-reactor-with-car-batteries/story-fn84naht-1226025003364>

### “We cannot trust official reports of ‘safety’ by the government and the media anymore.”

2012

Koichi Hasegawa: ‘Towards Long-term Sustainability: In Response to the 3/11 Earthquake and the Fukushima Nuclear Disaster’, Tohoku University

### TEPCO: Tech dearth behind N-accident

December, 2012

The report cited the root cause of the meltdowns triggered by the huge tsunami unleashed by the magnitude-9 earthquake on March 11, 2011, as the company's failure to prepare well for a severe accident and tsunami, on the false belief that it had fully established nuclear plant safety measures.

[www.yomiuri.co.jp/dy/national/T121217003947.htm](http://www.yomiuri.co.jp/dy/national/T121217003947.htm)

### Kan-do attitude averted the meltdown of Japan

January, 2013

“This was an enemy created by the Japanese themselves, that a major nuclear accident will not occur,” Naoto Kan, prime minister at the time of the disaster, writes.

“This was a premise established throughout Japanese society, a premise that allowed 54 reactors to be built. The law, the entire system of government, politics, economics, even the culture was acting under this set premise.

“Its conclusion was that we don’t need to prepare for such a thing. It was this attitude that led to a situation in which no one was able to deal with an accident that could occur.”

[www.japantimes.co.jp/opinion/2013/01/26/commentary/read-all-about-it-how-kan-do-attitude-averted-the-meltdown-of-japan/#.UQ3AJ-jW4y5](http://www.japantimes.co.jp/opinion/2013/01/26/commentary/read-all-about-it-how-kan-do-attitude-averted-the-meltdown-of-japan/#.UQ3AJ-jW4y5)

### Evacuees fear repeat of history

2014

Before the disaster, Hiroshi Sugamoto, head of an administrative section in the town of Futaba, participated in regular meetings with executives of Tokyo Electric Power Co. But whenever he brought up potential problems regarding tsunamis or earthquakes, he says, TEPCO would dismiss them as "impossible."

[mainichi.jp/english/english/features/news/20140716p2a00m0na014000c.html](http://mainichi.jp/english/english/features/news/20140716p2a00m0na014000c.html)

### Who’s responsible for the Fukushima disaster?

October, 2015

The International Atomic Energy Agency released its comprehensive — but mostly ignored — final report on Fukushima on Aug. 30.

It blamed the March 2011 triple meltdowns at Tokyo Electric Power Co.’s Fukushima No. 1 power plant on a blind belief in “the nuclear safety myth.” In other words, the myth that Japan’s “nuclear power plants were so safe that an accident of this magnitude was simply unthinkable.”

“It was not fully clear which organizations had the responsibility and authority to issue binding instructions on how to respond to safety issues without delay. The regulations, guidelines and procedures in place at the time of the accident were not fully in line with international practice in some key areas, most notably in relation to periodic safety reviews, re-evaluation of hazards, severe accident management and safety culture.”

<http://www.japantimes.co.jp/news/2015/10/03/national/media-national/whos-responsible-fukushima-disaster/#.VhDNF6RskZ0>

## Technology Failure

### Nuclear expert: Hubris led to disaster

March, 2011

Having heralded Japan's entry into the atomic age, a leading nuclear scientist has been left reeling by the crisis at the Fukushima No. 1 power plant. Atsushi Kasai, a former laboratory chief at what is now the Japan Atomic Energy Agency, suggests that today's generations of scientists and plant operators may have been blinded by an overconfidence in Japanese technology.

<http://www.asahi.com/english/TKY201103250201.html>

### Japanese robots long gone before Fukushima accident

May, 2011

Five years before the Great East Japan Earthquake and tsunami triggered the crisis at the Fukushima No. 1 nuclear power plant, Japan's six robots that could venture into a radiation-filled reactor building were consigned to the scrap heap. The reasons ranged from the uneasiness they caused nuclear plant employees, to the belief that a nuclear power accident could never occur in technologically advanced Japan.

<http://www.asahi.com/english/TKY201105260175.html>

### Stand tall on reconstruction

June, 2011

The Fukushima No. 1 nuclear power plant — a facility that was believed to have been built with the finest of cutting-edge technology — has become an out-of-control leviathan, sending numerous Fukushima Prefecture residents into lives of exile.

<http://www.yomiuri.co.jp/dy/national/T110626002373.htm>

### Tepco finds chinks around two bolts in leaky tank

September, 2013

Tokyo Electric Power Co. said Wednesday night that it found chinks in a storage tank from which 300 tons of highly radioactive water escaped with barely a trace last month.

[www.japantimes.co.jp/news/2013/09/25/national/tepcos-finds-chinks-around-two-bolts-in-leaky-tank/#.UkZK07yGpGF](http://www.japantimes.co.jp/news/2013/09/25/national/tepcos-finds-chinks-around-two-bolts-in-leaky-tank/#.UkZK07yGpGF)

### Makeshift equipment and frequent glitches

2013

The plant still runs on makeshift equipment and frequently suffers glitches. Just over the past few weeks, the plant suffered nearly a dozen problems ranging from extensive power outages to leaks of highly radioactive water from underground water pools. On Monday, TEPCO had to stop the cooling system for one of the fuel storage pools for safety checks after finding two dead rats inside a transformer box. Earlier this month, a rat short-circuited a switchboard, causing an extensive outage and cooling loss for up to 30 hours.

[www.japantoday.com/category/national/view/iaea-says-fukushima-cleanup-may-take-more-than-40-years](http://www.japantoday.com/category/national/view/iaea-says-fukushima-cleanup-may-take-more-than-40-years)

### More trouble hits TEPCO's water cleanup system

February, 2014

A pump for sending tainted water into equipment where radioactive materials are absorbed stopped working.

[the-japan-news.com/news/article/0001069900](http://the-japan-news.com/news/article/0001069900)

### Cloudy water halts ALPS work at Fukushima nuclear plant

March, 2014

An advanced radioactive water cleanup system at the crippled Fukushima No. 1 nuclear power plant has run into trouble again. TEPCO suspended operations at one of three units of the Advanced Liquid Processing System (ALPS) after cloudy water was observed within the unit Thursday morning. The unit in question had resumed operations only on Tuesday.

[the-japan-news.com/news/article/0001163844](http://the-japan-news.com/news/article/0001163844)

### More experts challenge Tepco's 'Great Icewall'

May, 2014

Experts on Friday heaped further criticism on a plan to build a costly underground frozen wall around the radiation-tainted Fukushima No. 1 power plant, a development that could delay the start of the experimental project. The experts and nuclear regulatory officials said at a meeting in Tokyo on Friday that they weren't convinced the project can resolve the serious problems involving contaminated water at the plant.

[www.japantimes.co.jp/news/2014/05/04/national/experts-challenge-tepcos-great-icewall-fukushima-1/#.U2btd8ezkjU](http://www.japantimes.co.jp/news/2014/05/04/national/experts-challenge-tepcos-great-icewall-fukushima-1/#.U2btd8ezkjU)

### TEPCO plan to block contaminated water with ice walls hits snag

July, 2014

A plan by Tokyo Electric Power Co. to block the flow of contaminated water at the Fukushima No. 1 Nuclear Power Plant faces problems as ice walls meant to stop the flow have failed to form.

[mainichi.jp/english/english/newsselect/news/20140707p2a00m0na011000c.html](http://mainichi.jp/english/english/newsselect/news/20140707p2a00m0na011000c.html)

### Attempt to stop water flowing into trench fails

November, 2014

An effort to stop contaminated water from flowing into a trench at the crippled Fukushima No. 1 Nuclear Power Plant failed to completely halt the flow, announced Tokyo Electric Power Co. (TEPCO), the plant's operator, on Nov. 17.

[mainichi.jp/english/english/newsselect/news/20141118p2a00m0na005000c.html](http://mainichi.jp/english/english/newsselect/news/20141118p2a00m0na005000c.html)

### TEPCO confirms nearly all fuel melted, sank into vessel, in No. 1 unit

March, 2015

Tokyo Electric Power Co. said Thursday it has confirmed that nearly all fuel in reactor 1 at its Fukushima No. 1 nuclear power plant has melted and fallen into the containment vessel, through analysis using elementary particles called muons.

<http://www.japantimes.co.jp/news/2015/03/20/national/tepcoco-confirms-nearly-fuel-melted-sank-vessel-fukushima-1-unit/#.VQvpZUYkeq4>

### Robotic probe stops working inside nuclear reactor vessel

April, 2015

A robotic probe sent inside a highly radioactive reactor vessel at the crippled Fukushima No. 1 Nuclear Power Plant stopped working about five hours after the operation began, plant operator Tokyo Electric Power Co. said.

<http://mainichi.jp/english/english/newsselect/news/20150411p2a00m0na005000c.html>

### TEPCO begins examination of Fukushima reactor containment vessel exhaust pipe

October, 2015

Tokyo Electric Power Co. is examining an exhaust pipe used to release pressure inside containment vessels at the Fukushima No. 1 nuclear plant shortly after the March 2011 nuclear meltdowns there. Poles supporting the pipe have begun to deteriorate in the 4 1/2 years since the outbreak of the nuclear crisis, which was triggered by the March 2011 Great East Japan Earthquake and tsunami.

<http://mainichi.jp/english/english/newsselect/news/20151010p2a00m0na007000c.html>

### The robots sent into Fukushima have 'died'

March, 2016

The remote-controlled robots that were sent into the site of the 2011 meltdown at the Fukushima Daiichi nuclear power plant in Japan have reportedly 'died', thanks to incredibly high amounts of leaked radioactive materials.

<http://www.sciencealert.com/the-robots-sent-into-fukushima-have-died>

### Ground zero is no place for human or robot

March, 2016

The technology needed to establish the location of the melted fuel rods in the other three reactors at the plant has not been developed.

The fuel rods melted through their containment vessels in the reactors, and no one knows exactly where they are now. This part of the plant is so dangerous to humans Tepco has been developing robots which can swim under water and negotiate obstacles in damaged tunnels and piping to search for the melted fuel rods. But as soon as they get close to the reactors the radiation destroys their wiring and renders them useless, causing long delays.

Each robot must be custom-built for each building. It takes two years to develop a single-function robot.

<http://www.theage.com.au/world/fukushimas-ground-zero-is-no-place-for-man-or-robot-20160310-gnfhpx.html#ixzz42ThUJFH7>

### New study shows most fuel was contained

July, 2016

Most of the nuclear fuel inside the No. 2 reactor at the Fukushima No. 1 nuclear power plant apparently did not melt through the pressure vessel as previously believed, research using muon tomography has revealed.

<http://www.asahi.com/ajw/articles/AJ201607290050.html>

### Leaky 'ice wall'

September, 2016

The problem: Groundwater flows down from higher inland elevations towards the Pacific, collecting in the nuclear plant's shattered reactor buildings and becoming contaminated. The plant grounds are packed with (occasionally leaky) storage tanks full of water pumped out of the reactor and turbine building basements, but the water does not stop.

TEPCO has attempted to stop the groundwater from getting into the buildings with a 1.5-kilometer subterranean 'ice wall' (actually frozen soil) around the No. 1-No. 4 reactor

buildings, but results have been inconclusive. Meanwhile, water decontaminated at the plant remains laced with radioactive tritium, and no storage site has yet been found to put this wastewater. And, the ice wall has holes in it.

<http://mainichi.jp/english/articles/20160907/p2a/00m/0na/011000c>

### Robot stuck in Fukushima No. 2 reactor on 1st try, abandoned

February, 2017

In the latest hitch in efforts to decommission reactors at the Fukushima No. 1 nuclear power plant, a robotic surveyor became mired in deposits and was lost on its maiden journey on Feb. 16.

<http://www.asahi.com/ajw/articles/AJ201702170048.html>

### Ice wall fail

March, 2017

Tepco's once-vaunted underground ice wall, built at a cost of 24.5bn yen, has so far failed to completely prevent groundwater from leaking into the reactor basements and mixing with radioactive coolant water. The structure, which freezes the soil to a depth of 30 metres, is still allowing 150 tonnes of groundwater to seep into the reactor basements every day.

<https://www.theguardian.com/world/2017/mar/09/fukushima-nuclear-cleanup-falters-six-years-after-tsunami>

### Robot can't find melted fuel at No. 1 reactor of Fukushima plant

March, 2017

Tokyo Electric Power Co. extended the mission of a survey robot after it failed to locate melted nuclear fuel at the No. 1 reactor of the Fukushima No. 1 nuclear power plant.

<http://www.asahi.com/ajw/articles/AJ201703220046.html>

### Tepco's 'ice wall' fails to freeze Fukushima's toxic water buildup

March, 2018

A costly "ice wall" is failing to keep groundwater from seeping into the stricken Fukushima Dai-ichi nuclear plant, data from operator Tokyo Electric Power Co shows, preventing it from removing radioactive melted fuel at the site seven years after the disaster.

When the ice wall was announced in 2013, Tepco assured skeptics that it would limit the flow of groundwater into the plant's basements, where it mixes with highly radioactive debris from the site's reactors, to "nearly nothing."

However, since the ice wall became fully operational at the end of August, an average of 141 metric tonnes a day of water has seeped into the reactor and turbine areas, more than the average of 132 metric tonnes a day during the prior nine months.

Using 34.5 billion yen (\$324 million) in public funds, Tepco sunk about 1,500 tubes filled with brine to a depth of 30 meters (100 feet) in a 1.5-kilometre (1-mile) perimeter around four of the plant's reactors. It then cools the brine to minus 30 degrees Celsius (minus 22 Fahrenheit).

In addition to the building costs, the ice wall needs an estimated 44 million kilowatt hours of electricity a year to run, enough to power about 15,000 typical Japanese homes.

<https://www.reuters.com/article/us-japan-disaster-nuclear-icewall-idUSKCN1GK0SY>

### Real reason for choice of 'ice wall' 2013

At the beginning of 2013, the government established a council to discuss what to do about the contaminated water, and as a result decided to order a joint venture between TEPCO and Kajima Corp. to construct an "ice wall" (impermeable frozen soil wall) to stretch around the reactor buildings of Units 1 to 4.

The reason they chose this frozen soil method was that to spend their development budget from METI they had to find an unproven technology that needed to be developed. In late March 2016, they began trying to freeze part of the ice wall, but it did not solidify as planned, and they were unable to shut out the underground water with it (as of June 2016).

[Catholic Bishops p. 125](#)

### Water woes threaten Fukushima cleanup March, 2019

TEPCO said the equipment could remove all radionuclides except tritium, a relatively harmless hydrogen isotope that is hard to separate from water. Tritium-laced water is released into the environment at nuclear sites around the world.

But after newspaper reports last year questioned the effectiveness of ALPS-processed water, TEPCO acknowledged that strontium-90 and other radioactive elements remained in many of the tanks.

TEPCO said the problems occurred because absorbent materials in the equipment had not been changed frequently enough.

<https://www.reuters.com/article/us-japan-nuclear-water-idUSKCN1QP0MA>

## Radiation

### Radiation 10 million times normal at Japan nuclear plant

March, 2011

Radioactivity in water at one earthquake-crippled Japanese nuclear reactor soared to 10 million times its usual level Sunday, prompting the plant operator to evacuate workers, local media reported.

<https://www.nbcnews.com/id/wbna42280076>

### Firefighters scared of radiation

March, 2011

Local volunteer firefighters are searching for bodies by themselves without the help of heavy machinery because operators and other professionals won't enter the town.

<http://search.japantimes.co.jp/cgi-bin/fd20110327pb.html>

### Farmer suicide

March, 2011

A 64-year-old organic farmer in Fukushima Prefecture hanged himself the day after the government advised people not to eat cabbage and other vegetables grown in the prefecture. Cabbages had been one of his farm's specialities.

[https://foodmuseum.typepad.com/food\\_museum\\_blog/2011/03/distraught-over-his-contaminated-cabbages-japanese-farmer-bids-them-farewell.html](https://foodmuseum.typepad.com/food_museum_blog/2011/03/distraught-over-his-contaminated-cabbages-japanese-farmer-bids-them-farewell.html)

### Plutonium detected in soil outside Fukushima nuke plant

June, 2011

A small amount of plutonium believed to have been emitted from the crippled Fukushima No. 1 nuclear plant has been detected in soil outside the plant, a researcher at a university said Sunday.

<http://mdn.mainichi.jp/mdnnews/news/20110606p2g00m0dm011000c.html>

### Radiation Understated After Quake, Japan Says

June, 2011

Japan said Monday that radioactive emissions from the stricken Fukushima Daiichi nuclear power plant in the early days of the March 11 earthquake and tsunami disaster might have been more than twice as large as a previous estimate, suggesting the accident was more grave than the government had publicly acknowledged.

<http://www.nytimes.com/2011/06/07/world/asia/07japan.html?ref=energy-environment>

**Bad straw devastates herd / Third-generation farmer loses faith in government, future**  
July, 2011

Rice straw at a farm in Kitakata was found to have been contaminated with radioactive cesium, 30 times the legal limit of 300 becquerels per kilogram for grass, and 23 cows suspected to have been contaminated with cesium have been shipped.

The farmer did not know about the government's instructions not to give cattle feed that had been kept outdoors after the accidents. "My place is more than 100 kilometers from the nuclear power plant, so I wasn't worried."

"I have to keep spending money to feed the cows, but I can't ship them," the farmer said. "I think I have no choice but to give up farming."

<http://www.yomiuri.co.jp/dy/national/T110718003816.htm>

**Report suggests second meltdown at reactor at Fukushima plant**  
August, 2011

A second meltdown likely occurred in the No. 3 reactor at the Fukushima No. 1 nuclear power plant, a scenario that could hinder the current strategy to end the crisis, a scientist said.

<http://www.asahi.com/english/TKY201108080276.html>

**Radiation forecasts ignored; town not warned**  
August, 2011

The nation's system to forecast radiation threats was working from the moment its nuclear crisis began. As officials planned a venting operation certain to release radioactivity into the air, the system predicted Karino Elementary School would be directly in the path of the plume emerging from the tsunami-hit Fukushima No. 1 nuclear plant.

But the prediction helped no one. Nobody acted on it.

The school, just over 10 km from the plant, was not immediately cleared out. Quite the opposite. It was turned into a temporary evacuation center.

<http://search.japantimes.co.jp/cgi-bin/nn20110810f2.html>

**34 spots top Chernobyl evacuation standard**  
August, 2011

Soil at 34 spots in Fukushima Prefecture has been contaminated with levels of radioactive cesium higher than the standard used for forcible evacuations after the Chernobyl disaster.

<http://www.yomiuri.co.jp/dy/national/20110830dy05.htm>

### **Fukushima cesium leaks 'equal 168 Hiroshima bombs'** 2011

The Japanese government estimates the amount of radioactive cesium-137 released by the Fukushima nuclear disaster so far is equal to that of 168 Hiroshima bombs.

<http://www.japantoday.com/category/national/view/fukushima-cesium-leaks-equal-168-hiroshima-bombs-says-report>

### **Japan's food radiation limits set too high** October, 2011

A visiting Belarusian scientist believes Japan's food radiation limits have been set too high and urged the nation to lower them to realistic levels. He pointed out that the limit for radioactive cesium in 1 kilogram of drinking water is set at 200 becquerels in Japan, 20 times as high as the maximum allowable level in Belarus.

[mdn.mainichi.jp/mdnnews/news/20111013p2g00m0dm010000c.html](http://mdn.mainichi.jp/mdnnews/news/20111013p2g00m0dm010000c.html)

### **Radiation test errors trigger widespread false alarms** December, 2011

Mix-ups and disagreements over radiation measurements are adding to confusion about the extent of contamination in Japan due to the accident at the Fukushima No. 1 nuclear power plant.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201112160019](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201112160019)

### **Radiation fears spread to forest industry** December, 2011

Radiation fears stemming from the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant and radiation monitoring activities are raising concern among people handling trees to grow mushrooms and make charcoal.

Forest workers are very concerned about any potential fallout from the nuclear crisis because they have to independently monitor radiation before applying to the plant operator, Tokyo Electric Power Co. (TEPCO), for compensation, unlike farmers and fishermen who have standing in law.

<http://mdn.mainichi.jp/mdnnews/news/20111226p2a00m0na009000c.html>

## Residents dump radiated soil in absence of plan 2011

"I scooped up all the radioactive soil and grass from my garden and dumped it in the forest, so no one could find it," said a mother of a four-year-old child from Fukushima city, who did not want to be identified by name.

"When I put my Geiger counter close to that mountain of soil it showed 10 microseverts per hour," she said. That is more than four times the official annual nuclear exposure limit. Others were spotted dumping their nuclear waste in public parks and by the river, residents said.

<http://af.reuters.com/article/worldNews/idAFTRE76408R20110705?pageNumber=1&virtualBrandChannel=0&sp=true>

## Residents starving for info December, 2011

After the success of the show aired on April 3, Masuda and the others completed the program they had first wanted to broadcast. Late night on May 15, the ETV special program "Network de Tsukuru Hoshano Osen Chizu" (A network-based map of radioactive contamination) was aired. The reaction to this show was even greater.

"We received 1,000 calls from viewers who told us things such as, they were able to grasp the situation, they wanted this kind of investigative journalism, and why did we broadcast it so late at night?"

"We showed the stark reality. The show reported radioactive readings. The government seemed to have worried about a panic, but in fact the opposite occurred. We heard a lot of people who say they wanted to know what situation they were in."

Even if the numbers are shocking, the people want to see the actual data. The residents had been starving for information.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201112310048>

## "Consumers do not trust the national standards." May, 2012

On April 23, phones at the farm ministry's Food Industry Affairs Bureau were ringing off the hook.

Callers were furious at an advisory, issued by the ministry three days before, urging food companies, shops and restaurants to stay in line with new national maximums for radioactive cesium in food and drop their own more stringent standards.

"Consumers do not trust the national standards."

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201205070087](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201205070087)

**Science ministry admits failings in handling of SPEEDI data**  
July, 2012

The science ministry admitted failings in its handling of advice on the use of contaminated playgrounds. After criticism, the ministry changed the safety standards for playgrounds from 3.8 microsieverts an hour to 1 millisievert a year.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201207280073](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201207280073)

**Another worker 'forgets' to wear dosimeter**  
August, 2012

An employee of a subcontractor worked at the stricken Fukushima No. 1 nuclear power plant on Aug. 10 without wearing a personal dosimeter, plant operator Tokyo Electric Power Co. said.

An employee of another TEPCO subcontractor is known to have also worked at the Fukushima plant without a dosimeter on Aug. 3.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201208110044>

**Monitoring dosimeter compliance anything but easy**  
August, 2012

In July, the Asahi Shimbun reported that subcontracted workers, at the behest of their boss, used lead plates to cover the dosimeters to keep radiation dose readings at lower levels. A number of other tricks were later unveiled, such as leaving dosimeters in cars parked within plant grounds.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201208140073](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201208140073)

**Above-limit strontium found at Fukushima plant**  
2013

Strontium-90 above the provisional limit set by Tokyo Electric Power Co. has been detected in rainwater inside the barriers around storage tanks containing radioactive water in six areas at its crippled Fukushima No. 1 nuclear power plant.

[the-japan-news.com/news/article/0000737883](http://the-japan-news.com/news/article/0000737883)

**High radiation bars decommissioning of Fukushima plant**  
February, 2013

Preparations for the mammoth task of decommissioning crippled reactors at the Fukushima No. 1 nuclear power plant are being stymied by continued high levels of radiation from the triple meltdowns there two years ago.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201302210064](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302210064)

### WHO says only slightly higher cancer risk for Fukushima residents

March, 2013

Two years after the Fukushima nuclear disaster, an international team of experts said Thursday that residents of areas hit by the highest doses of radiation face an increased cancer risk so small it probably won't be detectable.

[www.japantimes.co.jp/news/2013/03/02/national/who-says-only-slightly-higher-cancer-risk-for-fukushima-residents/#.UUB6dBnW4y5](http://www.japantimes.co.jp/news/2013/03/02/national/who-says-only-slightly-higher-cancer-risk-for-fukushima-residents/#.UUB6dBnW4y5)

### Strict radiation reference levels shunned to stem Fukushima exodus

May, 2013

The government avoided setting stringent radiation reference levels for the return of Fukushima evacuees for fear of triggering a population drain and being hit by ballooning costs for compensation.

Government officials initially sought a 5-millisievert cutoff line to ensure evacuees' safety, but the number was later eased to 20 millisieverts as some Cabinet members insisted on responding to local officials' concern that the tougher yardstick could spur population flight. They also factored in the possibility that costs of compensation for evacuees could significantly rise if they were unable to return home in the contaminated areas for a prolonged period.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201305250053](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201305250053)

### Survey wrongly estimates radiation exposure of 16,000 people

June, 2013

Fukushima Prefecture and the National Institute of Radiological Sciences said they erroneously estimated the radiation exposure of 16,118 people in a survey covering the first four months following the disaster. Among about 420,000 people the authorities have finished compiling data on so far, recalculations show 12,469 received higher doses and 3,649 lower doses than previously estimated.

[mainichi.jp/english/english/newsselect/news/20130626p2g00m0dm034000c.html](http://mainichi.jp/english/english/newsselect/news/20130626p2g00m0dm034000c.html)

### Fukushima radiation is not done yet

July, 2013

TEPCO has detected in test wells radioactive substances such as strontium and tritium, at 3,000 becquerels/ltr, being carried by ground water seepage towards the ocean.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201307040081>

### **Fukushima radiation is not done yet**

July, 2013

It was announced that moss growing on the rooftop of an apartment building in Fukushima city had cesium levels exceeding 1.7m becquerels, the highest radioactivity levels detected since last year. (Fukushima city is 50km from the nuclear plant.)

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201307040081>

### **Institute revises radiation exposure chart without explanation**

July, 2013

The National Institute of Radiological Sciences (NIRS) has revised its chart of doses and related health risks without offering an explanation, triggering confusion and criticism as a result of the disparity among government figures circulating among the public.

In April 2012, the NIRS deleted a description saying that there were no increased cancer incidences with a radiation dose of 100 millisieverts or less.

Instead, the new chart said it has been found that the risk of dying from cancer gradually rises in accordance with an increase in radiation doses exceeding 100 millisieverts.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201307240065](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201307240065)

### **Fukushima: health disaster or PR fail?**

September, 2013

Gerry Thomas, who runs the Chernobyl Tissue Bank at Imperial College London, is dismissive of the health risks. The problem in Japan, she says, is more one of communication than public health.

[www.japantimes.co.jp/news/2013/09/07/national/fukushima-health-disaster-or-pr-fail/#.UiwBebyGpGE](http://www.japantimes.co.jp/news/2013/09/07/national/fukushima-health-disaster-or-pr-fail/#.UiwBebyGpGE)

### **Tritium levels near Fukushima nuclear leak site continue to spike**

September, 2013

Tritium levels sampled from a testing well near the Fukushima No. 1 nuclear power plant storage tank that leaked 300 tons of highly radioactive water have spiked to new highs.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201309130047](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309130047)

### High radiation levels found at possible Olympic sites

October, 2013

A citizens group measured high radiation levels at candidate venues for the 2020 Tokyo Olympics, but the metropolitan government disputes the data and the International Olympic Committee has shown little interest. The group said some of the potential venues for the Summer Games had radiation levels exceeding the Tokyo metropolitan government's standards for decontamination.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310080051](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310080051)

### Typhoon flushes out radioactive strontium at Fukushima nuclear plant

October, 2013

Rain from Typhoon No. 26 apparently flushed out radioactive materials at the Fukushima No. 1 nuclear plant, leaving water with high strontium levels in a drainage ditch that connects to the ocean.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310170060](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310170060)

### Cleanup delayed

October, 2013

One reason for the cleanup delay is a lack of space to store the waste that comes out of the decontamination process. Some residents have opposed dumping the waste in their neighborhoods.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310210100](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310210100)

### Lower radiation readings proposed to speed return of Fukushima evacuees

November, 2013

The Nuclear Regulation Authority has drafted a proposal to accelerate the return home of Fukushima nuclear disaster evacuees by using radiation readings that tend to be lower than the ones now officially used.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201311090063](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201311090063)

### Cleanup may take more than 40 years

2013

The government and plant operator Tokyo Electric Power Co (TEPCO) have predicted the cleanup would take up to 40 years. They still have to develop technology and equipment that

can operate under fatally high radiation levels to locate and remove melted fuel. The reactors must be kept cool and the plant must stay safe and stable, and those efforts to ensure safety could slow the process down.

[www.japantoday.com/category/national/view/iaea-says-fukushima-cleanup-may-take-more-than-40-years](http://www.japantoday.com/category/national/view/iaea-says-fukushima-cleanup-may-take-more-than-40-years)

### TEPCO to pave Fukushima Daiichi site with asphalt to lower radiation

December, 2013

The operator of the crippled Fukushima Daiichi nuclear complex said Wednesday it will start covering the plant's premises with asphalt to reduce the levels of radiation workers are exposed to there, possibly later this month.

[mainichi.jp/english/english/newsselect/news/20131212p2g00m0dm043000c.html](http://mainichi.jp/english/english/newsselect/news/20131212p2g00m0dm043000c.html)

### Experts differ over cancer rate in children

December, 2013

Experts were divided over whether radiation from the Fukushima nuclear accident affected the thyroid cancer rate among children in Fukushima Prefecture, in which 59 young people have been diagnosed with or suspected of contracting the disease.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201312220021](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201312220021)

### Typhoons spread Fukushima fallout, study warns

2013

Typhoons that hit Japan each year are helping spread radioactive material from the Fukushima nuclear disaster into the country's waterways, researchers say. Contaminated soil gets washed away by the high winds and rain and deposited in streams and rivers.

[www.japantoday.com/category/national/view/typhoons-spread-fukushima-fallout-study-warns](http://www.japantoday.com/category/national/view/typhoons-spread-fukushima-fallout-study-warns)

### Japan riled by WHO's Fukushima cancer warning

2013

Japan on Friday insisted warnings by the World Health Organization of a rise in the risk of cancer for people in Fukushima were overblown, saying the agency was unnecessarily stoking fears.

[www.japantoday.com/category/national/view/japan-riled-by-whos-fukushima-cancer-warning](http://www.japantoday.com/category/national/view/japan-riled-by-whos-fukushima-cancer-warning)

### Fish with very high levels of cesium found near Fukushima

January, 2014

A black sea bream contaminated with 12,400 becquerels per kilogram of radioactive cesium, 124 times the safety standards for foodstuffs, was found in waters near the crippled Fukushima No. 1 nuclear power plant, a government-affiliated research institute said.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201401110029](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401110029)

### Groundwater cesium reaches record level

February, 2014

Tokyo Electric Power Co. said Thursday that it has detected a record 54,000 becquerels of radioactive cesium per liter in groundwater collected Wednesday from an observation well east of the reactor 2 turbine at the Fukushima No. 1 nuclear power plant.

[www.japantimes.co.jp/news/2014/02/13/national/groundwater-cesium-reaches-record-level/#.UvzEifYVcZI](http://www.japantimes.co.jp/news/2014/02/13/national/groundwater-cesium-reaches-record-level/#.UvzEifYVcZI)

### Cesium levels high in hundreds of Fukushima reservoirs

February, 2014

Very high levels of accumulated radioactive cesium have been detected in the mud of hundreds of reservoirs used to irrigate farmland in Fukushima Prefecture.

[ajw.asahi.com/article/behind\\_news/AJ201402250071](http://ajw.asahi.com/article/behind_news/AJ201402250071)

### Iitate farmer's cautionary tale

April, 2014

Unlike most of his fellow Fukushima farmers, Hasegawa never believed a word uttered by the “experts” who repeatedly came to visit his village 40 km from the crippled Fukushima No. 1 plant after the nuclear catastrophe began and assured residents it would pose little risk to their health. Appalled to hear the experts repeating “daijobu” (everything is fine), Hasegawa said he felt nothing but intense distrust from their reassuring tone. His fellow farmers, however, readily swallowed every word, as if desperate to believe everything was indeed fine.

The decontamination work is slow-paced and being carried out with makeshift methods and dubious safety standards. The original plan was to use high-pressure washing equipment, but now the workers are allegedly wiping off the radioactive contaminants using paper towels.

[www.japantimes.co.jp/news/2014/04/11/national/iitate-farmers-cautionary-tale-translated/#.U03iZMezkjV](http://www.japantimes.co.jp/news/2014/04/11/national/iitate-farmers-cautionary-tale-translated/#.U03iZMezkjV)

### Estimated radiation doses of returnees withheld for half a year

April, 2014

The government withheld findings on estimated radiation exposure for Fukushima returnees for six months, even though levels exceeded the long-term target of 1 millisievert a year at more than half of surveyed locations.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201404160056](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201404160056)  
[www.japantimes.co.jp/news/2014/04/17/national/radiation-study-on-evacuation-zones-kept-undisclosed-for-six-months/#.U1C1N8ezkjU](http://www.japantimes.co.jp/news/2014/04/17/national/radiation-study-on-evacuation-zones-kept-undisclosed-for-six-months/#.U1C1N8ezkjU)

### TEPCO ready to release radiation, not information, during Fukushima crisis

May, 2014

In the chaotic early stages of the Fukushima nuclear disaster, Tokyo Electric Power Co. was preparing a last-ditch countermeasure that would have released a large amount of radiation on an unknowing public.

Dry venting was planned on March 14, 2011, to prevent rising pressure from causing the containment vessel of the No. 3 reactor to break apart, according to documents. However, residents around the nuclear plant were never warned about the venting plan.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201405210045](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201405210045)

### Food not checked for radiation poses risk

June, 2014

Eating unchecked homegrown vegetables and wild game from radiation-tainted areas on a regular basis can lead to high levels of internal radiation exposure, according to the results of a study published Tuesday in the U.S. online science journal PLOS ONE.

[www.japantimes.co.jp/news/2014/06/17/national/food-checked-radiation-poses-risk-fukushima-study/#.U5-vQajCnbM](http://www.japantimes.co.jp/news/2014/06/17/national/food-checked-radiation-poses-risk-fukushima-study/#.U5-vQajCnbM)

### Abnormal changes in small birds

June, 2014

In 2011, a common reed bunting, a small migratory bird, was found with uneven tail feathers that had a moth-eaten appearance. By March 2012, the same abnormality was identified at all research sites across Japan.

[http://ajw.asahi.com/article/0311disaster/analysis\\_opinion/AJ201406250004](http://ajw.asahi.com/article/0311disaster/analysis_opinion/AJ201406250004)

### Over 1 T. Becquerels of Cesium Spread by Work at Plant

July, 2014

Up to 1.12 trillion becquerels of radioactive cesium are estimated to have been dispersed during work last summer to remove debris at the No. 3 reactor at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear plant. The per-hour release amount is 2,800 times the 10 billion becquerels usually discharged from the buildings at the crippled plant.

[jen.jiji.com/jc/eng?g=eco&k=2014072300837](http://jen.jiji.com/jc/eng?g=eco&k=2014072300837)

### Monkeys show possible effects of radiation

July, 2014

Monkeys near the stricken Fukushima nuclear power plant have lower blood cell counts than cousins living farther away, possibly because of radiation exposure, a study said Thursday.

[http://www.japantimes.co.jp/news/2014/07/25/national/science-health/fukushima-monkeys-show-possible-effects-radiation-study-suggests/#.U9G\\_Pki-8aE](http://www.japantimes.co.jp/news/2014/07/25/national/science-health/fukushima-monkeys-show-possible-effects-radiation-study-suggests/#.U9G_Pki-8aE)

### Scandal over child cancers in Fukushima

2014

Early health checks are finding abnormally high instances -- "several times to several tens of times higher" (59 kids and teens out of 239,000 tested) -- of thyroid cancer in Fukushima prefecture. Government and local prefectural authorities are saying that it is too early for such cancers to be manifesting themselves, so this must just be a statistical blip.

Or, and no one is saying it, but maybe those kids were affected by the Daiichi plant years before the disaster?

Either way, families with children who decided to trust the government and stay in the prefecture after the Fukushima power plant blew up must be regretting their decisions now.

Over time, as it becomes clear whether or not there is another Minamata-type wave of victims, the decision-makers will no doubt duck responsibility and leave it to the families affected to drag their cases to the courts -- something guaranteed to take years or decades to happen. Maybe someone will say sorry in 2061 -- this is how long it took (50 years) for the nation's PM, Junichiro Koizumi in 2006, to issue the first formal Prime Ministerial apology to the Minamata victims.

<https://mail.google.com/mail/u/0/?shva=1#inbox/143ab319b4be19e6>  
[https://www.japaninc.com/tt740\\_nine\\_new\\_trends\\_for\\_2014](https://www.japaninc.com/tt740_nine_new_trends_for_2014)

### Decontamination limits

September, 2014

Atmospheric radiation levels in houses and farmland declined by 50 to 80 percent after the top layers of soil and grass were removed, and walls and roofs were washed.

But even after a thorough cleaning had been carried out, atmospheric radiation levels in many areas remained above 20 millisieverts per year — the threshold for lifting the government’s evacuation order.

[www.japantimes.co.jp/news/2014/09/22/reference/fukushima-cleanup-going-painfully-slow/#.VCS7t-e-8aF](http://www.japantimes.co.jp/news/2014/09/22/reference/fukushima-cleanup-going-painfully-slow/#.VCS7t-e-8aF)

### **Fukushima farmers seek aid for radiation zone cattle** 2014

Masami Yoshizawa and fellow farmer Naoto Matsumura have remained at their farms to care for their own and others’ abandoned livestock in areas where access has been restricted due to radiation fears since the March 2011 meltdowns at the Fukushima DaiIchi nuclear plant.

[www.japantoday.com/category/national/view/fukushima-farmers-seek-aid-for-radiation-zone-cattle](http://www.japantoday.com/category/national/view/fukushima-farmers-seek-aid-for-radiation-zone-cattle)

### **Mothers compile booklet derived from radiation seminars** December, 2014

Mothers living near the stricken Fukushima No. 1 nuclear plant have compiled a booklet offering basic knowledge about radiation and explanations addressing safety concerns arising from the disaster.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201412290023>

### **People pressured not to talk about radiation** December, 2014

“People have felt pressured not to talk about radiation, and some mothers have gotten the information only now, more than three years after the accident.”

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201412290023>

### **70% of fallout that fell over land ended up in forests** 2015

About 70% of the fallout that fell over land ended up in forests, which will be impossible to effectively decontaminate, and where it will remain bioavailable to plants and wildlife for decades. Radionuclides have essentially hijacked the watershed, turning it into a cesium delivery system (while delivering smaller amounts of other nuclides as well).

<https://medium.com/safecast-report/part-2-5-6197b1f5bfd>  
<https://www.slideshare.net/safecast/safecast-reportfinalmed>

### Skeptical residents monitoring radiation levels

February, 2015

Residents of the Okubo-Yosouchi district began measuring radiation levels near their homes and in the farm fields from 2013. The catalyst was the monthly meetings that were held for the 14 households in the hamlet that had gone their separate ways after the evacuation order was issued. At those meetings, residents were curious about the radiation levels. However, some said the central government could not be trusted, so they decided they had to check for themselves.

In the Oguni neighborhood, a resident's group began taking airborne radiation level measurements six months after the accident. Data for each 100-meter-square area were listed on a map, and the information has been updated annually since.

The neighborhood has a mix of households that were designated for evacuation because of high radiation levels as well as those that were not so designated. Residents who were exempt from the designation used the data on the map to argue that there was very little difference in radiation levels from areas designated for evacuation. That led to a settlement with TEPCO for compensation levels that were close to those offered to residents living in the designated areas.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201502080025>

### Radioactive debris continues to stack up at plant

March, 2015

With nowhere to put it, refuse and debris contaminated with radioactive materials continue to pile up at the crippled Fukushima No. 1 nuclear power plant.

A total of 258,300 cubic meters of radioactive debris was produced to the end of this January in the plant, where decommissioning work is under way. The amount is equivalent to the capacity of about 650 25-meter-long swimming pools.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201503080013>

### Fukushima gov't says nuclear disaster 'unlikely' cause of thyroid gland cancer

March, 2015

Fukushima prefectural authorities here have dismissed any effect of radiation from the Fukushima No. 1 Nuclear Power Plant disaster on 86 thyroid gland cancer patients found in the prefecture as of the end of 2014.

<http://mainichi.jp/english/english/newsselect/news/20150325p2a00m0na006000c.html>

### Flooding swept away radiation cleanup bags in Fukushima

September, 2015

Bags filled with grass and soil from work to remove radioactive substances spewed by the crippled Fukushima No. 1 nuclear plant were swept away in the flooding of rivers in Iitate, Fukushima Prefecture, the Environment Ministry said. It remained unclear how many had been washed away.

<http://www.japantimes.co.jp/news/2015/09/12/national/flooding-swept-away-radiation-cleanup-bags-in-fukushima/#.VfOWO86HkZ0>

### **Hundreds of Radiation-Related Cancer Cases on the Way** October, 2015

New scientific research indicates that hundreds more cancers have been and will be contracted in the local population. A 30-fold excess of thyroid cancer has been detected among over 400,000 young people below the age of 18 from the Fukushima area — Oliver Tickell in *The Ecologist*.

Other radioactive elements emitted in the accident pose even more of a threat to the population's health (in particular, cesium-137, cesium-134 and plutonium-239).

<http://sputniknews.com/asia/20151023/1029014961/fukushima-radiation-cancer-threat-japan.html#ixzz3wvYErMvN>

### **The number of people affected by radiation in Japan is triple that of Chernobyl.** 2015

<https://ourworld.unu.edu/en/radiation-from-fukushima-disaster-still-affects-32-million-japanese>

### **Redeeming lives of Fukushima's irradiated animals** 2015

Tohoku University Prof. Manabu Fukumoto has been examining the blood and other factors of slaughtered cattle and wild animals caught by hunters mainly within a 20-kilometer radius of the plant.

Fukumoto discovered that cesium levels in the organs of calves were 1.5 times higher than in those of their mothers.

<http://the-japan-news.com/news/article/0002159008>

### **N-rumors push beef prices down in Fukushima Pref.** 2015

Although nearly four years have passed since the accident at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant, groundless rumors about radioactive contamination

persist, and wholesale prices of Fukushima beef remain about 10 percent lower than the average market price.

<http://the-japan-news.com/news/article/0001865845>

### Radiation from Fukushima spreads off U.S. shores 2015

Radiation from Japan's 2011 nuclear disaster has spread off North American shores and contamination is increasing at previously identified sites, although levels are still too low to threaten human or ocean life, scientists said on Thursday.

<http://www.japantoday.com/category/national/view/radiation-from-fukushima-nuclear-disaster-spreads-off-u-s-shores>

### Radiation from Fukushima Still Affects 32 Million Japanese 2015

The 2015 Fukushima Report, produced by Green Cross, explains that those exposed will see their overall risk of cancer increase, especially for those who were still children at the time of the accident. "Their health will be at risk over their entire lifetime as a result of the radiation released by the Fukushima Daiichi nuclear power plant."

<https://ourworld.unu.edu/en/radiation-from-fukushima-disaster-still-affects-32-million-japanese>

### Researchers trying to unravel spread of cesium and its impact on ecosystem December, 2015

More than 90 percent of the fir trees in forests close to the site of Japan's 2011 nuclear disaster are showing signs of abnormality, and plant lice specimens collected in a town more than 30 kilometers from the crippled facility are missing legs or crooked.

But it remains unclear whether the mutations in plants and animals are definitively connected to the disaster at the Fukushima No. 1 nuclear power plant.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201512220004>

### 55 schools still unusable February, 2016

Fifty-five public elementary schools and junior high schools in the three prefectures hardest hit by the March 2011 disaster remain unusable, including 30 around the crippled Fukushima No. 1 nuclear power plant.

Kumamachi Elementary School in Okuma, Fukushima Prefecture, is located about 3 kilometers from the plant in an area designated as difficult-to-return zone because of high radiation levels.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201602040064>

### Ground zero no place for human or robot

March, 2016

The fuel rods melted through their containment vessels in the reactors, and no one knows exactly where they are now. This part of the plant is so dangerous to humans Tepco has been developing robots to search for the melted fuel rods. But as soon as they get close to the reactors the radiation destroys their wiring and renders them useless, causing long delays.

<http://www.theage.com.au/world/fukushimas-ground-zero-is-no-place-for-man-or-robot-20160310-gnfhpx.html#ixzz42ThUJFH7>

### 30 groups show radioactive soil levels to address Fukushima fears

May, 2016

The website of a coalition of 30 private groups, titled the East Japan Soil Measurement Project, shows radiation levels in soil samples taken from more than 1,900 sites in Tokyo and 16 prefectures.

The project was started partly because parents were concerned that local governments were using only airborne radiation levels to determine if outdoor areas were safe for children. While radioactive contamination in the air decreases as time passes, that is not necessarily the case with radioactive substances in the ground.

The group's survey of land contamination has found "hot spots," where levels are significantly higher than in the surrounding neighborhoods, five years after the disaster. The radiation levels in some of those areas are comparable to those at nuclear reactor buildings and medical institutions that provide radiation therapy, where public access is restricted because annual radiation doses can exceed 5 millisieverts.

<http://www.asahi.com/ajw/articles/AJ201605060006.html>

### Decontaminating soil

July, 2016

The Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors sets the safety criteria for recycling metals and other materials generated from the decommissioning of nuclear reactors at no more than 100 becquerels per kilogram, and requires materials whose radiation levels exceed that level to be buried underground as "radioactive waste."

The Environment Ministry formally decided to allow limited use of soil generated from decontamination work in mounds under road pavements and other public works projects, as long as the soil contains no more than 8,000 becquerels per kilogram of radioactive cesium.

In April 2011, in the aftermath of the Fukushima meltdowns, the Ministry of Agriculture, Forestry and Fisheries restricted rice planting in paddies whose radiation levels topped 5,000 becquerels per kilogram of soil. While the restriction was effective for just one year, the same criteria have been in place for ensuing decontamination, where surface soil of more than 5,000 becquerels is removed and surface soil under that level is replaced with deeper layers.

It is inconsistent to strip away soil of more than 5,000 becquerels while recycling soil with the same level of radiation.

<http://mainichi.jp/english/articles/20160705/p2a/00m/0na/012000c>

### Gov't to lift special designation on 7.7 tons of radioactive waste

July, 2016

The Environment Ministry will lift the designation of 7.7 metric tons of waste stored in the city of Chiba that is contaminated with radioactive materials from the crippled Fukushima No. 1 nuclear plant as 'specified waste', allowing it to be disposed of as regular trash. The decision comes after the level of radioactive cesium in the waste dropped below the government's standard of 8,000 becquerels per kilogram.

<http://mainichi.jp/english/articles/20160722/p2a/00m/0na/021000c>

### Couple built home on top of radioactive soil due to inaccurate city sketch

August, 2016

A couple unknowingly built a new home in Fukushima on top of bags containing radioactive soil because they received an inaccurate waste storage sketch created by the Fukushima Municipal Government.

<http://mainichi.jp/english/articles/20160829/p2a/00m/0na/011000c>

<http://mainichi.jp/articles/20160829/ddm/001/040/171000c>

### Radioactive Food And Water The New Normal In Japan

September, 2016

Greenpeace found "[r]adiation along Fukushima rivers up to 200 times higher than Pacific Ocean seabed." The rivers and ocean are connected. Why doesn't the media report on these worrying hotspots?

<http://www.activistpost.com/2016/09/radioactive-food-water-new-normal-japan.html>

### Few food items exceed limit 5 years after disaster

September, 2016

A total of 0.1 percent of major food products from the 17 prefectures northeast of Shizuoka Prefecture registered radioactive contamination released in the Fukushima nuclear crisis in fiscal 2015.

Immediately after the outbreak of the nuclear disaster in March 2011, radioactive cesium was detected in domesticated rice and beef. Cesium exceeding the government-set limit is now detected only in wild vegetables, game meat and the like.

Shortly after the outbreak of the nuclear crisis, 6 to 16 percent of the fish caught off the coast exceeded the upper limit, but none of the fish caught in the same area exceeded the limit last year. However, river fish such as mountain trout and Japanese daces continue to register cesium exceeding the upper limit, as radioactive materials in un-decontaminated mountain forests flow into the rivers when it rains.

The cumulative cost of inspections in the 17 prefectures is about 4 billion yen.

<http://mainichi.jp/english/articles/20160909/p2a/00m/0na/023000c>

### Temporary radioactive soil storage sites hinder farmers

November, 2016

Wide swaths of temporary storage sites for radioactive soil and other waste generated from decontamination work in areas around the crippled plant are hampering locals from resuming farming.

The makeshift storage sites occupy roughly 1,000 hectares in total, with over 90 percent of those temporary storage sites on farmland.

<http://mainichi.jp/english/articles/20161120/p2a/00m/0na/004000c#csidx3c393e09f8adcdbb38de549149edbc6>

### Interim storage for contaminated soil

2016

The Environment Ministry estimates that by fiscal 2020, it will have acquired between 640 and 1,150 hectares of land, which could store 5 million to 12.5 million cubic meters of contaminated soil.

There is currently estimated to be about 10 million cubic meters of contaminated soil in Fukushima Prefecture, which could eventually rise to 22 million cubic meters.

<http://the-japan-news.com/news/article/0002835558>

### Fish less contaminated

2016

According to the prefecture, about 50 percent of the fish samples tested for radiation levels exceeded the government-designated maximum of 100 becquerels per kilogram right after the nuclear disaster started in 2011. But after April 2015, no fish has exceeded that limit.

<http://features.japantimes.co.jp/march-11-radiation/#part3>

### Highest radiation reading since 3/11 detected at Fukushima No. 1 reactor

February, 2017

The radiation level in the containment vessel of reactor 2 at the crippled Fukushima No. 1 power plant has reached a maximum of 530 sieverts per hour, the highest since the triple core meltdown in March 2011.

<http://www.japantimes.co.jp/news/2017/02/03/national/fukushima-radiation-level-highest-since-march-11/#.WJVWwhDogik>

### Radiation level in Fukushima No. 2 reactor measured higher

February, 2017

The road to decommissioning Fukushima No. 1 nuclear power plant's No. 2 reactor could be rockier than expected, as radiation levels on Feb. 9 were even deadlier than those recorded in late January.

Tokyo Electric Power Co. announced that day that radiation levels inside the reactor were estimated at up to 650 sieverts per hour, much higher than the record 530 sieverts per hour marked by the previous survey.

<http://www.asahi.com/ajw/articles/AJ201702100035.html>

### 4 more districts in Fukushima set to be declared safe to return to

February, 2017

Evacuation orders will be lifted shortly for four more municipalities in Fukushima Prefecture, but the prospect of residents returning to their old homes in huge numbers seems unlikely. About 32,000 residents will be affected, but there is no guarantee that all will soon, if ever, return.

<http://www.asahi.com/ajw/articles/AJ201702280051.html>

### Wild mushrooms to blame for the spread of cesium in Fukushima

March, 2017

Radioactive cesium released after the Fukushima No. 1 nuclear power plant's triple meltdown in 2011 is continuing to contaminate the environment through wild mushrooms, scientists say.

It turns out that the fungi absorb cesium and then release it through their spores after concentrating it. But the amount of cesium in the environment is miniscule and poses no threat to human health.

<http://www.asahi.com/ajw/articles/AJ201703210001.html>

### Lethal 11 sieverts in water near bottom of reactor 1 vessel

March, 2017

A radiation level of 11 sieverts per hour has been detected in tainted water inside a reactor containment vessel at the Fukushima No. 1 nuclear power plant. This is the highest radiation level detected in water inside the containment vessel. If exposed to this level of radiation, a person likely would die in about 40 minutes.

<http://www.japantimes.co.jp/news/2017/03/22/national/robot-probe-finds-lethal-11-sieverts-water-near-bottom-fukushima-reactor-1-vessel/>

### Locals, experts discuss radiation risks

March, 2017

Residents have agonized over whether to return to their homes in the village of Iitate, one of the most heavily contaminated areas, with evacuation orders to be lifted on March 31.

...

"We understand the necessity of issuing the radiation exposure record books to protect victim's health," said one resident. "But high school girls have fears and worries about possible future discrimination that is likely to be caused by possessing the books by posing such questions as, "Can we get married?" or "Can we have children?"

<http://www.asahi.com/ajw/articles/AJ201703250003.html>

### Shortage of soil

March, 2017

The proposals come at a time when Fukushima Prefecture faces a shortage of soil due to the decontamination.

<http://www.japantimes.co.jp/news/2017/03/27/national/government-proposes-reusing-decontaminated-fukushima-soil-landfill/#.WNmzVI6kLMU>

### Govt proposes reusing decontaminated soil as landfill

March, 2017

The Environment Ministry on Monday proposed reusing decontaminated soil from disaster-hit Fukushima Prefecture as landfill for parks and green areas.

<http://www.japantimes.co.jp/news/2017/03/27/national/government-proposes-reusing-decontaminated-fukushima-soil-landfill/#.WNmzVI6kLMU>

### **Plan to recycle radioactive soil in Fukushima**

May, 2017

In an apparent attempt to quell fears, the Environment Ministry on May 17 showed how it will recycle radioactive soil in construction projects to reduce the growing piles of widely abhorred contaminated debris. The cleanup has already collected about 16 million cubic meters of contaminated soil.

<http://www.asahi.com/ajw/articles/AJ201705180051.html>

### **Fukushima may get mutant rice that absorbs less radiation**

June, 2017

The National Agriculture and Food Research Organization used ion-beam irradiation to cause a gene mutation in Koshihikari to block the discharge of sodium ions from its roots. That enhanced the concentration of sodium ions in its root cells and suppressed the intake of cesium.

<http://www.asahi.com/ajw/articles/AJ201706130005.html>

### **No-go zones keep kin from burying deceased Fukushima evacuees at ancestral gravesites**

August, 2017

In municipalities that remain off-limits because of the fallout from the triple core meltdown at the Fukushima No. 1 power plant in March 2011, the inability of residents to return has put burials for their loved ones on hold.

<https://www.japantimes.co.jp/news/2017/08/24/national/no-go-zones-keep-kin-burying-deceased-fukushima-evacuees-ancestral-gravesites/>

### **Blanket radiation checks**

November, 2017

The blanket radiation checks conducted on rice grown in meltdown-hit Fukushima Prefecture have recently come under debate because none with radiation levels exceeding the safety limit has been found in recent years.

Some residents, including rice producers, want to continue the current system because there are consumers who still shun Fukushima produce. But conducting the checks is costly and requires a lot of personnel.

The rice is checked bag by bag before shipment, with the safety threshold set at 100 becquerels per kilogram. Bags that pass inspection get certification labels before entering the distribution channels.

The rice harvested last year and checked for radiation by the end of September came to 10.26 million bags. To cover the inspection expenses, the prefectural government collects ¥5 billion from Tepco each year. Some ¥500 million to ¥600 million in personnel expenses are covered by state subsidies.

<https://www.japantimes.co.jp/news/2017/11/05/national/blanket-radiation-checks-fukushima-rice-debate/>

### Gov't certifies Fukushima TEPCO employee's leukemia as work-related illness

December, 2017

The leukemia that developed in a Tokyo Electric Power Co. (TEPCO) employee in his 40s working on the aftermath of the damaged Fukushima No. 1 Nuclear Power Plant was certified as a work-related illness by the Ministry of Health, Labor and Welfare.

This marks the third case of receiving work-related illness certification for developing leukemia in the aftermath of the nuclear disaster.

<http://mainichi.jp/english/articles/20171214/p2a/00m/0na/001000c>

### Six years later - women and children still suffer most

2017

The resettlement plans create a dilemma for those who refuse to go back to their former homes but are dependent on financial support, especially single mothers. After the disaster, a lot of women separated from or even divorced their husbands, who chose to stay in contaminated regions because of their work, and evacuated with their children.

<http://www.dw.com/en/six-years-after-fukushima-women-and-children-still-suffer-most/a-37871135>

### Robotic probes show tough task ahead

March, 2018

The probes revealed a puzzling situation about the No. 2 reactor: Radiation levels at a site away from deposits of nuclear fuel debris are higher than those at a site close to them.

<http://www.asahi.com/ajw/articles/AJ201803070054.html>

### Amount of food with radioactive cesium exceeding gov't standards dropping: study

March, 2018

The number of cases in which radioactive cesium exceeding Japanese government standards was found in food items dropped to less than 20 percent over a five-year period from fiscal 2012, a health ministry study has found.

<http://mainichi.jp/english/articles/20180322/p2a/00m/0na/006000c>

### **Fukushima residents fight state plan to build roads with radiation-tainted soil**

April, 2018

The Environment Ministry plans to use radiation-tainted soil to build roads in Fukushima Prefecture, starting with trials in the city of Nihonmatsu next month.

But in the face of fierce protests from safety-minded residents, the ministry is struggling to advance the plan.

<https://www.japantimes.co.jp/news/2018/04/29/national/fukushima-residents-fight-state-plan-build-roads-radiation-tainted-soil/>

### **Fukushima village radiation still above gov't target after cleanup: Greenpeace**

2018

Radiation levels at houses and nearby areas in a Fukushima village remain around three times higher than the target set by the government despite cleanup work following the 2011 nuclear crisis.

<https://japantoday.com/category/national/fukushima-village-radiation-still-above-gov't-target-after-cleanup>

### **Locals opposed to removal of most dosimeters**

July, 2018

Officials and residents in Fukushima Prefecture are opposing the central government plan to remove 80 percent of the radiation dosimeters set up in the wake of the 2011 accident at the Fukushima No. 1 nuclear power plant.

The Nuclear Regulation Authority announced plans to remove 2,400 of the 3,000 monitoring posts in areas where dose rates have fallen and keep the remaining 600 in 12 municipalities around the plant.

<http://www.asahi.com/ajw/articles/AJ201807090004.html>

### **Farmers struggle to keep cows left behind**

December, 2018

Having disregarded a state instruction to kill cattle left behind in areas near the crisis-hit Fukushima Daiichi nuclear plant, some local farmers have been struggling to keep about 430 cows within a 20-kilometers radius of the complex exposed to radiation.

<https://mainichi.jp/english/articles/20181226/p2g/00m/0fe/062000c>

### Niigata government to dispose of radioactive mud stored since Fukushima crisis

January, 2019

The Niigata Prefectural Government said Tuesday it will dispose of around 60,000 tons of mud containing radioactive cesium that has been stored since the disaster and ask the operator of the crisis-hit plant to shoulder the costs. The disposal costs are estimated at ¥3 billion (\$27.5 million).

<https://www.japantimes.co.jp/news/2019/01/08/national/niigata-government-dispose-radioactive-mud-stored-since-fukushima-crisis/>

### Girl, 11, exposed to high radiation levels

January, 2019

An 11-year-old girl who evacuated from the town of Futaba was likely exposed to radiation levels near the government-set standard, despite government assurances that no children were exposed to such high doses. The girl is said to have been exposed to a radiation dose of about 100 millisieverts, the threshold for enhanced risk of cancer.

<http://www.asahi.com/ajw/articles/AJ201901220056.html>

### Radiation levels at plant far worse than was thought

2020

Exceedingly high radiation levels found inside crippled reactor buildings at the Fukushima No. 1 nuclear plant were labeled by nuclear regulators as an “extremely serious” challenge to the shutdown process and overall decommissioning of the site.

Radiation levels were estimated at 10 sieverts per hour, a lethal dose for anyone who spends even an hour in the vicinity, according to experts.

The finding would make it exceptionally difficult for workers to move the shield plugs, raising the prospect that the plan to decommission the reactors will have to be reassessed.

<http://www.asahi.com/ajw/articles/14071742>

### Mothers ignorant of radiation — Hisako Sakiyama

2020

I visited a recuperation center last year, and met about 10 mothers there. You may assume that these families, who sent their children to a place like this, are likely to be particularly concerned about radiation, but surprisingly, none of the mothers knew about the high prevalence of childhood thyroid cancer. I was just shocked.

I was trying to understand why, and I realized that people in Fukushima get their information mainly from local news sources, such as Fukushima Minpō and Fukushima Minyū newspapers, and Fukushima TV or other local television channels. These do not take up this news as major stories.

These mothers also shared with me that they kept it secret from neighbors and even relatives that they were sending their children to a recuperation facility. They were afraid that they might be criticized or labeled as oversensitive about radiation exposure, so they just told people that they were going on vacation, not mentioning recuperation at all.

I was also surprised when we went to Koriyama City Hall to see if our organization, 3.11 Fund for Children with Thyroid Cancer, could leave some application forms at the front desk. As a matter of fact, the city of Koriyama has the highest incidents of childhood thyroid cancer, along with places like Iwaki. But the Koriyama city officials had no idea. When we told them about the rising number of cancer cases, they were shocked, and even panicked.

<https://apjff.org/2020/19/Sakiyama-Hirano-Kasai.html>

### Puzzling safety standard

The Japanese government continues to maintain a safety standard of up to 20 mSv/yr – which is twenty times the usual limit. This applies only in Fukushima, as part of a policy to encourage residents to return home.

The government used the threshold of a 20 mSv radiation dose as the basis for evacuation orders soon after the accident, so residents in the applicable areas were forced to leave everything and flee their hometown in order to evacuate to areas where the radiation level was below 1 mSv/yr.

Now, the government is trying to bring people back to hometowns which are still contaminated with radiation levels of up to 20 mSv/yr, claiming that decontamination efforts have made it safe to return. It just does not make any sense at all.

<https://apjff.org/2020/19/Sakiyama-Hirano-Kasai.html>  
[www.japantoday.com/category/national/view/scientists-setting-radiation-exposure-limits-took-utility-money-probe](http://www.japantoday.com/category/national/view/scientists-setting-radiation-exposure-limits-took-utility-money-probe)

### Fukushima N-Plant water to be released 1 km from coast

August, 2021

The government and Tokyo Electric Power Company Holdings Inc. plan to release treated radioactive water from the stricken Fukushima No. 1 nuclear power plant about 1 kilometer off the coast, sources said Tuesday.

The treated water, containing radioactive tritium, will be released through an undersea tunnel that will be set up, according to the sources.

<https://the-japan-news.com/news/article/0007708998>

### Measures announced to battle harmful rumors related to release of treated water

August, 2021

The government has released its interim measures for battling harmful rumors expected to stem from the release of treated radioactive water from the Tokyo Electric Power Company Holdings Inc.'s Fukushima No. 1 nuclear power plant.

Announced on Tuesday, the measures include establishing a fund to buy fishery products at the government's expense on a temporary basis if demand falls, as well as the dissemination of information to prevent harmful rumors.

<https://the-japan-news.com/news/article/0007707892>

### Fukushima is still happening

September, 2021

There is (still significant risk)... Many of the particles embedded in the ecosystem of Fukushima will remain dangerous to living creatures for hundreds, or even thousands of years. Cesium-137, a particle that spread in large amounts after both Chernobyl and Fukushima, remains dangerous to living creatures for 300 years.

The primary risk to the public health is not the external radiation, the primary risk is that one may internalize radioactive particles and retain them inside the body.

<https://apjff.org/2021/17/Jacobs.html>

### Lethal radiation levels detected in plant reactor lid

September, 2021

The operator of the crippled Fukushima No. 1 nuclear plant could be forced to reconsider the plant's decommissioning process after lethal radiation levels equivalent to those of melted nuclear fuel were detected near one of the lids covering a reactor.

<https://www.asahi.com/ajw/articles/14440765>

## Thyroid Cancer

### 13,680 children have abnormal growths

2012

One year after the 3/11 nuclear disaster, more than 38,000 children tested from the Fukushima Prefecture, 36%, 13,680 cases, have abnormal growths, cysts or nodules on their thyroids.

<http://fukushimavoices-eng.blogspot.jp/>

### 1 case of thyroid cancer found

September, 2012

A Fukushima prefectural government panel on the health impact from last year's nuclear crisis at the Fukushima Daiichi power plant said Tuesday that one young person has been found to be suffering from thyroid cancer.

Shinichi Suzuki, professor at Fukushima Medical University and an observer on the panel, said at the meeting that there was no confirmed link between the case and radiation released during the nuclear crisis.

[mainichi.jp/english/english/newsselect/news/20120912p2g00m0dm025000c.html](http://mainichi.jp/english/english/newsselect/news/20120912p2g00m0dm025000c.html)

### 2 more thyroid cancer cases identified in Fukushima

February, 2013

A Fukushima prefectural government panel said Wednesday two young people, who were 18 or younger when the nuclear crisis at the Fukushima Daiichi complex erupted in March 2011, have been diagnosed with thyroid cancer, bringing the total number of such cases to three.

[mainichi.jp/english/english/newsselect/news/20130213p2g00m0dm091000c.html](http://mainichi.jp/english/english/newsselect/news/20130213p2g00m0dm091000c.html)

### Thyroid cancers up in Fukushima

November, 2013

Screening of Fukushima residents who were 18 or younger at the time of the 2011 nuclear disaster had found 26 confirmed and 32 suspected cases of thyroid cancer as of Sept. 30, according to the Fukushima Prefectural Government.

The number of confirmed cases was up by eight from August, while the suspected cases rose by seven, the prefecture-led study found.

[www.japantimes.co.jp/news/2013/11/13/national/thyroid-cancers-up-in-fukushima/#.UoSV3o2GpGE](http://www.japantimes.co.jp/news/2013/11/13/national/thyroid-cancers-up-in-fukushima/#.UoSV3o2GpGE)

### Four more Fukushima children suspected of having thyroid cancer

December, 2014

Four more children are suspected of having thyroid cancer in the latest survey on the possible health impact of the 2011 Fukushima meltdown disaster, sources said Tuesday.

<http://www.japantimes.co.jp/news/2014/12/24/national/science-health/four-fukushima-children-suspected-thyroid-cancer/#.VJpHrAAU>

### 16 new cases of thyroid cancer in young

May, 2015

Sixteen young people who lived near the crippled Fukushima No. 1 nuclear power plant have been diagnosed with thyroid cancer, prefectural authorities said May 18, although they added it is “unlikely” a direct result of the nuclear accident.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201505190041>

Families of Fukushima thyroid cancer patients launch support group

March, 2016

Families of children in Fukushima Prefecture who were diagnosed with thyroid cancer through health checkups conducted by the prefectural government in the wake of the Fukushima No. 1 nuclear plant disaster launched a family association on March 12.

<http://mainichi.jp/english/articles/20160314/p2a/00m/0na/006000c>

### 15 more child thyroid cancer cases found in Fukushima

June, 2016

An additional 15 people in Fukushima Prefecture who were 18 or younger when the Fukushima nuclear disaster occurred have been diagnosed with thyroid cancer, including a child who was 5 at the time.

<http://www.asahi.com/ajw/articles/AJ201606070042.html>

### Woman breaks silence among Fukushima thyroid cancer patients

2016

She’s 21, has thyroid cancer, and wants people in her prefecture in northeastern Japan to get screened for it. That statement might not seem provocative, but her prefecture is Fukushima, and of the 173 young people with confirmed or suspected cases since the 2011 nuclear meltdowns there, she is the first to speak out.

That near-silence highlights the fear Fukushima thyroid-cancer patients have about being the “nail that sticks out,” and thus gets hammered down.

<http://www.japantoday.com/category/lifestyle/view/woman-breaks-silence-among-fukushima-thyroid-cancer-patients>

### Thyroid cancer compensation for Fukushima plant worker

December, 2016

A man who developed thyroid gland cancer after working at the stricken Fukushima No. 1 nuclear plant has for the first time won the right to work-related compensation.

<http://www.asahi.com/ajw/articles/AJ201612170027.html>

### Mothers ignorant of radiation — Hisako Sakiyama 2020

I visited a recuperation center last year, and met about 10 mothers there. You may assume that these families, who sent their children to a place like this, are likely to be particularly concerned about radiation, but surprisingly, none of the mothers knew about the high prevalence of childhood thyroid cancer. I was just shocked.

I was trying to understand why, and I realized that people in Fukushima get their information mainly from local news sources, such as Fukushima Minpō and Fukushima Minyū newspapers, and Fukushima TV or other local television channels. These do not take up this news as major stories.

These mothers also shared with me that they kept it secret from neighbors and even relatives that they were sending their children to a recuperation facility. They were afraid that they might be criticized or labeled as oversensitive about radiation exposure, so they just told people that they were going on vacation, not mentioning recuperation at all.

I was also surprised when we went to Koriyama City Hall to see if our organization, 3.11 Fund for Children with Thyroid Cancer, could leave some application forms at the front desk. As a matter of fact, the city of Koriyama has the highest incidents of childhood thyroid cancer, along with places like Iwaki. But the Koriyama city officials had no idea. When we told them about the rising number of cancer cases, they were shocked, and even panicked.

<https://apjff.org/2020/19/Sakiyama-Hirano-Kasai.html>

### Radioactive Waste

#### How are toxic houses and land decontaminated?

September, 2014

The work mainly consists of scraping off the top layer of soil, removing grass and fallen leaves, and washing roofs and walls with water or wiping them off with cloth.

[www.japantimes.co.jp/news/2014/09/22/reference/fukushima-cleanup-going-painfully-slow/#.VCS7t-e-8aF](http://www.japantimes.co.jp/news/2014/09/22/reference/fukushima-cleanup-going-painfully-slow/#.VCS7t-e-8aF)

#### Negotiations continuing

September, 2014

The government still needs to negotiate with more than 2,000 landowners to acquire 16 sq. km of land in Okuma and Futaba to build the storage facilities.

[www.japantimes.co.jp/news/2014/09/22/reference/fukushima-cleanup-going-painfully-slow/#.VCS7t-e-8aF](http://www.japantimes.co.jp/news/2014/09/22/reference/fukushima-cleanup-going-painfully-slow/#.VCS7t-e-8aF)

### **Fukushima residents torn over nuclear waste storage plan**

March, 2015

Norio Kimura lost his wife, father and 7-year-old daughter Yuna in the March 2011 tsunami. Now, he fears he may lose his land, too, as Japan's government wants to build a storage site for 30 million tons of radioactive debris on his former doorstep.

<http://www.japantoday.com/category/national/view/fukushima-residents-torn-over-nuclear-waste-storage-plan>

### **Ubiquitous large black bags**

December, 2016

Large black bags piled up like stone walls are a common sight in Fukushima Prefecture. The bags, over 9 million in 2015, are filled with contaminated soil left over from the decontamination work carried out in the wake of the 2011 disaster at the Fukushima No. 1 nuclear power plant.

The bags of soil are being provisionally stored at about 130,000 spots throughout the prefecture, including in schoolyards and parks and beside private houses.

There were about 10.3 million cubic meters of contaminated soil as of the end of last year.

Decontamination has been completed for almost 90% of the about 420,000 houses and other buildings targeted for clean-up in Fukushima Prefecture. Storage facilities for the contaminated soil generated by the decontamination effort are intended to be only an interim solution. Legislation has been passed demanding that a final solution outside the prefecture be found within 30 years.

<http://the-japan-news.com/news/article/0003002233>  
<http://mainichi.jp/english/articles/20151210/p2a/00m/0na/020000c>

In March 2016 the ministry had acquired only about 1.3% of the land.

<http://mainichi.jp/english/articles/20160328/p2a/00m/0na/011000c>

### **Location still not secured**

July, 2021

TEPCO has not yet secured a location to dispose of a large amount of radioactive waste, a difficult task that it plans to tackle in the years to come.

Perhaps the most crucial question that must be resolved will be where high-level and low-level waste that will be produced from the decommissioning process should be temporarily stored before a permanent disposal site is found.

A total of 9,532 spent nuclear fuel rods--highly radioactive materials--are stored at the plant. Fukushima officials are demanding they be removed from the prefecture by the time the decommissioning wraps up in fiscal 2064.

But no municipalities in Japan want to accept and house such dangerous materials in their backyards.

TEPCO estimates the amount of low-level radioactive waste will total 52,000 tons. To dispose of the waste, it needs to be buried underground at a depth from several meters to more than 70 meters from the surface, depending on the levels of radioactivity.

But as of now, no potential sites in Japan for temporary storage have been determined, not to mention a final disposal site.

<http://www.asahi.com/ajw/articles/14389389>

## **Radioactive Water**

### **Radioactivity in seawater 1,250 times higher than normal**

March, 2011

Just outside a reactor at the coastal nuclear plant, radioactivity in seawater tested about 1,250 times higher than normal.

<http://www.japantoday.com/category/politics/view/edano-criticizes-tepco-for-series-of-mistakes-on-nuclear-plant>

### **Radioactive leaks into sea were 20,000 times above limit: TEPCO**

April, 2011

Highly radioactive water that leaked into the Pacific Ocean from the crisis-hit Fukushima Daiichi nuclear plant in early April contained an estimated 5,000 terabecquerels of radioactive substances, 20,000 times the annual allowable limit for the plant.

<http://mdn.mainichi.jp/mdnnews/news/20110421p2g00m0dm049000c.html>

### **Japan insists discharge of radioactive water does not breach international law**

April, 2011

Despite protests from abroad, the Japanese government said it is not in immediate violation of international law by discharging radioactive water into the sea. The government said the radiation levels are not high. The wastewater is about 100 times more radioactive than the limit set for seawater under Japan's nuclear power plant regulations, according to the government.

<http://www.asahi.com/english/TKY201104060133.html>

### Radioactive Water Leak Found at Fukushima N-Plant

August, 2012

Tokyo Electric Power Co. on Tuesday morning discovered possibly highly radioactive water on the first floor of the No. 4 reactor turbine building at its disaster-crippled Fukushima No. 1 nuclear plant in northeastern Japan.

[jen.jiji.com/jc/eng?g=eco&k=2012081400603](http://jen.jiji.com/jc/eng?g=eco&k=2012081400603)

### Quiet release of contaminated water to the ocean

2012

A large amount of contaminated water was released to the ocean from April 4 to 10 without notification to the fishing industry and neighboring countries.

‘Towards Long-term Sustainability: In Response to the 3/11 Earthquake and the Fukushima Nuclear Disaster’, Koichi Hasegawa, Tohoku University

### Record-high cesium in fish near N-plant

January 20, 2013

About 254,000 becquerels per kilogram of radioactive cesium was measured in a spotbelly rockfish caught in the port of Tokyo Electric Power Co.'s crippled Fukushima No. 1 nuclear power station late last month, TEPCO has said. The cesium level is 2,540 times higher than the government-set limit for food and the highest found in fish since the March 2011 accident at the plant, according to TEPCO.

[www.yomiuri.co.jp/dy/national/T130119002888.htm](http://www.yomiuri.co.jp/dy/national/T130119002888.htm)

### TEPCO seeks approval over dumping groundwater from Fukushima plant

May 13, 2013

Tokyo Electric Power Co. on Monday met with fishermen in Fukushima to seek approval for a plan to discharge groundwater it has pumped from the premises of the crippled Fukushima Daiichi nuclear power plant.

[mainichi.jp/english/english/newsselect/news/20130513p2g00m0dm077000c.html](http://mainichi.jp/english/english/newsselect/news/20130513p2g00m0dm077000c.html)

### TEPCO admits radioactive cesium in water flowing into Fukushima plant

June 4 2013

Tokyo Electric Power Co (TEPCO) said on Tuesday it had detected radioactive cesium in groundwater flowing into its wrecked Fukushima Daiichi plant, reversing an earlier finding that any contamination was negligible.

[www.japantoday.com/category/national/view/tepcu-admits-radioactive-cesium-in-groundwater-flowing-into-fukushima-plant](http://www.japantoday.com/category/national/view/tepcu-admits-radioactive-cesium-in-groundwater-flowing-into-fukushima-plant)

### Fukushima radiation is not done yet

July, 2013

TEPCO has detected in test wells radioactive substances such as strontium and tritium, at 3,000 becquerels/ltr, being carried by ground water seepage towards the ocean.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201307040081>

### Tritium level hits record off N-plant

July, 2013

Tokyo Electric Power Co. says 2,300 becquerels per liter of tritium was found in seawater sampled off its crippled Fukushima No. 1 nuclear power station Wednesday, the highest level recorded since the March 2011 accident.

[the-japan-news.com/news/article/0000362901](http://the-japan-news.com/news/article/0000362901)

### Groundwater contamination level soars at Fukushima plant

July, 2013

The operator of the crippled Fukushima Daiichi nuclear power plant said Tuesday that the density of radioactive cesium in groundwater by the sea at the plant has soared to around 90 times higher than three days ago.

[mainichi.jp/english/english/newsselect/news/20130709p2g00m0dm075000c.html](http://mainichi.jp/english/english/newsselect/news/20130709p2g00m0dm075000c.html)

### More radiation found in water at N-plant

July, 2013

Tokyo Electric Power Co. on Friday reported a spike in levels of radioactive substances in groundwater from an additional observation well at its crippled nuclear plant in Fukushima Prefecture, adding to previously observed contamination in other wells at the site.

[the-japan-news.com/news/article/0000377402](http://the-japan-news.com/news/article/0000377402)

**Tepco trying to keep radioactive water from reaching sea, but can it?**  
July, 2013

Tokyo Electric Power Co. only recently admitted radioactive water is flowing from its crippled Fukushima No. 1 plant into the Pacific. Although Tepco is giving assurances that it is taking steps to prevent more tainted groundwater from reaching the sea, it's unclear how effective those efforts are, considering the difficulty of even pinpointing the problem.

[www.japantimes.co.jp/news/2013/07/31/reference/tepco-trying-to-keep-radioactive-water-from-reaching-sea-but-can-it/#.UhXxGryGpGE](http://www.japantimes.co.jp/news/2013/07/31/reference/tepco-trying-to-keep-radioactive-water-from-reaching-sea-but-can-it/#.UhXxGryGpGE)

**TEPCO says radioactive water overflowing at Fukushima plant**  
August, 2013

The operator of the wrecked Fukushima nuclear power plant said Tuesday it is struggling with its latest efforts to stop contaminated underground water leaks from running into the sea.

Tokyo Electric Power Co (TEPCO) said that some of the water was seeping over or around a "liquid glass wall" it has created by injecting chemicals into the soil that solidify into a wall.

[www.japantoday.com/category/national/view/tepco-says-radioactive-water-overflowing-at-fukushima-plant](http://www.japantoday.com/category/national/view/tepco-says-radioactive-water-overflowing-at-fukushima-plant)

**Toxic Water Could Flow Around Barrier To Sea**  
August, 2013

The Nuclear Regulation Authority on Monday questioned the effectiveness of a nearly completed underground barrier meant to prevent radioactive water from leaking into the ocean at the Fukushima Daiichi nuclear plant.

Highly radioactive water in the ground between reactor buildings and the coastline is feared to be flowing into the ocean. Tokyo Electric Power Co. began building a barrier near the water's edge by injecting special chemicals deep into the ground.

Tepco has come under fire for responding slowly to the problem of radioactive groundwater, and some of its measures are said to have worsened the situation.

[e.nikkei.com/e/ac/tnks/Nni20130812D1208A17.htm](http://e.nikkei.com/e/ac/tnks/Nni20130812D1208A17.htm)

**Fukushima fishermen delay resuming business due to toxic water leak**  
August, 2013

A fisheries cooperative in Fukushima Prefecture that has voluntarily suspended business, decided to postpone a trial operation, saying that starting the operation would be difficult after it came to light that radioactive water has been spewing into the Pacific Ocean from the nuclear plant.

[www.japantimes.co.jp/news/2013/08/22/national/fukushima-fishermen-delay-resuming-business-due-to-toxic-water-leak/#.UhXv4byGpGE](http://www.japantimes.co.jp/news/2013/08/22/national/fukushima-fishermen-delay-resuming-business-due-to-toxic-water-leak/#.UhXv4byGpGE)

### High-level radioactive tritium found in seawater at Fukushima plant port

August, 2013

Concentrations of radioactive tritium in seawater from the port of the stricken Fukushima No. 1 nuclear power plant have risen between eight and 18 times in one week, Tokyo Electric Power Co. said Aug. 23.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201308240067](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308240067)

### Fukushima's toxic water pool grows as Tepco dithers

August, 2013

The Tokyo Electric Power Company is trying to decide what to do with the largest pool of radioactive water in the history of nuclear accidents: 330,000 tonnes. It can either dump it in the ocean, let it evaporate into the air, or both.

Tepco has 300 tonnes of water flowing into the reactors each day for cooling, while another 400 tonnes of groundwater is seeping from hills behind the plant into basements and mixing with contaminated run-off.

Tepco is then pumping hundreds of tonnes out of the basements each day to storage tanks where it awaits treatment to extract cesium and strontium via two filter systems.

Tepco said this week that the second of the two filter systems failed this month and it will not be repaired until next month.

Last week at least 300 tonnes leaked from one of the 1000 tonne storage tanks. Japan's nuclear industry used the tank storage method even before the Fukushima accident and it has long been shown to be unsafe.

<http://www.theage.com.au/world/fukushimas-toxic-water-pool-grows-as-tepco-dithers-20130830-2svvn.html#ixzz2dSpudBLd>

### High radiation readings found at Fukushima tanks

September, 2013

The operator of Japan's stricken Fukushima nuclear power plant said Saturday it had found new radiation hotspots near tanks storing toxic water, with one reading peaking at 1,800 millisieverts per hour—a potentially lethal dose.

[www.japantoday.com/category/national/view/high-radiation-readings-found-at-fukushima-tanks](http://www.japantoday.com/category/national/view/high-radiation-readings-found-at-fukushima-tanks)

### TEPCO discovers pipe leaking radioactive water at Fukushima plant September, 2013

The operator of Japan's stricken Fukushima nuclear plant said Sunday it had found highly radioactive water dripping from a pipe connecting two coolant tanks at one of four radiation hotspots.

The discovery came hours after Tokyo Electric Power Co (TEPCO) said late Saturday that radioactivity at one of the other four sites measured 1,800 millisieverts per hour—a dose that would kill a human left exposed to it in four hours.

[www.japantoday.com/category/national/view/tepcO-discovers-pipe-leaking-radioactive-water-at-fukushima-plant](http://www.japantoday.com/category/national/view/tepcO-discovers-pipe-leaking-radioactive-water-at-fukushima-plant)

### Tanks said built in haste, bound to leak September, 2013

A subcontractor who was involved in building water storage tanks at the damaged Fukushima No. 1 nuclear plant said late last month that concerns about leaks emerged after workers were told to build the vessels as quickly as possible. He said management of the tanks' construction was poor, with necessary materials sometimes not delivered on time and rusty bolts found among the materials.

[www.japantimes.co.jp/news/2013/09/02/national/leaks-feared-when-fukushima-no-1-water-tanks-constructed/#.UiV0jryGpGF](http://www.japantimes.co.jp/news/2013/09/02/national/leaks-feared-when-fukushima-no-1-water-tanks-constructed/#.UiV0jryGpGF)

### TEPCO confirms highly radioactive water spread underground September, 2013

Highly radioactive water that leaked from a storage tank and was not discovered until last month is spreading underground at the Fukushima No. 1 nuclear power plant. TEPCO first discovered the leak on Aug. 19, which is suspected to have started in July.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201309060053](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309060053)

### Leak from tank contaminating groundwater September, 2013

Tokyo Electric Power Co. has discovered radioactive materials from groundwater at the crippled Fukushima No. 1 nuclear power plant. It is the second such instance, which suggests contaminated water that leaked from a storage tank is spreading underground.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201309100048](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309100048)

### Govt's uphill battle over tainted water

September, 2013

On Sept. 3, the government announced it will tap a public fund of ¥47 billion to beef up measures against the tainted water leakage. Akira Amari, state minister in charge of economic and fiscal policy, said: “TEPCO has been cornered financially and psychologically. This [announcement] means the government will waste no time in doing what should be done.”

The contaminated water issue includes three main problems.

First, the amount of radioactive water increases by 400 tons at the plant every day. Nuclear fuel in the plant’s Nos. 1, 2 and 3 reactors, all damaged by the March 11, 2011, disaster, continues to generate heat and needs to be cooled with water. But the cooling water keeps escaping from the damaged reactors. Moreover, groundwater flowing down from the hills has seeped into the reactor buildings, increasing the amount of tainted water to 430,000 tons.

Second, contaminated water has leaked from makeshift storage tanks. Because of weak joints in the 1,000-ton steel tanks, an estimated 300 tons of water has leaked from a faulty tank.

Third, highly radioactive water that accumulated in underground tunnels that hold pipes and cables, which are connected to the reactor and turbine buildings, has found its way into the plant’s harbor.

Early warning ignored

However, Masao Yoshida, the chief of the Fukushima plant when the nuclear crisis broke out, raised the alarm over water leakage in April 2011. “Handling the water is an urgent task. If we fail to deal with it, we can’t overcome [the crisis],” said Yoshida, who died in July.

TEPCO, however, found that simply securing space to store an increasing volume of radioactive water was enough to keep its hands full. As a result, it delayed taking steps to tackle the water leaks, leaving highly radioactive water untouched in the tunnels.

Masayuki Ono, acting general manager of TEPCO’s nuclear power and plant siting division, said: “We deal with issues according to their priority, but face delays in solving them. Under the current system, we’re not capable of handling the risk properly.”

[the-japan-news.com/news/article/0000584813](http://the-japan-news.com/news/article/0000584813)

**Tanks, not leak, main problem at Fukushima**

September, 2013

The cesium-137 in the highly contaminated water in the basements of Fukushima No. 1’s flooded reactor buildings was giving off as much as 160 petabecquerels as of the end of May 2011, nearly twice the cesium-137 released by the Chernobyl disaster.

Tepco had by now planned to start using ALPS — a high-tech filtering machine that can remove everything radioactive but tritium from tainted water — but the utility halted test runs after finding corrosion holes in the equipment.

[www.japantimes.co.jp/news/2013/09/12/national/tanks-not-leak-main-problem-at-fukushima/#.UjJVzbyGpGE](http://www.japantimes.co.jp/news/2013/09/12/national/tanks-not-leak-main-problem-at-fukushima/#.UjJVzbyGpGE)

### **Tepco discharges tainted rainwater from storage tank areas**

September, 2013

Tainted rainwater was discharged into the ocean Monday to prevent the damaged Fukushima No. 1 power plant from being flooded by the passage of Typhoon Man-yi. Tepco said the radiation level of the water overall, including strontium 90, which accounted for about half of the beta ray emissions, maxed out at 24 becquerels per liter.

In areas where water samples were highly toxic, Tepco took a different approach and transferred it elsewhere. One of those areas contained rainwater that was emitting 170,000 becquerels per liter, far higher than allowed.

[www.japantimes.co.jp/news/2013/09/16/national/tepcos-discharges-tainted-rainwater-from-storage-tank-areas/#.UjfQrryGpGE](http://www.japantimes.co.jp/news/2013/09/16/national/tepcos-discharges-tainted-rainwater-from-storage-tank-areas/#.UjfQrryGpGE)

### **Tepco ditched water-containment solution in '11**

September, 2013

Tokyo Electric Power Co. initially put off a plan to create groundwater shields at the Fukushima No. 1 nuclear plant after being cowed by the cost, a former senior government official revealed Wednesday.

Earlier this month, the government vowed to spend ¥32 billion on building underground walls by freezing soil around the reactor buildings to prevent groundwater from seeping into the basement levels.

Tepco asked the industry minister to postpone the announcement as the utility was concerned about how the stock market would react to the ¥100 billion or so in funds it would require. The minister agreed.

[www.japantimes.co.jp/news/2013/09/18/national/tepcos-ditched-water-containment-solution-in-11/#.Ujz4r7zRzEY](http://www.japantimes.co.jp/news/2013/09/18/national/tepcos-ditched-water-containment-solution-in-11/#.Ujz4r7zRzEY)

### **High levels of radiation discovered in new well at Fukushima plant**

September, 2013

Highly radioactive water accumulating in underground tunnels at the Fukushima No. 1 nuclear power plant is spreading to the surrounding soil. TEPCO has detected radioactive materials that emit beta rays, including strontium, from a new observation well on the seaward side of the reactor complex. Strontium is believed to accumulate in bones and cause bone cancer and leukemia.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201309270056](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309270056)

**TEPCO faces high hurdles in controlling contaminated water at Fukushima plant**  
September, 2013

Government screening of the contaminated water issue has led to suggestions that the problem exceeds TEPCO's capacity as a single company.

The total amount of radioactively contaminated water has been increasing as an estimated 400 tons of groundwater flows into the damaged reactor buildings at the plant each day and comes into contact with melted nuclear fuel.

[mainichi.jp/english/english/newsselect/news/20130928p2a00m0na006000c.html](http://mainichi.jp/english/english/newsselect/news/20130928p2a00m0na006000c.html)

**N-water seeping from tank**  
September, 2013

Tokyo Electric Power Co. has confirmed that radioactive water is seeping through a joint of one of the tanks that store low-level radioactive water at its Fukushima No.1 nuclear power plant.

[the-japan-news.com/news/article/0000687190](http://the-japan-news.com/news/article/0000687190)

**Radioactive water found overflowing from tank at Fukushima plant**  
October, 2013

Some four tons of water containing radioactive materials overflowed from a storage tank at the Fukushima No. 1 Nuclear Power Plant due to human error, the Tokyo Electric Power Co. has revealed.

[mainichi.jp/english/english/newsselect/news/20131002p2a00m0na004000c.html](http://mainichi.jp/english/english/newsselect/news/20131002p2a00m0na004000c.html)

**New radioactive water leak found at Fukushima No. 1: Tepco**  
October, 2013

Tokyo Electric Power Co. says it has found that water contaminated with a highly concentrated radioactive substance escaped from another storage tank and some may have reached the Pacific Ocean.

Tepco said it detected 200,000 becquerels per liter of beta ray-emitting radioactive substances, including strontium-90, far above the legal limit of 30 becquerels per liter, as well as cesium-134 and -137, both within their legal limits.

[www.japantimes.co.jp/news/2013/10/03/national/new-radioactive-water-leak-found-at-fukushima-no-1-tepco/#.Uk1RNYTRzEY](http://www.japantimes.co.jp/news/2013/10/03/national/new-radioactive-water-leak-found-at-fukushima-no-1-tepco/#.Uk1RNYTRzEY)

### NRA to Tepco: Fix water mess, even add workers

October, 2013

The Nuclear Regulation Authority on Friday ordered Tokyo Electric Power Co. to bring under control the massive amount of radioactive water gushing from the Fukushima No. 1 nuclear complex, including by boosting worker numbers on-site.

Summoning Tepco President Naomi Hirose after a series of recent spills at the crippled power plant, Katsuhiko Ikeda, head of the NRA secretariat, tore into the utility for “rudimentary mistakes” that caused the toxic water problem and said its management in the field was “significantly deteriorating.”

[www.japantimes.co.jp/news/2013/10/04/national/nra-to-tepco-fix-water-mess-even-add-workers/#.Uk6jGSTRzEY](http://www.japantimes.co.jp/news/2013/10/04/national/nra-to-tepco-fix-water-mess-even-add-workers/#.Uk6jGSTRzEY)

### Radiation levels in seawater near Fukushima reactor hit 2-year high

October, 2013

Radiation levels in seawater just outside one of the damaged Fukushima reactors spiked this week to the highest level in two years.

Radiation levels on Wednesday, the day six workers were exposed to highly radioactive water, jumped 13 times the previous day’s reading, the highest levels since late 2011.

TEPCO said combined cesium-134 and cesium-137 readings just outside the damaged No. 2 reactor spiked to 1,200 becquerels per liter on Wednesday, more than 13 times the level on Tuesday.

Cesium-134 readings were 370 becquerels per liter while cesium-137 was 830/liter within a silt fence right outside the reactor building. Regulatory limits for cesium, which emits a strong gamma radiation and is harmful to the human body, is 90 bq/liter for cesium-137 and 60 bq/liter for cesium-134.

[www.japantoday.com/category/national/view/radiation-levels-in-seawater-near-fukushima-reactor-hit-2-year-high](http://www.japantoday.com/category/national/view/radiation-levels-in-seawater-near-fukushima-reactor-hit-2-year-high)

### TEPCO skips protocol in draining typhoon rainwater at Fukushima plant

October, 2013

Heavy rainfall from Typhoon No. 26 forced Tokyo Electric Power Co. to abandon protocol to prevent rainwater from overflowing near tanks holding contaminated water at the Fukushima No. 1 nuclear power plant.

The company said the radiation levels of the rainwater discharged from nine locations were all within provisional safety standards approved by the Nuclear Regulation Authority late on Oct. 15.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310180083](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310180083)

### Radioactivity level in well water soars near leaky Fukushima tank

October, 2013

A record level of radioactivity was found in a well near a storage tank from which 300 tons of highly radioactive water leaked in the summer at the devastated Fukushima No. 1 nuclear power plant.

On Oct. 18, Tokyo Electric Power Co. said 400,000 becquerels of beta ray sources, including radioactive strontium, were detected per liter of water taken on Oct. 17, about 6,500 times more than the 61 becquerels recorded the previous morning.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310180088](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310180088)

### Rainwater overflows barriers around water tanks

October, 2013

Tokyo Electric Power Co. said Sunday that rainwater has overflowed concrete barriers surrounding 12 clusters of tanks storing radiation-contaminated water at the crippled Fukushima Daiichi nuclear power plant. The company said it cannot rule out the possibility that contaminated water has reached the Pacific Ocean via drainage conduits near the clusters.

Levels of strontium-90 exceeding provisional safety standards were detected at six sites.

[mainichi.jp/english/english/newsselect/news/20131021p2g00m0dm025000c.html](http://mainichi.jp/english/english/newsselect/news/20131021p2g00m0dm025000c.html)  
[ajw.asahi.com/article/0311disaster/fukushima/AJ201310210087](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310210087)

### Highest radiation level detected in water found in drainage ditch at Fukushima nuclear plant

October, 2013

Tokyo Electric Power Co. said it has found the highest radiation levels recorded since it began checking water in drainage ditches in August, 140,000 becquerels per liter, at its crippled Fukushima No. 1 nuclear plant. The legal standard for strontium emissions is 30 becquerels per liter.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310240061](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310240061)

### TEPCO to start water-freezing work at Fukushima plant in Dec.

November, 2013

Tokyo Electric Power Co. will begin implementing a plan early next month to freeze water in tunnel pipes where they connect with turbine buildings to prevent the water from escaping from the buildings.

[the-japan-news.com/news/article/0000785092](http://the-japan-news.com/news/article/0000785092)

### Record radioactivity level found at Fukushima plant well

November, 2013

A record high level of 710,000 becquerels of beta-ray sources, such as radioactive strontium, was detected per liter of water in an observation well at the crippled Fukushima No. 1 nuclear plant.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201311120055](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201311120055)

Radiation 36,000 times permissible level detected in underground water at Fukushima plant  
December, 2013

The operator of the disaster-hit Fukushima No. 1 Nuclear Power Plant said on Dec. 2 that it has detected radioactive materials that topped 36,000 times the permissible level in underground water extracted in the area.

[mainichi.jp/english/english/newsselect/news/20131203p2a00m0na011000c.html](http://mainichi.jp/english/english/newsselect/news/20131203p2a00m0na011000c.html)

### Fukushima water tanks: leaky and built with illegal labor

December, 2013

Storage tanks at the Fukushima Daiichi nuclear plant like one that spilled almost 80,000 gallons of radioactive water this year were built in part by workers illegally hired in one of the poorest corners of Japan.

“Even if we didn’t agree with how things were being done, we had to keep quiet and work fast,” said Yoshitatsu Uechi, 48, a mechanic and former bus driver, who was one of a crew recruited in Okinawa.

Since the 2011 disaster, huge volumes of radioactive water have built up at the Fukushima site, with some leaking into the nearby Pacific Ocean. As an interim measure, TEPCO rushed an order for steel tanks that could be put together quickly after being shipped in parts and assembled on site. These bolted-style storage tanks, each as tall as a 3-storey building, were intended to last only until 2016, giving TEPCO time to have a purification system in place so contaminated water could be cleansed and safely discharged.

In August, one of the tanks was discovered to have leaked about 300 tons of water, raising global alarm over Japan’s handling of the crisis and prompting the government to order that the makeshift, bolted tanks like those assembled by the Okinawa crew be replaced by sturdier, welded tanks.

Weeks later, radiation at the ground near one of the tanks spiked to a level so high that it would have caused radiation sickness within an hour if a worker had been directly exposed. That spike, after an apparent leak of radioactive water, occurred in the same area where Uechi and the Okinawa crew had been working.

“Yes, we did a shoddy job,” said one of Uechi’s co-workers, who didn’t want to be named as it could jeopardise his job prospects. “The quality of what we did was low, but what else would you expect? We had to race to finish the tanks.”

In one example, Uechi said workers were rushed to apply caulking to seal the tanks even when it was raining and snowing. “It didn’t make any sense, because the caulking wouldn’t get to the metal. It would float out,” Uechi said.

[www.japantoday.com/category/national/view/fukushima-water-tanks-leaky-and-built-with-illegal-labor](http://www.japantoday.com/category/national/view/fukushima-water-tanks-leaky-and-built-with-illegal-labor)

### Large amount of cesium flowed into ocean after 2011 typhoon

January, 2014

The amount of radioactive cesium that flowed into the sea through a river running across central Fukushima Prefecture when a powerful typhoon hit in September 2011 totaled 6.2 trillion becquerels, about 60 percent of the total for a 12-month period, researchers say.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201401220010](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401220010)

### Record-high strontium-90 in past Fukushima plant groundwater sample

February, 2014

The operator of the crippled Fukushima Daiichi nuclear power plant said Thursday that a groundwater sample taken from a well at the site in July last year contained a record-high 5 million becquerels per liter of radioactive strontium-90. Strontium tends to accumulate in bones and is thought to cause bone cancer and leukemia.

[mainichi.jp/english/english/newsselect/news/20140207p2g00m0dm038000c.html](http://mainichi.jp/english/english/newsselect/news/20140207p2g00m0dm038000c.html)

### 100 tons of radioactive water leaks from Fukushima plant

February, 2014

Tokyo Electric Power Co. said Thursday that 100 tons of highly radioactive water has leaked from a storage tank at its crippled Fukushima No. 1 nuclear power plant. The water contained 230 million becquerels per liter of beta ray-emitting radioactive substances such as strontium-90. A barrier at the H6 tank area failed to prevent the water from leaking, the operator said.

[the-japan-news.com/news/article/0001051035](http://the-japan-news.com/news/article/0001051035)

### Solving Fukushima water problem a long, hard slog

March, 2014

The most troubling problem is dealing with the buildup of radioactive water, which is increasing at a rate of 400 tons in the reactor buildings every day, and another 400 tons of lightly contaminated water that seeps daily into the Pacific.

[www.japantimes.co.jp/news/2014/03/06/national/solving-fukushima-water-problem-a-long-hard-slog/#.UxmyNV4VcZI](http://www.japantimes.co.jp/news/2014/03/06/national/solving-fukushima-water-problem-a-long-hard-slog/#.UxmyNV4VcZI)

### **Radiation checks clear most food items**

March, 2014

Of 19,180 fish and other seafood samples that underwent radiation surveys between April 1 last year through March 5 this year, 280 items, or 1.5 percent, were found to have exceeded the state-set regulatory level of radioactive cesium of 100 becquerels per kilogram. Of those 280 items, 172 were fish and other kinds of seafood caught off Fukushima, and 56 were fresh fish caught in rivers and ponds within the prefecture.

[www.japantimes.co.jp/news/2014/03/07/national/radiation-checks-clear-most-food-items/#.UxmyjF4VcZI](http://www.japantimes.co.jp/news/2014/03/07/national/radiation-checks-clear-most-food-items/#.UxmyjF4VcZI)

### **Over 200 tons of radioactive water pumped into wrong building at Fukushima plant**

April, 2014

Tokyo Electric Power Co. (TEPCO) said April 14 that 203 tons of highly radioactive waste water was transferred to a building at its crippled Fukushima No. 1 Nuclear Power Plant by mistake.

[mainichi.jp/english/english/newsselect/news/20140414p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20140414p2a00m0na008000c.html)

### **Record high radiation in seawater off Fukushima plant**

May, 2014

Radiation has spiked to all-time highs at five monitoring points in waters adjacent to the crippled Fukushima No. 1 power station, plant operator Tokyo Electric Power Co. said Friday.

[www.japantimes.co.jp/news/2014/05/17/national/record-high-radiation-in-seawater-off-fukushima-plant/#.U3iOYy9CUZJ](http://www.japantimes.co.jp/news/2014/05/17/national/record-high-radiation-in-seawater-off-fukushima-plant/#.U3iOYy9CUZJ)

### **ALPS water cleaner halted again**

May, 2014

Tokyo Electric Power Co. said Tuesday it has again suspended its trouble-plagued system for cleaning radiation-tainted water at the Fukushima No. 1 power plant.

[www.japantimes.co.jp/news/2014/05/20/national/alps-water-cleaner-halted/#.U3yIiS9CUZI](http://www.japantimes.co.jp/news/2014/05/20/national/alps-water-cleaner-halted/#.U3yIiS9CUZI)

### **Nuclear regulator OKs plan to build underground ice wall at Fukushima plant**

May, 2014

Japan's nuclear regulator on Monday approved a plan to freeze the soil under the crippled Fukushima nuclear plant to try to slow the build-up of radioactive water, officials said. The wall is intended to block groundwater from nearby hillsides that has been flowing under the plant and mixing with polluted water used to cool reactors that went into meltdown after an earthquake and tsunami in March 2011.

[www.japantoday.com/category/national/view/nuclear-regulator-oks-plan-to-build-underground-ice-wall-at-fukushima-plant](http://www.japantoday.com/category/national/view/nuclear-regulator-oks-plan-to-build-underground-ice-wall-at-fukushima-plant)

### U.S. firm hired to scrub Fukushima No. 1 water

June, 2014

Tokyo Electric Power Co. will use a truck-mounted filtration system to extract strontium from water stored at the damaged Fukushima No. 1 power plant as the utility struggles to overcome technical problems with its existing water-processing facility.

[www.japantimes.co.jp/news/2014/06/09/national/u-s-firm-hired-to-scrub-fukushima-no-1-water/#.U5ZyFi\\_CnbM](http://www.japantimes.co.jp/news/2014/06/09/national/u-s-firm-hired-to-scrub-fukushima-no-1-water/#.U5ZyFi_CnbM)

### Operation to halt flow of groundwater into No. 1 reactor buildings falters: Tepco

July, 2014

Tokyo Electric Power Co. admitted Monday that the so-called groundwater bypass operation at its crippled Fukushima No. 1 nuclear power plant is not working. The operation is intended to reduce the tons of radiation-tainted water being generated by the plant each day.

[www.japantimes.co.jp/news/2014/07/29/national/operation-to-halt-flow-of-groundwater-into-no-1-reactor-buildings-falters-tepco/#.U9chFki-8aE](http://www.japantimes.co.jp/news/2014/07/29/national/operation-to-halt-flow-of-groundwater-into-no-1-reactor-buildings-falters-tepco/#.U9chFki-8aE)

### Three firms picked to help tackle toxic water

August, 2014

The government picked three overseas companies Tuesday to participate in a subsidized project to determine the best available technology for separating radioactive tritium from the toxic water. Tokyo Electric Power Co. is currently test-running a system it says is capable of removing 62 types of radioactive substances from the contaminated water, but not tritium.

[www.japantimes.co.jp/news/2014/08/26/national/three-firms-picked-help-tackle-toxic-water-fukushima-1/#.U\\_yaMki-8aE](http://www.japantimes.co.jp/news/2014/08/26/national/three-firms-picked-help-tackle-toxic-water-fukushima-1/#.U_yaMki-8aE)

### TEPCO struggling to win approval of fishermen over water-discharge plan

September, 2014

Local fishermen are crying foul over Tokyo Electric Power Co.'s latest plan to discharge processed contaminated water from the crippled Fukushima No. 1 nuclear power plant into

the ocean. “I can’t believe anything TEPCO says,” one of the attendees said after a meeting with TEPCO.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201409190046](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201409190046)

### Plan OK'd for dumping Fukushima's water into ocean after treatment

January, 2015

The Nuclear Regulation Authority on Wednesday gave the green light to Tokyo Electric Power Co.'s plan to dump toxic groundwater pumped up at the stricken Fukushima Daiichi nuclear complex into the Pacific Ocean after removing almost all radioactive materials from it.

<http://mainichi.jp/english/english/newsselect/news/20150121p2g00m0dm071000c.html>

### Fisheries ‘shocked’ at silence over water leak at wrecked Fukushima No. 1 plant

February, 2015

Fishermen in Fukushima Prefecture slammed Tokyo Electric Power Co. on Wednesday after it emerged that water containing cesium and other radioactive isotopes has been draining into the Pacific near the Fukushima No. 1 plant and that Tepco did nothing to prevent it despite learning of the leak last May.

<http://www.japantimes.co.jp/news/2015/02/25/national/tepcO-admits-failed-disclose-cesium-tainted-water-leaks-since-april/#.VPAXI3YkdHB>

### Tons of radioactive rainwater seeps into soil at Fukushima plant

March, 2015

Tokyo Electric Power Co. reported a massive leak of radioactive rainwater at its crippled Fukushima No. 1 nuclear power plant on March 10. It said hundreds of tons of contaminated rainwater breached barriers surrounding storage tanks for highly radioactive water and seeped into the ground.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201503110070>

### Excessive cesium in flounder

March, 2015

Flounders caught close to the Fukushima Daiichi power plant were found to have cesium levels exceeding the limit.

<https://ourworld.unu.edu/en/radiation-from-fukushima-disaster-still-affects-32-million-japanese>

### **Fukushima No. 1 still has 7,000 tons of problematic toxic water to be removed**

July, 2015

Some 7,000 tons of radioactive water at risk of leaking into the ground still has to be removed from underground tunnels and other locations at the Fukushima No. 1 nuclear plant.

<http://www.japantimes.co.jp/news/2015/07/21/national/fukushima-1-still-7000-tons-problematic-toxic-water-removed/#.Va8q-7ckeQk>

### **TEPCO begins pumping up groundwater before dumping in ocean**

September, 2015

The operator of the crippled Fukushima Daiichi nuclear power plant on Thursday began pumping up groundwater from wells around the reactor buildings as part of its plan to dump it into the ocean after treatment.

<http://mainichi.jp/english/english/newsselect/news/20150903p2g00m0in042000c.html>

### **Radioactive water still leaking**

November, 2015

A leak of at least 225 liters of radiation-tainted water was detected from pipes inside the turbine building of the plant's No. 2 reactor that transport highly radioactive water to Fukushima Harbor.

<http://mainichi.jp/english/english/newsselect/news/20151106p2a00m0na003000c.html>

### **Test fishing in Fukushima reels in a clean catch fit for a king**

November, 2015

An aquarium's veterinarian and a team of local volunteers are monitoring radioactive contamination of fish in waters near the crippled Fukushima No. 1 nuclear power plant to see if the marine life is fit to be served for dinner.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201511100001>

### **Radioactivity level rises 4,000-fold in duct water at Fukushima plant**

December, 2015

The concentration of radioactive materials in water in an underground duct at the Fukushima No. 1 nuclear plant soared 4,000 times from a year ago.

[http://ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201512110041](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201512110041)

### **New problem of radioactive water**

December, 2015

Tokyo Electric Power Co. has unexpectedly been forced to deal with an increasingly large amount of radioactive water accumulating at the crippled Fukushima No. 1 nuclear power plant after seaside walls to block the flow of groundwater were constructed in October.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201512260045>

**NRA, Tepco agree to start frozen underground wall at Fukushima No. 1 in stages**  
February, 2016

The Nuclear Regulation Authority and Tokyo Electric Power Co. have broadly agreed to start operating the frozen underground wall at the Fukushima No. 1 nuclear plant in stages.

The amount of contaminated water continues to rise due to the groundwater flowing into the reactor buildings. As of Thursday, the amount of tainted water kept in storage tanks stood at nearly 800,000 tons, with the amount increasing by several hundred tons per day.

<http://www.japantimes.co.jp/news/2016/02/15/national/nra-tepco-agree-start-frozen-underground-wall-fukushima-no-1-stages/>

**Charges ruled out for Tepco figures over radioactive water spillage into sea**  
March, 2016

Public prosecutors decided on Tuesday not to indict Tokyo Electric Power Co. President Naomi Hirose and other current and former executives of the utility over radioactive water leaks from the crippled Fukushima No. 1 nuclear power plant into the ocean.

<http://www.japantimes.co.jp/news/2016/03/30/national/crime-legal/charges-ruled-tepco-figures-fukushima-no-1-radioactive-water-spillage-sea/>

**Dumping Fukushima tritium into ocean 'least costly, fastest' solution: gov't**  
April, 2016

The Ministry of Economy, Trade and Industry estimates that discharging tritium in the contaminated water at the Fukushima No. 1 nuclear plant into the ocean is the fastest and least costly way of disposing of the radioactive material, it has been learned.

<http://mainichi.jp/english/articles/20160419/p2a/00m/0na/019000c>

**All Fukushima seafood samples pass safety tests for radioactivity**  
February, 2017

For the first time, radioactivity levels were lower than the government's safety limit in every seafood sample caught off Fukushima Prefecture for an entire year, officials said.

<http://www.asahi.com/ajw/articles/AJ201702030003.html>

### **Fukushima fishermen fight release of tainted water**

March, 2017

The Soma-Futaba fishing cooperative will soon resume fishing for konago (young lancefish), after the heads of fishing co-ops in the prefecture approved the start of experimental fishing operations 10 to 20 km from the Fukushima No. 1 plant.

However, local fishermen are not optimistic because their industry still faces ‘concern’ that radioactive fish could tarnish their reputation.

<http://www.japantimes.co.jp/news/2017/03/19/national/fukushima-fishermen-fight-release-tainted-water-tritium-standoff-continues/>

### **Tepco backpedals after reconstruction chief knocks plan to dump tritiated water into sea**

July, 2017

Tokyo Electric backed off its tritium-dumping decision Friday after disaster reconstruction minister Masayoshi Yoshino said it would cause problems for struggling fishermen trying to recover in Fukushima Prefecture.

<http://www.japantimes.co.jp/news/2017/07/15/national/tepco-backpedals-disaster-reconstruction-chief-knocks-plan-dump-tritiated-water-sea/>

### **Fukushima tsunami plans to be expedited at stricken N-plant**

August, 2018

About 50,000 tons of water contaminated with high concentrations of radioactive substances have accumulated in the basements of the reactor buildings, turbine buildings and other facilities of reactors Nos. 1-4. If a tsunami were to hit, this water could flow into the sea.

<http://the-japan-news.com/news/article/0004670847>

### **Researchers develop technology to remove radioactive tritium from water**

August, 2018

A team of researchers from Kindai University and private companies in western Japan has developed a new filter enabling the removal of water containing radioactive tritium.

<https://mainichi.jp/english/articles/20180828/p2a/00m/0na/013000c>

### **Treated water at Fukushima plant far too unsafe to be dumped soon**

September, 2018

On Sept. 28, TEPCO acknowledged that about 80 percent of the water in giant storage tanks on the premises exceeded government standards for radioactive materials even though it had already been processed.

Some of the ‘processed’ water showed concentrations of radioactive materials at more than about 20,000 times the standard used to determine if the water is safe enough to discharge into the ocean.

<http://www.asahi.com/ajw/articles/AJ201809290029.html>

### Radioactive water threatens Fukushima fishery's fragile gains

November, 2018

Since a catastrophic nuclear accident seven years ago, Fukushima fishermen have made painstaking efforts to rebuild their livelihood, assiduously testing the radioactivity levels of their catches to ensure safety. Now, rapidly accumulating wastewater from the crippled power plant is again threatening this hard-won business recovery.

<https://asia.nikkei.com/Economy/Radioactive-water-threatens-Fukushima-fishery-s-fragile-gains>

### Radioactive cesium above legal limit detected in fish caught off Fukushima

February, 2019

Radioactive cesium exceeding the state limit has been detected in fish caught off Fukushima Prefecture for the first time in about four years.

<https://www.japantimes.co.jp/news/2019/02/02/national/science-health/limit-cesium-detected-fish-caught-off-fukushima/>

### 1 million tons of contaminated water must be stored

March, 2019

Eight years after the Fukushima nuclear crisis, a fresh obstacle threatens to undermine the massive clean-up: 1 million tons of contaminated water must be stored, possibly for years, at the power plant.

<https://jp.reuters.com/article/japan-nuclear-water/rpt-eight-years-on-water-woes-threaten-fukushima-cleanup-idUSL3N20Y04R>

### Why the decision to release treated Fukushima water took a decade

April, 2021

Distrust of TEPCO and government hindered plans for scientifically safe discharge

<https://asia.nikkei.com/Politics/Why-the-decision-to-release-treated-Fukushima-water-took-a-decade2>

### Plans to dump water an appalling ecological crime

April, 2021

Dr Paul Dorfman, a senior researcher at the Energy Institute of University College London and founder of the Nuclear Consulting Group said: “Plans to dump highly radioactively contaminated water into the Pacific represent an appalling ecological crime. The pollution will bio-accumulate in the marine environment, concentrating in flora and fauna, and in the people who eat the local fish and shellfish.”

<https://www.express.co.uk/news/world/1427378/fukushima-plans-dump-radioactive-water-japanese-government-appalling-ont>

### Plant water to be released into sea before tritium test results revealed

June, 2021

Water from the Fukushima Daiichi Nuclear Power Station is set to be released into the ocean before results showing the concentration of radioactive tritium are available, Tokyo Electric Power Company Holding Inc. has announced.

<https://mainichi.jp/english/articles/20210612/p2a/00m/0sc/010000c>

### Marine species could have their DNA damaged

June, 2021

Dr Paul Dorfman: “The issue is whether the concentration of radionuclides will damage the environment – and there is a complex debate around this.

“I think it’s true to say that marine species could have their DNA damaged through exposure to radionuclides in seawater, and a contaminated environment results in a contaminated food chain.”

Shaun Burnie, a senior nuclear specialist with Greenpeace East Asia, says that nearly 800,000 cubic meters of the water still contains high levels of radioactive strontium-90 and iodine-129. This is in addition to other radionuclides because the ALPS system failed to reduce radioactive elements, as claimed by the plant owner.

“It’s unclear whether they will be successful in doing so over the coming years,” he says.

<https://www.power-technology.com/features/something-in-the-water-controversy-courts-the-fukushima-clean-up/>

### IAEA: Science, objectivity key to Fukushima water release

September, 2021

An IAEA team is preparing for years of monitoring by the IAEA before, during and after the planned discharge of water into the sea, which is expected to take decades.

Reader's comment: "The International Atomic Energy Agency's business is the promotion of the use of nuclear energy."

<https://japantoday.com/category/national/iaea-science-objectivity-key-to-fukushima-water-release>

<https://nypost.com/2021/09/09/iaea-science-objectivity-key-to-fukushima-water-release/>

### Our understanding of the risks of tritium higher and higher September, 2021

What we're talking about here is huge. It's a million tons, an unprecedented amount. This nuclear waste water was in direct contact with the melted reactor core, so the leaks of reactor cooling system, ground water flowing into the basement of the damaged reactor and the turbine building have both introduced radioactive material into this water. So there are significant questions about the relative safety of this idea.

"Contaminated water is treated through a process known as Advanced Liquid Processing System (ALPS) which intends to remove radionuclides except for tritium. But it's unknown territory, if it really can do this.

And it's a very high concentration of tritium, radium, ? in this waste water, and if one looks at the trajectory of the risk from tritium, one sees as each decade passes, our understanding of the risks of tritium have gotten higher and higher.

The problem with this is that these radionuclides have a high biological concentration factor and sea floor sediment water distribution currents ?

What that means is they tend to fall to the bottom and to stay there. So the ocean currents won't be removing this, so they'll accumulate on the seabed in seas near Japan.

And then, via the food web, what we'll see is a return to land and a return via the food web to humans.

<https://www.bbc.co.uk/sounds/play/w172xv2tnbzfxxz>

[Transcribed by author. ? = uncertain words]

## Contamination

### Cows fed rice straw contaminated with radioactive cesium

July, 2011

In the middle of April, about one month after the crisis at the Fukushima No. 1 nuclear power plant began, a farmer collected about 30 pickup truckloads of rice straw that he had stored in paddy fields.

The cows, including the 100 still on his farm, were fed the straw through late June, he said. He said he did not know about the government's instructions not to give cattle feed that had been kept outdoors after the accidents at the Fukushima plant.

"My place is more than 100 kilometers from the nuclear power plant, so I wasn't worried," he said. "The government should have sent officials to every farm to let us know what we could feed our animals."

According to the prefectural government, rice straw at his farm was found to have been contaminated with radioactive cesium, 30 times the legal limit of 300 becquerels per kilogram for grass, and 23 cows suspected to have been contaminated with cesium have been shipped.

It has been reported that some beef distributed to retailers was contaminated with cesium exceeding legal limits.

<http://www.yomiuri.co.jp/dy/national/T110718003816.htm>

### Worker says illicit dumping is daily occurrence

January, 2013

Water that has been used to decontaminate surfaces must also be collected by placing plastic sheets under structures during cleaning. The tainted water is then pumped into a tank and processed with a purification system. However, failure to take such measures is common, a worker said. "It's only in model zones directly under the jurisdiction of the Environment Ministry where the ministry conducts inspections that water is collected properly. Otherwise, it's not done. (Tainted water) is left as is.

[mainichi.jp/english/english/newsselect/news/20130105p2a00m0na015000c.html](http://mainichi.jp/english/english/newsselect/news/20130105p2a00m0na015000c.html)

### Deductions strip daily wage of nuclear cleanup workers down to 1,000 yen

April, 2013

One decontamination worker spent his days cutting grass on a hillside about 20 kilometers from the shattered Fukushima No. 1 nuclear plant. The lunch provided by his company consisted of plain rice balls and pickled vegetables, and there were no shops nearby where he could buy something extra. When the man approached the woman in charge of meals, she

told him she'd been ordered by the company to keep breakfast costs at 100 yen and dinner costs at 200 yen per worker.

The acquaintance who introduced the 59-year-old to the cleanup job told him he'd be "cutting grass along roadsides. You'll get a place to stay, plus two meals and 11,000 yen a day." The man actually got about that amount, but only after adding the daily 10,000 yen in danger pay provided by the central government. His company was paying him just 1,000 yen a day, or less than one-fifth of the prefecture's per diem minimum wage.

[mainichi.jp/english/english/newsselect/news/20130405p2a00m0na014000c.html](http://mainichi.jp/english/english/newsselect/news/20130405p2a00m0na014000c.html)

### Japan's nuclear clean-up costly, complex and at risk of failing August, 2013

Some workers have said they have been told to flush contaminated leaves away in rivers by supervisors to speed the job up and reduce waste, since storage remains a problem.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201308150021](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308150021)

### Total decontamination costs could be at least \$100 billion October, 2013

The Japan Center for Economic Research, an independent think-tank, reckons total decontamination costs could be at least \$100 billion.

[www.japantoday.com/category/national/view/for-tepco-fresh-financing-masks-long-term-problems](http://www.japantoday.com/category/national/view/for-tepco-fresh-financing-masks-long-term-problems)

### Japan to spend ¥100 bil on contaminated soil storage facility December, 2013

This contaminated waste is currently stored at waste incineration plants, sewage treatment plants and agricultural and forestry facilities nationwide.

<http://www.japantoday.com/category/national/view/japan-to-spend-y10-bil-on-contaminated-soil-storage-facility>

### Debris disposal January, 2014

According to the Environment Ministry, the March 2011 disaster is believed to have created more than 17 million tons of debris in the three hardest-hit prefectures of Fukushima, Iwate and Miyagi.

In Iwate and Miyagi, the number of incinerators and other facilities for debris disposal was increased substantially following the disaster.

But the prefectures asked Tokyo and 16 other prefectures outside the disaster area to dispose of 650,000 tons they could not handle by themselves. All debris from Iwate and Miyagi prefectures is likely to be disposed of by the end of March.

[the-japan-news.com/news/article/0000938654](http://the-japan-news.com/news/article/0000938654)

## SAFECAST

2015

Melted fuel removal has been done only once before, at Three Mile Island, where melted core removal was completed in 1990, so there are not many people with experience to call on for assistance. The job is too big for any one company to tackle, so a new, well-funded research institute has been established to incubate the kinds of technologies that will be necessary. The process will require decades.

<https://medium.com/safecast-report/part-2-5-6197b1f5bfda>  
<https://www.slideshare.net/safecast/safecast-reportfinalmed>

## Alleged illegal dumping of radiated plant debris

March, 2016

A supervisor and a crane operator were arrested in July for alleged illegal dumping of radiated plant debris in Minamisoma. Five companies heading the project were suspended for six weeks.

<http://www.japantoday.com/category/national/view/fukushima-decontamination-troops-often-exploited-shunned>

## Fukushima 'decontamination troops' often exploited, shunned

March, 2016

Though group leaders' radiation exposure levels are regularly checked, decontamination workers' individual levels have not been systematically recorded.

<http://www.japantoday.com/category/national/view/fukushima-decontamination-troops-often-exploited-shunned>

## Contaminated gloves and masks disposed of at convenience stores

March, 2016

Some laborers used to discard their contaminated gloves and masks in convenience store garbage bins.

<http://www.japantoday.com/category/national/view/fukushima-decontamination-troops-often-exploited-shunned>

### Firms used foreign trainees to clean up

October, 2018

Four companies used foreign trainees to perform work cleaning up radioactive contamination.

The government does not allow companies to use foreign trainees for the removal of radioactive contamination, as such work is not consistent with the purpose of the trainee program.

One company was found to have neglected to pay allowances for decontamination work, amounting to a combined ¥1.5 million, to three trainees.

<https://www.japantimes.co.jp/news/2018/10/19/national/four-japan-firms-used-foreign-trainees-clean-fukushima-plant-nuclear-meltdowns-final-report/>

### Decontamination cost

2020

The National Institute of Advanced Industrial Science and Technology estimates decontamination will take as much as 5.1 trillion yen.

### Catholic Bishops p. 61

### U.N. team: Unclear if Fukushima cleanup can finish by 2051

August, 2021

Too little is known about melted fuel inside damaged reactors at the wrecked Fukushima nuclear power plant, even a decade after the disaster, to be able to tell if its decommissioning can be finished by 2051 as planned, Christophe Xerri, head of an International Atomic Energy Agency team, said Friday.

Japanese government and utility officials say they hope to finish its decommissioning within 30 years, though some experts say that's overly optimistic, even if a full decommissioning is possible at all.

The biggest challenge is removing and managing highly radioactive fuel debris from the three damaged reactors, said Xerri, the director of IAEA's Division of Nuclear Fuel Cycle and Waste Technology.

Research and development of new technologies needed for the cleanup will take one or two decades, Xerri said.

<https://www.asahi.com/ajw/articles/14428063>

## Health Consequences

### Heart Failure, 3 Other Diseases Surge after March 2011 Disaster

August, 2012

The numbers of cases of heart failure, stroke, pneumonia and cardiac arrest surged in Miyagi Prefecture, northeastern Japan, after the March 11 earthquake and tsunami last year, a study by Tohoku University has revealed.

The increase can be attributed to disaster-related stress and the use of water polluted by the tsunami, according to the survey by a team of the university led by Prof. Hiroaki Shimokawa.

[jen.jiji.com/jc/eng?g=eco&k=2012082700678](http://jen.jiji.com/jc/eng?g=eco&k=2012082700678)

### Japan makes a start on sharing lessons from nuclear crisis

March, 2015

Children in Fukushima Prefecture are becoming unfit and overweight as the 2011 nuclear crisis limited the time they could play outside.

<http://www.japantoday.com/category/national/view/japan-makes-a-start-on-sharing-lessons-from-nuclear-crisis>

### Huge Spike in Neurological Diseases in Japan After Fukushima — 600% Rise in Disorders Among Evacuees

May, 2015

<http://www.globalresearch.ca/huge-spike-in-neurological-diseases-after-fukushima-600-rise-in-disorders-among-evacuees/5450580>

### TEPCO sued over 102-yr-old's suicide

July, 2015

Three relatives of a 102-year-old man in Fukushima Prefecture who killed himself shortly after the March 2011 accident at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear plant sued the company on Wednesday for about ¥60 million in damages.

<http://the-japan-news.com/news/article/0002320321>

### Health fallout from Fukushima mainly mental

August, 2015

The most lasting health impact of the Fukushima nuclear disaster will likely be psychological not physical, according to a trio of studies published Friday in The Lancet.

Moreover, the mental health toll comes not only from the trauma of dislocation and the spectre of harmful radiation, but from deficiencies in the way civic and health officials managed the crisis, the articles argued.

<http://www.japantoday.com/category/national/view/health-fallout-from-fukushima-mainly-mental-studies>

### 'Operation Tomodachi'

October, 2016

"Operation Tomodachi," was a U.S. Armed Forces operation to assist Japan in the wake of the March 2011 Great East Japan Earthquake and tsunami.

Eight former U.S. soldiers who participated in Operation Tomodachi (friend), a U.S. Armed Forces operation to assist Japan in the wake of the March 2011 Great East Japan Earthquake and tsunami, claim they were affected by radiation and launched a lawsuit in California in December 2012. The number of plaintiffs has since surpassed 450.

According to the lawsuit, the plaintiffs have been suffering from such illnesses as leukemia, testis cancer, colon bleeding, ringing in their ears and a decline in eyesight since they returned home after participating in the operation.

They are suing Tokyo Electric Power Co., the operator of the nuclear plant, Toshiba Corp., Hitachi Ltd., and other Japanese and U.S. atomic power station manufacturers.

<http://mainichi.jp/english/articles/20161011/p2a/00m/0na/019000c>

### TEPCO employee says he has depression due to overwork, seeks compensation

November, 2016

A 35-year-old TEPCO employee handling compensation claims relating to the disaster for the company filed an application with the Tokyo Central Labor Standards Inspection Office seeking workers' compensation for depression.

"My overtime working hours, if combined with unpaid overtime and take-home work, stood at 169 hours (in March)." [5.4 hours every day; 42 hours every week = worked a total of 82 hours a week]

<http://mainichi.jp/english/articles/20161101/p2a/00m/0na/017000c>

### Working-age man reaches physical, mental limit after disaster

November, 2017

In Ishinomaki, Miyagi Prefecture, where the tsunami that followed the Great East Japan Earthquake caused enormous damage in 2011, a 42-year-old man was found dead in a public housing unit for quake victims on June 4 of this year.

A physician explained to a relative that the man's death may have been the result of great physical and mental stress. The man's parents and younger sister had been missing since the tsunami following the quake more than six years earlier.

<http://the-japan-news.com/news/article/0004045088>

### Unattended deaths surge at reconstruction housing

March, 2018

The number of people who died an 'unattended death' surged last year at public disaster reconstruction housing in three prefectures severely hit by the 2011 Great East Japan Earthquake, exceeding for the first time the number of people who died at prefabricated temporary housing.

Fifty-five people died an unattended death at reconstruction housing in the prefectures of Iwate, Miyagi and Fukushima in 2017, about 2½ times the number the previous year, according to prefectural police headquarters and local governments.

<http://the-japan-news.com/news/article/0004282316>

### 70% of hospitals near Fukushima No. 1 nuclear plant bleeding money

September, 2018

Around 70 percent of medical institutions near the disaster-stricken Fukushima No. 1 nuclear power station are operating in the red after restarting services, due to lower patient numbers and mounting labor costs.

<https://www.japantimes.co.jp/news/2018/09/10/national/70-hospitals-near-fukushima-no-1-nuclear-plant-bleeding-money/>

### More than 3,000 disaster-related deaths

2020

More than 3,000 disaster-related deaths caused by loss of strength and energy due to relocation and changes in the living environment that accompany evacuation have been recognized in three prefectures of the Tohoku region (3,407 fatalities as of the end of September 2015, according to a Reconstruction Agency release).

Catholic Bishops p. 56

### One death and 16 injuries

September, 2021

The related meltdown at the Fukushima nuclear power station caused by the tsunami led to one death and 16 injuries.

<https://asia.nikkei.com/Life-Arts/Arts/Minamata-mercury-tragedy-gets-Hollywood-treatment>



## Coverup

### Men in Protective Clothing: 'I couldn't tell you then'

November, 2011

On Sundays, men wearing work clothes with the logo "Ministry of Education, Culture, Sports, Science and Technology" on the back came to the district to measure radiation levels. Yasuko Sanpei would leave the house to meet their car and ask them, "What's the reading today?"

"15 microsieverts (per hour)," one of them would casually said.

"Will you measure my home, too?"

On a different day, the man took measurements around her house. The reading outside the house was at 10 microsieverts/h, and was 5.5 microsieverts/h in the living room. The levels were much higher than normal.

The man wrote the numbers down on a piece of paper and handed it to Sanpei.

One Sunday in early June, out of the blue, the man said, "I can finally tell you this, but the radiation level at first exceeded 100 microsieverts/h in this area. I couldn't tell you then. I'm sorry."

[ajw.asahi.com/article/0311disaster/fukushima/AJ2011112417236](http://ajw.asahi.com/article/0311disaster/fukushima/AJ2011112417236)

### Policeman forbidden from telling the truth

November, 2011

After a few days, a Self-Defense Forces (SDF) jeep stopped in front of Kazuyo Sekiba's house and an SDF serviceman got out. He said he had come to check on her safety.

Concerned about reports of high radiation, she asked nervously, "How high are the readings around here?" The SDF man smiled and told her the area was fine.

"We're wearing a dosimeter, so we know how much radiation we're exposed to each day."

Sekiba felt relieved after hearing that. She stopped hiding in her house and went out into the neighborhood.

On April 17 when she stood on a bridge near her home, a man walked toward her. It was Naomi Toyoda, 55, a freelance journalist. Sekiba asked him to measure the radiation levels at her home, and he began taking measurements around her yard.

When he measured the area under the rain gutter in her entranceway, he stood up and exclaimed, "Wow. This is too bad."

Sensing his hesitance, Sekiba asked Toyoda to tell her the truth.

He told her, "In two hours, you would absorb 1 millisievert."

According to Toyoda, at that time the radiation level exceeded 500 microsieverts per hour. In just two hours a person would exceed the annual permissible exposure of 1 millisievert.

Upon hearing a specific number for the first time, Sekiba at last realized just how serious it was. She hurriedly prepared to leave and fled her home, seen off by Toyoda.

A few days later, when she returned home to get her cat, a patrol car of the Tokyo Metropolitan Police Department drove up.

She said to the policeman, apparently in his 30s, "This area had a high level of radiation, didn't it?"

"Yes, it was high. But I was forbidden to tell people by the government," he answered.

[ajw.asahi.com/article/0311disaster/fukushima/AJ2011112517239a](http://ajw.asahi.com/article/0311disaster/fukushima/AJ2011112517239a)

### **The Prometheus Trap / The Researcher's Resignation**

December, 2011

It was the afternoon of March 11. Shinzo Kimura, 44, a researcher and an expert in radiation hygiene, was at the National Institute of Occupational Safety and Health, Japan (JNIOSH) in Kawasaki, Kanagawa Prefecture, when the Great East Japan Earthquake hit.

He prepared to go to the accident site. The first thing to do to protect residents from radioactivity is to take measurements.

Kimura received a mass e-mail on his cellphone from the institute, which is under the jurisdiction of the Ministry of Health, Labor and Welfare. The message stated, "Do not take any unauthorized action." He was sure the e-mail was meant for him. He understood that it was sent out to stop him from going to the site.

Kimura thought back to the criticality accident in Tokai Village, Ibaraki Prefecture, that occurred in 1999. At the time, Kimura was working at the National Institute of Radiological Sciences (NIRS) in Chiba city. He immediately tried to investigate with his colleagues, but did not receive permission. On his day off, he voluntarily investigated the vicinity and began laying the groundwork for a full-fledged investigation, but was admonished by his supervisor who told him not to go off on his own. He decided to resign from the JNIOSH.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201112310048>

### **Cover-up of estimated costs to dispose of radioactive waste raises serious questions**

January, 2012

The cover-up is essentially similar to a case in which some high-ranking government officials hid a 2002 Russian diplomatic document in which Moscow offered to accept spent nuclear fuel from Japan, in that both helped promote the reprocessing of radioactive waste at a plant in Rokkasho, Aomori Prefecture.

<http://mdn.mainichi.jp/perspectives/news/20120102p2a00m0na001000c.html>

### Public wary of official optimism

March, 2012

Ayumu Yasutomi, a professor at the University of Tokyo, has analyzed the special mode of speech developed by professors at the University of Tokyo and which he says has contaminated discourse in the media. He uses as his main illustrative model the explanations that were offered by nuclear energy experts, many of whom teach at the university, on television in the months following the accident at the Fukushima No. 1 nuclear power plant a year ago. He singles out one professor, Naoto Sekimura, who appeared often on NHK, where he couched his lectures in "optimistic language" and avoided committing to any suppositions of what might actually be happening at any given moment. Sekimura did this by using special terms, in a condescending fashion, that viewers and even reporters couldn't understand.

The trick, according to Yasutomi, is for the user of this method to ignore points in the discussion that "are not favorable" to his position — in this case, a defense of nuclear power — and respond only to those that are. Moreover, the speaker presents himself as an "uninvolved observer," thus implying that anyone who disagrees with the observation is working only from opinion.

During the last few weeks a number of reports have been released analyzing the response to the nuclear accident and other incidents associated with the March 11 disaster, and almost all have found that the authorities at both the governmental and private levels purposely misled the public, ostensibly to prevent panic but, as Yasutomi's book argues, also to cover their respective backsides.

What's sobering about these reports is that no one is really shocked by their findings... As Yasutomi said, "People learned to mistrust those in authority, so much so that even if they told the truth, people couldn't tell. They just automatically thought they were lying."

[www.japantimes.co.jp/text/fd20120311pb.html](http://www.japantimes.co.jp/text/fd20120311pb.html)

### Kenichi Ohmae (organizational theorist, management consultant, former professor and dean of UCLA Luskin School of Public Affairs, and author)

April, 2012

Because of the limited and biased information issued by the Japanese government, the world does not know what really happened when the earthquake and the tsunami hit the six Fukushima nuclear reactors.

[www.japantimes.co.jp/text/eo20120418a4.html#.UAAPOXAVk7A](http://www.japantimes.co.jp/text/eo20120418a4.html#.UAAPOXAVk7A)

### Atomic Energy Commission held undocumented, closed-door meetings for more than a decade

July, 2012

The Japan Atomic Energy Commission has held closed preparatory sessions for more than 10 years prior to its open meetings every week, sometimes deliberating important matters of nuclear energy policy without keeping minutes.

The government did not keep minutes of 10 government meetings regarding the 2011 earthquake and tsunami and nuclear crisis at the Fukushima Daiichi power plant.

[www.japantimes.co.jp/text/nn20120709a3.html#.T\\_pen3B0Ey4](http://www.japantimes.co.jp/text/nn20120709a3.html#.T_pen3B0Ey4)

### Energy agency boss told subordinate to cover up estimated costs to dump nuclear fuel October, 2012

A division head at the Agency for Natural Resources and Energy instructed a subordinate in April 2004 to conceal the estimated costs for disposing of spent nuclear fuel without reprocessing it.

Two months later, a government advisory panel proposed a system under which electric power consumers would be required to foot approximately 19 trillion yen for the costs of operations at a spent nuclear fuel reprocessing plant in Rokkasho, Aomori Prefecture.

Under the current government policy, all spent nuclear fuel is supposed to be reprocessed. However, if the data had been disclosed, it would have revealed that dumping nuclear waste is far cheaper than reprocessing it and could have spurred calls on the government to review its so-called nuclear fuel recycling policy.

Masaya Yasui was serving as director of the agency's Nuclear Energy Policy Planning Division when he instructed the cover-up. In other words, those involved in the promotion of nuclear power blocked moves toward abandoning the nuclear fuel recycling project.

<http://mdn.mainichi.jp/mdnnews/news/20120102p2a00m0na014000c.html>

### WHO downplayed health effects of nuclear crisis on Fukushima residents December, 2012

A German doctor and member of a Nobel Peace Prize-winning physicians' group has criticized a World Health Organization report on the Fukushima nuclear catastrophe for underestimating its impact on human health.

[www.japantimes.co.jp/text/nn20121216a4.html](http://www.japantimes.co.jp/text/nn20121216a4.html)

### How Kan-do attitude averted the meltdown of Japan January, 2013

In the early hours of March 15, Prime Minister Kan was told of Tepco's intention to abandon the site of the accident.

Tepco officials have subsequently denied that they were preparing to abandon the stricken plant, admitting only to planning a partial retreat from its most critically affected areas. With the powerful pro-nuclear lobby in business and government behind them, their spin on the story — including “meddling” by the prime minister which, they suggest, stymied necessary action — has gained some credence in the media.

This befuddling story is a key strategic element in the nuclear industry’s relentless campaign to blur responsibility and to re-legitimize nuclear-power generation in these seismically active islands.

Yet the record is unequivocal: Tepco found itself unable to control events as they took one turn after another for the worse; and had the prime minister not intervened to consolidate decision-making and expedite emergency measures, a pall of radiation may very well have descended over the entire Kanto region, where the capital is located.

[www.japantimes.co.jp/opinion/2013/01/26/commentary/read-all-about-it-how-kan-do-attitude-averted-the-meltdown-of-japan/#.UQ3AJ-jW4y5](http://www.japantimes.co.jp/opinion/2013/01/26/commentary/read-all-about-it-how-kan-do-attitude-averted-the-meltdown-of-japan/#.UQ3AJ-jW4y5)

**Fukushima residents dissatisfied with prefectural handling of thyroid cancer screenings**  
April, 2013

Last fall, Makiko Suzuki, 39, from the prefectural city of Nihonmatsu, accompanied her 6-year-old son to a thyroid exam conducted by the prefecture. The technician who carried out the test appeared to be measuring something on the ultrasound monitor, but the exam ended after just a couple of minutes, without Suzuki receiving any kind of explanation.

Concerned, Suzuki took her son to a hospital to be screened again. In the 10-minute exam, the boy was found to have a nodule seven millimeters in size, which would merit a "B" grade under prefectural guidelines and require him to receive a second exam. However, the report Suzuki received from the prefecture about a month later ranked her son in the "A2" category, which only requires that his condition be monitored.

[mainichi.jp/english/english/newsselect/news/20130427p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20130427p2a00m0na008000c.html)

**Japan’s nuclear comedy just goes on and on**  
August, 2013

The latest revelations of leaks from at least one of more than 1,000 storage tanks being used to store radiation-contaminated water at the Fukushima No. 1 nuclear power plant.

While the media had been reporting on the problem for weeks, Tepco had denied it. Finally — and, oddly, just after July’s Upper House elections — there was the admission, the obligatory apology, and an announcement by the Japanese government that it would come to the rescue.

Tepco at first blamed the accident on “an unforeseen massive tsunami” triggered by the Great East Japan Earthquake. Then it admitted it had in fact foreseen just such a scenario but hadn’t done anything about it.

A Special Diet Commission reporting in July 2012, and other studies, concluded that the earthquake alone probably damaged the cooling system of the Fukushima plant's 40-year-old Reactor 1 so badly that, even before the tsunami, meltdown was inevitable because it would overheat so much.

In other words, some of Japan's nuclear power plants may be unable to withstand an earthquake. Not a comforting thought in a country that has constant seismic activity.

“Nuclear meltdown” itself was denied for months.

However, the words of a top Tepco exec should be of some comfort: “I wish to express regret for the recent cases of misconduct at our company, which eroded public confidence in the nuclear power industry. We will do everything ... to prevent similar incidents and to maintain safety. We will promote release of information in order to reassure the general public that we are making sincere efforts, and to convince them that ‘Tepco is trustworthy’ again.”

All very well — but those remarks were made in 2003 by then Tepco Chairman Tsunehisa Katsumata after the company admitted to extensive falsifying of safety records for more than a decade. The coverups included dangerous problems in a number of its aging nuclear power plants.

[www.japantimes.co.jp/news/2013/08/31/national/japans-nuclear-comedy-just-goes-on-and-on/#.UiLE6byGpGE](http://www.japantimes.co.jp/news/2013/08/31/national/japans-nuclear-comedy-just-goes-on-and-on/#.UiLE6byGpGE)

**Tepco withheld record-level radiation data last summer**  
February, 2014

Tokyo Electric Power Co. did not release until recently radiation data on groundwater collected last July at its Fukushima No. 1 nuclear plant although the utility was aware of the data that month.

[www.japantimes.co.jp/news/2014/02/11/national/tepcu-withheld-record-level-radiation-data-last-summer/#.UvmiWvYVcZI](http://www.japantimes.co.jp/news/2014/02/11/national/tepcu-withheld-record-level-radiation-data-last-summer/#.UvmiWvYVcZI)

**Iitate farmer's cautionary tale translated**  
April, 2014

Kenichi Hasegawa never believed a word uttered by the “experts” who repeatedly came to visit his village 40 km from the crippled Fukushima No. 1 plant after the nuclear catastrophe began and assured residents it would pose little risk to their health. Appalled to hear the experts repeating “daijobu” (everything's fine), Hasegawa said he felt nothing but intense distrust from their reassuring tone. His fellow farmers, however, readily swallowed every word, as if desperate to believe everything was indeed fine.

“From the very beginning, I had a hunch that there was something shady and dishonest about the way local and central government officials responded” to the disaster, Hasegawa recently told The Japan Times.

Hasegawa's book depicts the tragedies and social injustices he witnessed after the disaster started, including the suicide of his depressed friend, his village's organized attempt to cover up the gravity of the radiation, and his emotional farewell to the cattle he had raised his entire life after receiving the belated evacuation order.

Hasegawa said his biggest motivation for writing the book had to do with his desire to unveil "the culture of deception" he sensed from Iitate Mayor Norio Kanno, who he alleges sought to instill a false sense of security among the villagers.

Kanno, Hasegawa wrote, instructed his underlings not to breathe a word about the shocking radiation levels detected near Iitate's offices in the days after the meltdowns. The reading of 40 microsieverts per hour was far higher than the government-designated threshold of 0.23 microsievert that triggers decontamination.

More than two years after publishing the book, Hasegawa said the radiation woes in Iitate haven't changed. If anything, they have worsened. The decontamination work is slow-paced and being carried out with makeshift methods and dubious safety standards, he said. He heard the original plan was to use high-pressure washing equipment, but now the workers are allegedly wiping off the radioactive contaminants using paper towels, he said with frustration.

[www.japantimes.co.jp/news/2014/04/11/national/iitate-farmers-cautionary-tale-translated/#.U03iZMezkjV](http://www.japantimes.co.jp/news/2014/04/11/national/iitate-farmers-cautionary-tale-translated/#.U03iZMezkjV)

**Fukushima residents suspect gov't bid to downplay radiation exposure**  
April, 2014

A Foreign Ministry email requesting municipalities affected by the Fukushima nuclear disaster to submit residents' internal radiation exposure data for use by the International Atomic Energy Agency (IAEA) has met a backlash, as the email suggested the data could be used to play down the radiation effects from the disaster.

[mainichi.jp/english/english/newsselect/news/20140414p2a00m0na009000c.html](http://mainichi.jp/english/english/newsselect/news/20140414p2a00m0na009000c.html)

**Estimated radiation doses of Fukushima returnees withheld for half a year**  
April, 2014

The government withheld findings on estimated radiation exposure for Fukushima returnees for six months, even though levels exceeded the long-term target of 1 millisievert a year at more than half of surveyed locations.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201404160056](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201404160056)

**Niigata governor: State must stop lying about nuclear safety standards**  
April, 2014

The governor of Niigata Prefecture said the central government must stop spreading the lie that its new safety requirements for nuclear power plants are “the world’s strictest standards.”

Hirohiko Izumida said the government’s new setup for nuclear power facilities is filled with holes, fails to address unexpected developments and puts the onus on local governments to protect residents in the event of a nuclear accident.

“Although (the new requirements) do not measure up to international standards, (the central government) is not working to change the current situation,” Izumida said in a recent interview with The Asahi Shimbun. “(The state) is lying by insisting that it has done what it has not done.”

[ajw.asahi.com/article/0311disaster/fukushima/AJ201404230062](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201404230062)

### Doubts raised over ‘world’s strictest’ claim for new nuclear safety standards

April, 2014

“The assertion that the new safety standards for nuclear power plants are ‘the world’s strictest’ is a lie,” a senior LDP official said. “That is mere lip service to allow the restart of reactors.”

[ajw.asahi.com/article/0311disaster/fukushima/AJ201404260044](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201404260044)

### Insider's notes as Fukushima crisis unfolded describe disinterested TEPCO officials

June, 2014

Kenichi Shimomura, the Cabinet Secretariat councilor in charge of public relations, was with Prime Minister Naoto Kan at TEPCO's head office in Tokyo as the Fukushima nuclear disaster was unraveling.

"Until then, I had the impression that we were dealing with someone who was overseas somewhere," Shimomura recalled. "I thought there was nothing we could do if TEPCO headquarters also did not have any information. So it was a major shock for me when I realized TEPCO headquarters had been receiving information but never bothered to pass it on to the prime minister's office which was located so close by."

[ajw.asahi.com/article/0311disaster/fukushima/AJ201406120061](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201406120061)

### Japanese doctors threatened for revealing data

2014

We have firsthand knowledge from at least a half a dozen Japanese doctors who have said they have been threatened if they speak frankly to their patients about the health effects that they’re experiencing; or if they frankly speak in public about their fears — and, in fact, measurements — of how bad radioactive illnesses really are.

<http://enenews.com/japanese-medical-experts-threatened-bad-radioactive-illnesses-really>

## 4 biggest lies about the Fukushima disaster

2016

Five years on, we now know which assurances from authorities turned out to be dangerously false.

### #1 No radiation casualties

It took more than four years for the Japanese government to acknowledge that radiation had played a factor in casualties in Fukushima prefecture.

### #2 Not as bad as Chernobyl

Fukushima is described as the “worst since Chernobyl,” but in reality, it may turn out to be a lot worse.

### #3 Not poisoning children

In December 2015, Hokuto Hoshi, head of an examination panel on thyroid cases, said, “It is unlikely that radiation is responsible for the recently reported thyroid cancer cases, given that there are no reports of cancer among infants, who are particularly susceptible to radiation.” His comments came after 16 cases of thyroid cancer in the prefecture were confirmed in children under 18 during the previous 12 months.

A study by Toshihide Tsuda, a professor of environmental epidemiology at Okayama University, found that thyroid cancer rates in the prefecture were from 20 to 50 times higher than the national level.

### #4 It's not poisoning the land

Scary abnormalities have appeared, including fish containing 258 times the level of radiation deemed safe for consumption.

“Deformed” daisies were found near the site, which were created through a phenomenon called fasciation.

<https://www.rt.com/news/335294-4-biggest-lies-fukushima/>

## Government deleted ‘sarcophagus’ from report

July, 2016

A massive concrete structure encases the wrecked No. 4 reactor at the Chernobyl nuclear power plant, site of the catastrophic 1986 accident. Dubbed the "sarcophagus," it was erected to contain the fuel that could not be extracted from the crippled reactor.

Local governments raised objections to the use of this word in a report compiled by a government organ that supports the decommissioning of the Fukushima No. 1 nuclear power plant.

While the report discusses the extraction of melted fuel as a requirement, it is written in such a way as to suggest that the construction of a sarcophagus is an option that should not be

dismissed out of hand. This outraged the governor of Fukushima, Masao Uchibori, who lashed out, "Containing (the melted fuel) in a sarcophagus spells giving up hope for post-disaster reconstruction and for returning home."

The government organ has since deleted the word from the report, admitting that it was misleading and that constructing a sarcophagus is not under consideration.

<http://www.asahi.com/ajw/articles/AJ201607230013.html>

### Judges may order gov't to submit redacted report in lawsuit over Fukushima disaster October, 2016

A judge presiding at a trial over the Fukushima nuclear crisis said the judges in charge will decide by the end of this year on whether to order the government to submit some of its investigation committee's reports on the disaster that have been withheld.

<http://mainichi.jp/english/articles/20161014/p2a/00m/0na/005000c>

### NRA's radioactive soil concerns omitted from minutes of closed-door meeting February, 2017

Concerns raised by the Nuclear Regulation Authority on how radioactive soil from the Fukushima nuclear disaster would be reused were omitted from the minutes of closed-door meetings on the issue.

<http://mainichi.jp/english/articles/20170204/p2a/00m/0na/017000c#csidxbd95fedfd0c900ba337c80dcb3535e5> 

### Asking the tough questions on Fukushima March, 2017

Many people remain suspicious of the government's assurances that radioactivity has dropped to a safe level. There is still debate among experts as to whether or not the radiation in the area is dangerous. The government says that the problems caused by the accident are now "under control," and affected residents can soon go back to their old lives.

One media outlet which has challenged this assumption is TV Asahi. On March 9, the nightly news show sent its main announcer to Iitate, a village located about 40 km from the crippled nuclear facility. All 6,000 residents were eventually evacuated after the accident.

Standing in front of rows of black plastic bags, Tomikawa reported that, according to the government, decontamination efforts have been a success. A safe annual radiation level is 1 millisievert, but a local dairy farmer told Tomikawa that his own readings showed five times that level, adding that 70 percent of Iitate is wooded and forest land had not been decontaminated yet.

<http://www.japantimes.co.jp/news/2017/03/18/national/media-national/asking-tough-questions-fukushima/>

### **Fukushima nuclear plant tries image overhaul**

August, 2018

TEPCO officials have been gradually trying to rebrand the plant, bringing in school groups, diplomats and other visitors, and touting a plan to attract 20,000 people a year by 2020, when Tokyo hosts the Summer Olympics.

<https://japantoday.com/category/national/extreme-makeover-fukushima-nuclear-plant-tries-image-overhaul>

### **Japan pushes to remove Fukushima references from U.N. exhibition**

March, 2020

The Foreign Ministry has pushed for references to the Fukushima nuclear disaster to be removed from an upcoming exhibition at the United Nations.

<https://www.japantimes.co.jp/news/2020/03/03/national/japan-pushes-remove-fukushima-references-u-n-exhibition/>

### **Doctors covering up**

2020

Fukushima Prefectural Medical University is supposed to be investigating this, but they count only the cases that have been operated at their hospital. Anyone who was operated on elsewhere won't be counted. Therefore, nobody knows the actual number of thyroid cancer cases in Fukushima.

Some scholars dismiss the link between the unusually high occurrence of childhood thyroid cancer and radiation exposure, and insist that it was the result of "mass screening."

Dr. Yamashita Shunichi and his colleagues were working from the beginning to establish a discourse that the Fukushima disaster had done nothing harmful to the human body.

Dr. Yamashita told Fukushima residents to smile and relax at a public meeting right after the nuclear accident. He said to his audience, "Radiation does not affect people who are happy and smiling. The effects of radiation come to you if you worry about it. This theory has been proven by experiments on animals."

He said something like, "As a Japanese, I cannot say no to the government."

<https://apjff.org/2020/19/Sakiyama-Hirano-Kasai.html>

## **Coverup — Government**

## TEPCO and government hid unfavorable info 2020

Even in the process of dealing with the Fukushima Daiichi accident and its aftermath, TEPCO and the government, including the former Nuclear and Industrial Safety Agency, released only information that was favorable to themselves, hiding anything unfavorable. As a result, it has been indicated that many people were exposed to radiation from the Fukushima nuclear accident needlessly (Hizumi & Kino, 2012; Kino, 2013).

In particular, there were data available predicting the diffusion risks of radioactive substances from the most up-to-date facilities, called SPEEDI (System for Prediction of Emergency Dose Information), but they were not released to Japan's citizens. Indeed, they were provided to none less than the U.S. military.

Also, in Iitate, the radiation dose spiked on the evening of March 15 (reaching an hourly maximum of 44.7 microsieverts). Although the U.S. Department of Energy suggested on March 22 that there might be notable contamination in the vicinity of Iitate, it was not until April 22 that Japan's government designated Iitate as a 'deliberate evacuation area.'

## Catholic Bishops, pp. 63-64

## Japan Atomic Energy Research Institute's gag order December, 2011

The former Japan Atomic Energy Research Institute (currently, Japan Atomic Energy Agency) published the paper in October 1999. The single sheet of paper notes the rules for publicizing predicted impact of radioactivity and data on radioactivity levels.

If there is an external request to provide data, the individual fielding the request will ask his or her supervisor's opinion, who will in turn ask the department head, who will ask the director, who will ask the vice chairman.

If the vice chairman assents to the request, that will be passed down the line and the information will be provided through the office of safety management. An attached comment says "it should be confirmed that the information is academically sound."

In essence, data will not be provided to outsiders unless an extremely involved process is undertaken.

"We called this paper the 'gag order,'" explains Takashi Iwai, 54, who has worked for many years as the chairperson of the agency's labor union, the Genken labor union. The agency has another labor union for the former Power Reactor and Nuclear Fuel Development Corp.

"The information we knew about was officially a secret, even if it could help citizens. We weren't allowed to share it."

The paper was written just after the criticality accident in Tokai village on Sept. 30 in the same year. In other words, the paper was composed to prevent leaking various data involving the criticality accident. Thus, it is called a "gag order."

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201112310048>

**Gov't withheld estimates showing electricity surplus to boost nuclear power: critics**  
January, 2012

The government withheld an estimate that there would be no electricity shortages in the upcoming summer in an apparent bid to underscore the need to restart nuclear power plants, it has been learned.

[mdn.mainichi.jp/mdnnews/news/20120123p2a00m0na007000c.html](http://mdn.mainichi.jp/mdnnews/news/20120123p2a00m0na007000c.html)

**Ministry hid data on fallout from public**  
March, 2012

Former science minister Yoshiaki Takaki and other top ministry officials decided to withhold radiation forecast data from the public four days after the March 11 disasters triggered the nuclear crisis, an internal document shows.

[www.japantimes.co.jp/text/nn20120304a1.html](http://www.japantimes.co.jp/text/nn20120304a1.html)

**Fukushima Prefecture asked university to stop radiation dose tests soon after disaster**  
June, 2012

The Fukushima Prefectural Government asked a research team from Hirosaki University to stop conducting internal radiation exposure tests on prefectural residents after the outbreak of the Fukushima nuclear disaster on the grounds that the tests were "stirring uneasiness."

[mainichi.jp/select/news/20120614k0000m040121000c.html](http://mainichi.jp/select/news/20120614k0000m040121000c.html) (Japanese)

**Fukushima gov't tried to kill proposal to store baby teeth for future radiation checks**  
December, 2012

The Fukushima Prefectural Government has tried to kill a proposal by a local assemblyperson to store local children's milk teeth to examine their internal radiation exposure stemming from the Fukushima nuclear disaster.

[mainichi.jp/english/english/newsselect/news/20121219p2a00m0na016000c.html](http://mainichi.jp/english/english/newsselect/news/20121219p2a00m0na016000c.html)

**Mayor forbids talk of radiation levels**  
April, 2014

Iitate Mayor Norio Kanno instructed his underlings not to breathe a word about the shocking radiation levels detected near Iitate's offices in the days after the meltdowns. The reading of

40 microsieverts per hour was far higher than the government-designated threshold of 0.23 microsievert that triggers decontamination.

[www.japantimes.co.jp/news/2014/04/11/national/iitate-farmers-cautionary-tale-translated/#.U03iZMezkjV](http://www.japantimes.co.jp/news/2014/04/11/national/iitate-farmers-cautionary-tale-translated/#.U03iZMezkjV)

### Government shows no intention of disclosing Fukushima disaster interviews

May, 2014

Successive Cabinets have refused to release details of firsthand accounts of the Fukushima nuclear disaster, despite an understanding by a government investigation committee that the information from 772 interviewees could be made public.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201405240045](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201405240045)

### Ministry withholds minutes from nuclear accident compensation resolution meetings

October, 2014

The Education, Culture, Sports, Science and Technology Ministry is withholding minutes from meetings held by the top decision-making panel of the Nuclear Damage Compensation Dispute Resolution Center, which is the government-backed body handling alternative dispute resolution (ADR) for the Fukushima nuclear disaster.

<http://mainichi.jp/english/english/newsselect/news/20141025p2a00m0na012000c.html>

### Environment Ministry deleted some of its remarks from minutes on contaminated soil meet

January, 2017

The Ministry of the Environment deleted some of its remarks made in closed-door meetings on reuse of contaminated soil stemming from the Fukushima nuclear disaster from the minutes of the meetings. The meetings discussed the reuse of radioactively contaminated soil generated when areas affected by the Fukushima nuclear crisis were decontaminated.

<http://mainichi.jp/english/articles/20170105/p2a/00m/0na/007000c>

### Abe dishonest

March, 2017

Mitsuhiko Tanaka, a former Babcock-Hitachi nuclear engineer, accuses PM Abe and other government officials of playing down the severity of the decommissioning challenge in an attempt to win public support for the restart of nuclear reactors across the country.

“Abe said Fukushima was under control when he went overseas to promote the Tokyo Olympics, but he never said anything like that in Japan,” says Tanaka. “Anyone here could see that the situation was not under control.”

<https://www.theguardian.com/world/2017/mar/09/fukushima-nuclear-cleanup-falters-six-years-after-tsunami>

### **Convention on Early Notification of a Nuclear Accident**

May, 2018

At the 1986 G7 summit, Japan proposed that information should be promptly provided and assistance extended if a nuclear accident occurs. These proposals were announced in a statement at the meeting, and would later morph into the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency and the Convention on Early Notification of a Nuclear Accident.

<http://the-japan-news.com/news/article/0004419173>

### **Coverup — Tokyo Electric Power Co.**

#### **TEPCO hid problems and faked repairs**

2011

Days before an earthquake and tsunami knocked out power at the Fukushima plant, its operator had admitted faking repair records.

The operator of the Fukushima No 1 plant submitted a report to the country's nuclear watchdog 10 days before the quake hit on March 11, admitting it had failed to inspect 33 pieces of equipment in its six reactors there.

A power board distributing electricity to a reactor's temperature control valves was not examined for 11 years, and inspectors faked records, pretending to make thorough inspections when in fact they were only cursory, TEPCO said.

<http://www.theaustralian.com.au/tepcO-hid-problems-and-faked-repairs/story-fn84naht-1226025038908>

#### **Doubts deepen over TEPCO truthfulness after president's sightseeing trip uncovered**

May, 2011

Suspicious that Fukushima No. 1 Nuclear Power Plant operator Tokyo Electric Power Co. (TEPCO) is hiding information were heightened on May 27 with revelations that its president was not where TEPCO had said he was on the day of the Great East Japan Earthquake.

TEPCO had claimed that on March 11 its President Masataka Shimizu was on a trip to meet with Kansai-area business leaders. The Mainichi discovered, however, that Shimizu was in fact sightseeing in Nara -- a discrepancy that TEPCO now refuses to discuss.

<http://mdn.mainichi.jp/mdnnews/news/20110528p2a00m0na004000c.html>

### Fukushima residents call TEPCO nuke disaster report 'sloppy' and 'false'

June, 2012

Tokyo Electric Power Co.'s final report on the Fukushima nuclear disaster has triggered a major backlash from prefectural residents and authorities who call it weak and even laced with falsehoods.

[mainichi.jp/english/english/newsselect/news/20120621p2a00m0na017000c.html](http://mainichi.jp/english/english/newsselect/news/20120621p2a00m0na017000c.html)

### TEPCO inquiry admits 'misinformation'

March, 2013

An inquiry by Tokyo Electric Power Co. into allegations the utility misled Diet investigators and thereby thwarted an inspection of a particular building at the Fukushima No. 1 nuclear plant has agreed that there was misinformation, but insisted it was unintentional.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201303140095](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303140095)

### TEPCO withheld data on contaminated well water for weeks

June, 2013

After finding tritium levels higher than the safety standard in well water at the crippled Fukushima No. 1 nuclear power plant, Tokyo Electric Power Co. withheld the information from the public for nearly three weeks.

The company on June 19 disclosed that 500,000 becquerels of tritium per liter of water, eight times the legal limit, were detected. It also said that 1,000 becquerels of strontium, 30 times the legal limit, were detected.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201306200076](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201306200076)

### TEPCO admits delaying confirmation of leaks

July, 2013

Last week, the utility stated for the first time that radioactive groundwater had leaked outside the plant, confirming long-held suspicions of ocean contamination from the shattered reactors.

The company had previously reported rising levels of cancer-causing materials in groundwater samples taken from underneath the plant itself, but maintained it had halted toxic water from leaking beyond its borders.

As Japan's nuclear watchdog heaped doubt on TEPCO's claims, it eventually admitted delaying the release of test results confirming the leaks.

[www.japantoday.com/category/national/view/nuclear-watchdog-to-beef-up-fukushima-monitoring-team](http://www.japantoday.com/category/national/view/nuclear-watchdog-to-beef-up-fukushima-monitoring-team)

### Contaminated water leak coverup

August, 2013

Scientists, pointing to stubbornly high radioactive cesium levels in bottom fish since the disaster, had for some time suspected the plant was leaking radioactive water into the ocean. Tepco repeatedly denied that until last month, when it acknowledged contaminated water has been leaking into the ocean from early on in the crisis.

Ken Buesseler, a marine chemist at the Woods Hole Oceanographic Institution in Massachusetts, found that radioactive cesium levels in most fish caught off the Fukushima coast hadn't declined in the year following the March 2011 start of the disaster, suggesting that the contaminated water from the reactor-turbine areas is already reaching the sea. But Tepco hasn't provided the details he and other scientists need to further assess the situation.

[www.japantimes.co.jp/news/2013/08/23/national/tepc-hit-for-failing-to-foresee-menace-of-radioactive-groundwater-tank-leaks/#.UhrV8LyGpGG](http://www.japantimes.co.jp/news/2013/08/23/national/tepc-hit-for-failing-to-foresee-menace-of-radioactive-groundwater-tank-leaks/#.UhrV8LyGpGG)

### Tanks, not leak, main problem at Fukushima

September, 2013

... 300 tons of toxic water are flowing into the Pacific each day, something Tokyo Electric Power Co. continued to deny until the day after the Liberal Democratic Party won the Upper House election in July.

[www.japantimes.co.jp/news/2013/09/12/national/tanks-not-leak-main-problem-at-fukushima/#.UjJVzbyGpGE](http://www.japantimes.co.jp/news/2013/09/12/national/tanks-not-leak-main-problem-at-fukushima/#.UjJVzbyGpGE)

### Cracks in Tepco's 3/11 narrative

November, 2013

Toshio Kimura, 49, who served the company for 17 years from 1983 to 2000 and worked at Fukushima No. 1 for 12 years, is strongly of the view that pipes in the plant were damaged seriously by the quake before a subsequent tsunami struck the plant.

He casts doubt on Tepco's position that the tsunami caused loss of all the power sources, thus leading to the disaster. He says, "An effective means of determining the true cause of the accident would have been to analyze recorded data related to transient phenomena — data that show what happened near the reactor cores. Even though more than two years have passed since the disaster, however, Tepco has released only partial data.

"So I demanded that Tepco release the relevant data. It made public the data on Aug. 19 for the first time." But it was found later that the data did not represent the whole data.

[www.japantimes.co.jp/opinion/2013/11/17/commentary/cracks-in-tepcos-311-narrative/#at\\_pco=tcb-1.0&at\\_tot=8&at\\_ab=-&at\\_pos=6](http://www.japantimes.co.jp/opinion/2013/11/17/commentary/cracks-in-tepcos-311-narrative/#at_pco=tcb-1.0&at_tot=8&at_ab=-&at_pos=6)

**Tohoku Electric Power kicks up a stink about art display at publicity hall**  
October, 2014

A solitary bulging black sandbag, a sprinkling of dirt on a solar panel and a dosimeter: As art installations go, the work on display at a venue here smacked more of a statement than anything else.

Tohoku Electric asked for the work to be temporarily removed on grounds that people looking in from the street might regard it as suspicious.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201410140032](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201410140032)

**Tepco staff told to avoid word 'meltdown': report**  
2016

A report to be released on Thursday reveals that Tokyo Electric Power employees were instructed not use the term ‘meltdown’ when referring to the Fukushima Dai-ichi nuclear disaster that occurred in 2011.

For months after the accident, Tepco continued to deny that a meltdown had occurred.

<http://asia.nikkei.com/Politics-Economy/Policy-Politics/Tepco-staff-told-to-avoid-word-meltdown-report>

**NRA too hasty in giving green light to TEPCO to restart reactors**  
September, 2017

Last month it emerged that TEPCO had seriously delayed announcing that falling levels of underground water being pumped up at the Fukushima plant set off an alarm. The NRA bitterly criticized the delay, saying the suspicion that TEPCO was still in the habit of “covering up inconvenient facts and deceiving people” could not be avoided.

<http://www.asahi.com/ajw/articles/AJ201709140030.html>

**Coverup — Media**

**Paper with ties to power plant cancels anti-nuke book**  
December, 2011

The Nishinippon Shimbun, a Fukuoka-based regional newspaper publisher, canceled the publication of a book last December containing statements critical of plutothermal nuclear power generation at Kyushu Electric Power Co.’s Genkai nuclear power plant.

Behind the scenes lies a cozy relationship between the media firm and power company. Kyushu Electric Power is the second largest shareholder in the Nishinippon Shimbun with 222,000 shares, or a 3.08-percent stake. The newspaper firm also owned 3,800 shares in the

power company as of the end of March. Moreover, Takao Kawasaki, Nishinippon Shimbun president, serves concurrently as a director of the utility's subsidiary, Nishi Nippon Airlines Co.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201112160024](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201112160024)

### Japan falls far on press freedom list

January, 2013

Japan plummeted to 53rd from the previous year's 22nd in the 2013 press freedom ranking released Wednesday by Reporters Without Borders. Japan "has been affected by a lack of transparency and almost zero respect for access to information on subjects directly or indirectly related to Fukushima," the group said in a statement.

[www.japantimes.co.jp/news/2013/01/31/national/japan-falls-far-on-press-freedom-list/#.UQpP8-jW4y4](http://www.japantimes.co.jp/news/2013/01/31/national/japan-falls-far-on-press-freedom-list/#.UQpP8-jW4y4)

### 'Oishinbo' manga on hold after criticism of Fukushima episodes

May, 2014

Chastened editors of the long-running "Oishinbo" manga series agreed to review depictions after scenes about the Fukushima nuclear disaster in recent installments triggered an uproar.

The editors said they accepted criticisms leveled at them particularly with regard to the main character suddenly developing a nosebleed after visiting the crippled Fukushima No. 1 nuclear power plant.

In another scene, characters based on real-life individuals caution people not to live in Fukushima.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201405170047](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201405170047)

### Officials keep close tabs on journalists.

March, 2016

Officials keep close tabs on journalists. Minutes after chatting with some workers in Minamisoma, Associated Press journalists received a call from a city official warning them not to talk to decontamination crews.

<http://www.japantoday.com/category/national/view/fukushima-decontamination-troops-often-exploited-shunned>

### Media missing

March, 2017

Following the disaster, Mako became suspicious when she saw people fleeing Tokyo in large numbers but heard nothing about it on the news.

<http://www.japantimes.co.jp/news/2017/03/18/national/media-national/asking-tough-questions-fukushima/>

## Incompetence

“An unending litany of scandals, ranging from those at the ‘Keystone Cop’ level to potentially deadly serious.”

<https://apjff.org/2021/17/Simms.html>

### SDF withdraws from stricken nuclear plant

March, 2011

The SDF was part of operations to cool down the reactors with water when an explosion rocked the No. 2 reactor building, severely injuring several people including four SDF personnel. TEPCO staff directing the cooling operation had apparently assured the defense forces that there was no danger, sparking serious doubts about TEPCO's judgment.

"The SDF special weapons response unit does not have sufficient knowledge of nuclear power generation," said one unhappy Defense Ministry official. "On safety, they have no choice but to follow the directions of TEPCO and the Nuclear and Industrial Safety Agency."

<http://mdn.mainichi.jp/mdnnews/news/20110316p2a00m0na004000c.html>

### TEPCO dismissed important scientific evidence in planning nuclear plant's defense

March, 2011

While TEPCO and government officials have said no one could have anticipated such a massive tsunami, there is ample evidence that such waves have struck the northeast coast of Japan before — and that it could happen again along the culprit fault line.

TEPCO officials discounted important readings from a network of GPS units that showed that the two tectonic plates that create the fault were strongly ‘coupled’, or stuck together, thus storing up extra stress along a line hundreds of kilometers long. The greater the distance and stickiness of such coupling, experts say, the higher the stress buildup — pressure that can be violently released in an earthquake.

A TEPCO reassessment presented only four months ago concluded that tsunami-driven water would push no higher than 5.7 meters once it hit the shore at the Fukushima Daiichi complex. The reactors sit up a small bluff, between 4.3 and 6.3 meters above TEPCO’s projected high-water mark, according to a presentation at a November seismic safety conference in Japan by TEPCO civil engineer Makoto Takao.

“We assessed and confirmed the safety of the nuclear plants,” Takao asserted.

<http://www.japantoday.com/category/commentary/view/tepcO-dismissed-important-scientific-evidence-in-planning-nuclear-plants-defense>

<https://www.pressdemocrat.com/article/news/report-japan-nuclear-plant-downplayed-tsunami-risk/>

### Lack of foresight

March, 2011

Industry sources say separate plans existed to deal with an earthquake, a tsunami, a loss of electrical power and a nuclear accident inside the reactor. But none contemplated what would happen if all four events happened at once.

<http://www.theaustralian.com.au/saving-a-reactor-with-car-batteries/story-fn84naht-1226025003364>

### Government contradicts itself

March, 2011

At first, the government's announcements regarding radiation levels in produce from northern prefectures were almost comically self-contradictory. Chief Cabinet Secretary Yukio Edano repeatedly said that eating these products would not cause long-lasting health problems, but he also asked distributors to refrain from shipping them to market because radiation levels exceeded "allowable safety standards."

<http://search.japantimes.co.jp/cgi-bin/fd20110327pb.html>

### Workers without protective footwear suffer burns

March, 2011

Two workers at the tsunami-damaged Fukushima Daiichi plant suffered skin burns when they stepped in water that was 10,000 times more radioactive than levels normally found near the reactors. The operator sent them in without protective footwear.

<http://www.japantoday.com/category/politics/view/edano-criticizes-tepco-for-series-of-mistakes-on-nuclear-plant>

### Food safety inspections

March, 2011

Dissatisfaction with the system for food safety inspections is spreading among local governments and farmers in areas affected by radioactive emissions from the Fukushima No. 1 nuclear power plant.

Under the current system, prefectural governments and municipalities with public health centers decide which crops are to be tested, as well as the sample size, and report the results of the tests to the central government. However, there is great variation among different local governments' decisions on these points.

Even if the legal limit is exceeded in food from a certain area, it does not necessarily mean distribution of the products in question will be restricted. The current system allows only for imposition of shipping restrictions on entire prefectures--rather than just on the areas where dubious crops were grown.

<http://www.yomiuri.co.jp/dy/national/T110328004308.htm>

### Delays plague distribution of overseas aid

March, 2011

The government had received offers of support from 133 countries and territories, as well as 39 international organizations, as of 11 p.m. on 25 March, 2011. They included the dispatch of personnel and aid supplies. As of Friday, the government had accepted contributions of personnel, including rescue teams, from 21 nations, territories and international organizations. As of Sunday, it had accepted aid supplies from 26.

The Indonesian government sent 10,000 blankets which were too thin for the cold areas struck by the disaster.

The Thai government began preparing to send 15,000 tons of rice, but it was not sent because the Japanese government decided Japan had enough rice.

Ukraine, which experienced the catastrophe of a nuclear meltdown at its Chernobyl power plant, sent one ton of medical supplies, including iodine pills for Ukrainian people living in Japan. However, the medical supplies were returned to Ukraine by the Japanese government because "the medicine was not certified for use in Japan."

<http://www.yomiuri.co.jp/dy/national/T110328003863.htm>

### Overseas aid

March 29, 2011

"We have to respond to requests from disaster sites and make preparations so aid supplies can be handled smoothly," the official said. "Furthermore, transportation is limited, so it takes a lot of time to make the necessary arrangements," he said.

One embassy official spoke for many foreign missions when saying: "If we received more concrete information from the Japanese government regarding what supplies are needed in specific areas, we could support them more efficiently."

<http://www.yomiuri.co.jp/dy/national/T110328003869.htm>

### Troubled Plant Had High Rate of Problems

March, 2011

The crippled Japanese power plant at the heart of the world's worst nuclear crisis in a quarter of a century has a history of mechanical and operational flaws.

In August 2010, employees at Tokyo Electric Power Co.'s Fukushima Daiichi power plant, armed with plans for work on the complex's No. 6 reactor, instead began conducting work on the facility's No. 5 unit, according to regulatory records. They then altered work plans on

their own, leading to a mistake that rendered the unit's cooling system inoperable. Regulators looking into the issue discovered a cable for controlling the cooling system had mistakenly been removed, an error that wasn't discovered for more than two weeks.

In 2009, drain pipes were misconnected at five different places at Fukushima Daiichi, allowing radioactive tritium to mix with water from storm drains, according to records. It is unclear whether the tritium was released to the broader environment.

<http://theautomaticearth.blogspot.com/>

### Distrust grows among N-crisis players

April, 2011

The prime minister made a high-profile visit to TEPCO's head office in Uchisaiwaicho, Tokyo, in the early morning of March 15, a day after a hydrogen explosion at the No. 3 reactor. He severely chastised TEPCO officials there, saying the incident had been reported on television shortly after it happened but that TEPCO took about one hour to report it to the Prime Minister's Office.

The distrust on the prime minister's side was amplified after the utility changed its explanation a few times on whether it knew of the danger of the March 24 accident in which three plant workers were exposed to high-level radiation in the No. 3 reactor's turbine building.

Internal Affairs and Communications Minister Yoshihiro Katayama asked Economy, Trade and Industry Vice Minister Kazuo Matsunaga if the ministry's Nuclear and Industrial Safety Agency provided disaster-hit municipalities with sufficient information on the nuclear crisis, but he replied that the ministry would need two weeks to do that. Katayama was infuriated and asked why the ministry needed such a long time.

Matsunaga also angered Ryu Matsumoto, state minister in charge of disaster management. When Matsumoto said TEPCO employees should support people evacuated to the Saitama Super Arena in Saitama, Matsunaga replied he did not know what TEPCO employees were doing. Matsumoto angrily told him that he should know, because TEPCO was responsible for seriously disrupting evacuees' lives.

Meanwhile, agency and TEPCO officials are said to be very frustrated with the prime minister's side, because Kan has kept his distance from ministry bureaucrats and paid more attention to the opinions of private-sector nuclear experts he appointed as Cabinet consultants.

<http://www.yomiuri.co.jp/dy/national/T110401005516.htm>

### Long-term power loss not foreseen in nuclear guidelines

April, 2011

Design guidelines for nuclear plants do not require that utilities take steps against long-term power loss. The apparent lapse was based on the assumption that in case of an emergency, electricity would be quickly restored or backup power would suffice.

<http://search.japantimes.co.jp/cgi-bin/nn20110407a2.html>

### Most nuclear plants have hardly any insurance coverage

April, 2011

The Fukushima No. 1 nuclear disaster highlights one of the industry's key weaknesses — that nuclear power is a viable source for cheap energy only if plants go uninsured. The plant's operator, Tokyo Electric Power Co., had no disaster insurance.

<http://search.japantimes.co.jp/cgi-bin/nn20110423a2.html>

### Nuke crisis medical response team learns hard lesson

April, 2011

Japan's emergency medical response team for atomic accidents learned the hard way that its state of readiness and contingency plans were not fully adequate when it came to handling its first emergency since the team was established in December 2009.

The Radiation Emergency Medical Assistance Team was set up by the National Institute of Radiological Sciences in the city of Chiba, which is given the central role of handling patients exposed to radiation. REMAT is sent in after the hospital where patients have been transported summons help.

In Fukushima, however, hospitals near the nuclear plant in the quake- and tsunami-hit area were barely functioning. Some had been destroyed and doctors had fled.

One SDF member was hit by rubble sent flying by the explosion. He suffered bruising to his right leg, through which it was possible radioactive substances could find their way into his body. Takako Tominaga, a doctor in the squad, was at an off-site response center in the town of Okuma, where the injured SDF soldier was brought in.

Tominaga called the national institute, asking it to accommodate the patient. Makoto Akashi, who took the call, first wanted a nearby hospital to treat the man, to no avail. He was eventually flown to the institute.

<http://search.japantimes.co.jp/cgi-bin/nn20110428f3.html>

### TEPCO neglected radiation checks in building where two women absorbed high doses

May, 2011

Tokyo Electric Power Co. (TEPCO) failed to check the levels of radiation inside a key operation center at the crippled Fukushima nuclear power plant before two female workers were exposed to high levels of radiation there. The two workers have recently been exposed

to radiation higher than the legal limit for female workers — lower than that for men — of 5 millisieverts over a three-month period.

<http://mdn.mainichi.jp/mdnnews/news/20110504p2a00m0na010000c.html>

### Scant progress in repairing water, power lines

May, 2011

Nearly two months after the March 11 earthquake and tsunami, about 73,000 utility customers, including households, in Iwate, Miyagi and Fukushima prefectures, have no tap water, and electricity has not been restored to about 120,000 such customers.

<http://www.yomiuri.co.jp/dy/national/T110506005043.htm>

### Tepco detected sharp rise in radiation in reactor 1 immediately after temblor struck.

May, 2011

High radiation readings taken in the No. 1 reactor building the night of March 11 suggest it was the quake rather than the loss of cooling that critically damaged the Fukushima No. 1 power plant, a utility source said Saturday.

<http://search.japantimes.co.jp/cgi-bin/nn20110516a3.html>

### Core of reactor 1 melted 16 hours after quake

May, 2011

The meltdown at reactor No. 1 in Fukushima happened more quickly than feared, Tokyo Electric Power Co. said Sunday in a new analysis.

In a related revelation concerning a major mixup after the six-reactor complex lost power, Tepco and other sources said the same day that the utility had assembled 69 power supply vehicles at the plant by March 12 but that these proved virtually useless.

Tepco earlier said it had tried to connect the vehicles to power-receiving equipment needed to operate the water pumps intended to cool down the reactors. But this failed because the equipment was submerged in seawater from the tsunami, which posed the risk that the equipment would short out.

Tepco's account conflicts with the one detailed by the Nuclear and Industrial Safety Agency, which mentioned the first arrival of such a vehicle on the evening of March 11 but stopped mentioning it the following day, as the focus of attention had shifted to the need to release radioactive steam to relieve pressure that had built up inside the containment vessel of reactor 1.

<http://search.japantimes.co.jp/cgi-bin/nn20110516a1.html>

### TEPCO needs to stop ignoring the 'inconvenient'

May, 2011

Two months after the onset of the accident, TEPCO finally admitted the plant's No. 1 reactor had reached a complete core meltdown, apparently finding it could no longer deny the fact because of data based on new calculations. Still, it has yet to admit core meltdowns at the No. 2 and No. 3 reactors on the grounds that there is not sufficient data.

<http://www.asahi.com/english/TKY201105180362.html>

### Only 30% of donations reaches victims

May, 2011

Only about 30% of money donated to help victims of the March 11 earthquake and tsunami has reached people in the hardest-hit prefectures of Iwate, Miyagi and Fukushima. A shortage of staff at local governments in the affected areas and complicated application procedures are being blamed for slow distribution of the cash.

<http://www.yomiuri.co.jp/dy/national/T110522002795.htm>

### Japan does not encourage research into potential major accidents

2011

The first robot to go into one of the troubled nuclear plant's reactor buildings, where a high radiation level was measured after the accident, was a US PackBot. Japanese-made robots, said to be the 'best in the world', were not at the vanguard of such an important event.

Hirofumi Nakamura of the Japan Atomic Energy Agency said both the state and researchers feel uncomfortable about engaging in research for 'accidents at nuclear plants.' "While the state emphasizes the safety of nuclear plants to nearby residents, it does not encourage research into potential major accidents."

A high-ranking official at a government ministry said Tokyo Electric Power wields strong influence that has created a taboo. "Tokyo Electric Power is too big, and the state is also sensitive to it. Research that Tokyo Electric Power hates can never be promoted."

<http://www.japantoday.com/category/commentary/view/safety-myth-hampers-rd-of-measures-against-nuclear-accidents>

<https://www.japantimes.co.jp/news/2011/06/09/national/myth-of-nuclear-safety-sets-back-robotic-research-and-development/>

### TEPCO made 1,000 information errors related to power-saving goals

June, 2011

The industry ministry said Friday that Tokyo Electric Power Co. has made around 1,000 mistakes in relation to key information that the ministry has used for mandatory power-saving goals to be imposed on large-lot electricity users from July 1.

<http://mdn.mainichi.jp/mdnnews/news/20110604p2g00m0dm007000c.html>

### Preventing radiation contamination more important than TEPCO's stock prices

June, 2011

One figure who has entered the public spotlight in the wake of the nuclear crisis is 61-year-old Hiroaki Koide, an assistant professor at the Kyoto University Research Reactor Institute and a controversialist in the anti-nuclear debate. A specialist in nuclear power, Koide has garnered attention as a persistent researcher who has sounded the alarm over the dangers of this form of energy without seeking fame.

In a TV Asahi program on June 16, Koide made the following comment: "As far as I can tell from the announcements made by Tokyo Electric Power Co. (TEPCO), the nuclear fuel that has melted down inside reactors at the Fukushima nuclear plant has gone through the bottom of the containers, which are like pressure cookers, and is lying on the concrete foundations, sinking into the ground below. We have to install a barrier deep in the soil and build a subterranean dam as soon as possible to prevent groundwater contaminated with radioactive materials from leaking into the ocean."

When I asked a high-ranking government official about this, the official said that construction of an underground dam was indeed being prepared. But when I probed further, I found that the project was in limbo due to opposition from TEPCO.

The reason is funding. It would cost about 100 billion yen to build such a dam, but there is no guarantee that the government would cover the amount. If an announcement were made and TEPCO were seen as incurring more liabilities, then its shares would fall once again, and the company might not be able to make it through its next general shareholders' meeting.

In my possession, I have a copy of the guidelines that TEPCO presented to the government on how to handle press releases. The title of the document, dated June 13, is "Underground boundary' -- Regarding the press." It is split into five categories on how to handle the announcement of construction of an underground boundary. In essence, it says, "We are considering the issue under the guidance of prime ministerial aide Mabuchi, but we don't want to be seen as having excess liabilities, so we're keeping the details confidential."

Possibly the silliest response to envisaged questions from reporters is TEPCO's suggestion for a reply to the question, "Why hasn't construction been quickly started?" The response reads: "Underground water flows at a speed of about 5 to 10 centimeters a day, so we have more than a year before it reaches the shore."

<http://mdn.mainichi.jp/perspectives/news/20110620p2a00m0na005000c.html>

### TEPCO can't find 69 plant workers for radiation checks

June, 2011

The whereabouts of 69 people who had worked at the crippled Fukushima No. 1 nuclear power plant remain unknown, including 30 who have not even been identified, Tokyo Electric Power Co. said June 20.

Government officials are criticizing TEPCO's sloppy management of paperwork on the workers, saying it is now hampering follow-up radiation checks and allowed potential terrorists to enter the plant's site.

<http://www.asahi.com/english/TKY201106210158.html>

### Debris removal

June, 2011

Japan didn't have a disaster waste management guideline for tsunami before March 11.

<http://search.japantimes.co.jp/cgi-bin/nn20110630f1.html>

### Kan wants to phase out N-power / 'Accidents cannot be prevented'

July, 2011

Prime Minister Naoto Kan said, "I have realized that nuclear accidents cannot be prevented completely with the conventional safety measures we have at present."

<http://www.yomiuri.co.jp/dy/national/T110713005486.htm>

### No regulations established for rice straw

July, 2011

The Agriculture, Forestry and Fisheries Ministry was shocked to learn that beef cattle had been fed with radiation-contaminated rice straw that had been stored outside, rather than indoors. In the wake of the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant, the ministry instructed livestock farmers to use only feed that had been stored indoors, but it failed to impose any regulations on rice straw. "It was a blind spot," a ministry official admitted.

<http://www.yomiuri.co.jp/dy/national/T110715005136.htm>

### Cows fed rice straw contaminated with radioactive cesium

July, 2011

In the middle of April--about one month after the crisis at the Fukushima No. 1 nuclear power plant began, a farmer collected about 30 pickup truckloads of rice straw that he had stored in paddy fields.

The cows, including the 100 still on his farm, were fed the straw through late June, he said. He said he did not know about the government's instructions not to give cattle feed that had been kept outdoors after the accidents at the Fukushima plant.

"My place is more than 100 kilometers from the nuclear power plant, so I wasn't worried. I'm sorry that consumers have to deal with this," he said. "The government should have sent officials to every farm to let us know what we could feed our animals. If it had, this would not have happened."

According to the prefectural government, rice straw at his farm was found to have been contaminated with radioactive cesium, 30 times the legal limit of 300 becquerels per kilogram for grass, and 23 cows suspected to have been contaminated with cesium have been shipped.

<http://www.yomiuri.co.jp/dy/national/T110718003816.htm>

### **Radiation forecasts ignored; Namie not warned**

August, 2011

The nation's system to forecast radiation threats was working from the moment its nuclear crisis began. As officials planned a venting operation certain to release radioactivity into the air, the system predicted Karino Elementary School would be directly in the path of the plume emerging from the tsunami-hit Fukushima No. 1 nuclear plant.

But the prediction helped no one. Nobody acted on it.

The school, just over 10 km from the plant, was not immediately cleared out. Quite the opposite. It was turned into a temporary evacuation center.

Reports from the forecast system were sent to the nation's nuclear safety agency, but the flow of data stopped there. Prime Minister Naoto Kan and others involved in declaring evacuation areas never saw the reports, and neither did local authorities. So thousands of people stayed for days in areas that the system had identified as high-risk, an AP investigation has found.

<http://search.japantimes.co.jp/cgi-bin/nn20110810f2.html>

### **The explosive truth behind Fukushima's meltdown**

August, 2011

Kei Sugaoka, who conducted on-site inspections at the plant, warned the Japanese government in a letter dated 28 June 2000 that Tepco continued to operate a severely damaged steam dryer in the plant 10 years after he pointed out the problem. The government sat on the warning for two years.

In September 2002, Tepco admitted covering up data about cracks in critical circulation pipes.

On 2 March, nine days before the meltdown, government watchdog the Nuclear Industrial Safety Agency (NISA) warned Tepco on its failure to inspect critical pieces of equipment at the plant, including recirculation pumps.

An engineer who worked at Tepco plants said that often piping would not match up to the blueprints. In that case, the only solution was to use heavy machinery to pull the pipes close enough together to weld them shut. Inspection of piping was often cursory and the backs of the pipes, which were hard to reach, were often ignored. Repair jobs were rushed; no one wanted to be exposed to nuclear radiation longer than necessary.

[www.independent.co.uk/news/world/asia/the-explosive-truth-behind-fukushimas-meltdown-2338819.html](http://www.independent.co.uk/news/world/asia/the-explosive-truth-behind-fukushimas-meltdown-2338819.html)

### Calm at J. Village belies the danger

November, 2011

Yukiteru Naka, who runs the Fukushima-based nuclear plant maintenance outfit Tohoku Enterprise Co., sees a long-term labor issue that he says could increase the chances of serious human-error accidents occurring.

Tepco is running out of midlevel skilled nuclear plant workers, given the legal limit for radiation exposure, he warned.

Naka's company has 23 skilled workers who have engaged in efforts to contain the crisis.

The firm had already withdrawn 14 to 15 of them because their cumulative exposure is near the firm's annual maximum limit. They won't resume work at the plant until April 1, when the new fiscal year starts, he said.

"About 90 percent of accidents at a nuclear plant are caused by human error. And human error means they don't have enough knowledgeable engineers who can keep the situation under control," he said.

Skilled engineers are badly needed at present to contain the crisis, as workers have to quickly finish their tasks before being exposed to dangerously high levels of radiation.

"(Workers) should know the locations of valves, which pipes run where, and what's inside them; cold water, hot water or steam," he said.

"And they need to go quickly to their destination in the plant and speedily finish their work because the radiation is high," he said.

The government recently lowered the maximum allowable radiation exposure to 100 millisieverts. Many companies also have their own maximum limits, which means experienced workers must retreat from a nuclear plant once the cumulative dose hits the ceiling.

Naka said nuclear plants haven't had enough midlevel skilled workers for 20 years.

The Fukushima crisis has floored the nuclear industry's image and will further discourage young people from seeking such work, Naka said.

"We need an environment where young nuclear plant workers can be proud of their jobs," he said. "We need to improve both the image and working conditions, which will decrease the chance of human errors."

[www.japantimes.co.jp/text/nn20111112a3.html](http://www.japantimes.co.jp/text/nn20111112a3.html)

### Workers disable last defense without authorization

December, 2011

A coolant injection system meant to serve as a last defense against an explosion at the Fukushima No. 1 nuclear plant's No. 3 reactor had been disabled at the discretion of workers on site, suggesting that a possible breakdown in the chain of command led to the severity of the ongoing nuclear crisis. According to the committee's most recent findings, workers on site had shut down the No. 3 reactor's high-pressure coolant injection (HPCI) system on March 13 without authorization, and found later that they could not restart the system. The reactor suffered a hydrogen explosion the following day.

[mdn.mainichi.jp/mdnnews/national/news/20111216p2a00m0na020000c.html](http://mdn.mainichi.jp/mdnnews/national/news/20111216p2a00m0na020000c.html)

### Panel slams govt's shoddy info-sharing

December, 2011

Lack of communication within the Prime Minister's Office and its delays in releasing key information caused serious confusion in the wake of the Great East Japan Earthquake, a government panel investigating the crisis at the Fukushima No. 1 nuclear power plant will assert in an interim report.

<http://www.yomiuri.co.jp/dy/national/T111222005814.htm>

### TEPCO left backup power for nuclear data equipment detached for 4 months

January, 2012

Tokyo Electric Power Co. (TEPCO) left the backup power source of a reactor-monitoring device at the Fukushima No. 1 Nuclear Power Plant disconnected for four months until the March 2011 earthquake and tsunami triggered a disaster at the plant. Failure to connect the backup source is said to have prevented data on the status of the plant being sent to the government for about two hours after the outbreak of the crisis. It is believed this may have affected the initial response to the disaster and the predictions on the spread of radioactive materials.

TEPCO officials said that workers tried to connect the backup power supply during renewal work in November 2010, but the cable was too short so it was left disconnected.

[mdn.mainichi.jp/mdnnews/news/20120120p2a00m0na008000c.html](http://mdn.mainichi.jp/mdnnews/news/20120120p2a00m0na008000c.html)

### Fukushima No. 2 plant was 'near meltdown'

February, 2012

The Fukushima No. 2 nuclear power plant was "near meltdown" after being hit by tsunami, according to the head of the plant, Naohiro Masuda.

Masuda noted the timing of the disaster was critical in saving the plant. "We were lucky it happened on a Friday afternoon [and not on a weekend]." Only 40 employees would have been at the plant if the earthquake had occurred in the evening or on a weekend. "[In that case] it would be have been difficult for us to deal with the disaster," he said.

[www.yomiuri.co.jp/dy/national/T120209007089.htm](http://www.yomiuri.co.jp/dy/national/T120209007089.htm)

### Poor communications botched radiation monitoring on March 12

February, 2012

Japan failed to monitor the spread of radioactive materials due to a lack of communication among ministries. The Self-Defense Forces sent a helicopter to pick up personnel for airborne monitoring, but could not find anyone from the science ministry or its affiliate responsible for the survey at the meeting point.

It was crucial to find out in which directions airborne radioactive materials were spreading on March 12, when the damaged nuclear power plant began releasing large amounts of radioactive substances into the atmosphere while vast numbers of residents were evacuating.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201202240055](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201202240055)

### Nuke crisis far from under control as TEPCO's 'inadequate predictions' continue

March, 2012

What most struck me as dangerous was what we journalists saw first -- the injection pumps located on a hill overlooking one of the reactors.

Currently, radiation-tainted water is sent through a purifying system before it is reused to cool down the No. 1, 2 and 3 reactors, which all suffered core meltdowns. In other words, the above-mentioned injection pumps function like hearts, sending clean, cooling water to the reactors. The system was built in approximately three months following the outbreak of the disaster.

The pumps -- three of them -- were set up on the bed of a truck in a parking lot on a hill northwest of the No. 1 reactor. The pumps were covered with tarps, while pipes leading to the reactors were covered in black rubber insulation. Both are measures taken against freezing. I was shocked, however, to learn that both the tarp and the rubber insulation were put in place after water had already leaked due to freezing.

Low temperatures in January had caused the pumps and their surrounding pipes to freeze, leading to a series of water leakages.

[mdn.mainichi.jp/perspectives/news/20120316p2a00m0na007000c.html](http://mdn.mainichi.jp/perspectives/news/20120316p2a00m0na007000c.html)

### Fukushima govt deleted SPEEDI data

March, 2012

The Fukushima prefectural government deleted data provided by the central government on the projected spread of radioactive materials just after the crisis at the Fukushima No. 1 nuclear power plant broke out.

[www.yomiuri.co.jp/dy/national/T120321004935.htm](http://www.yomiuri.co.jp/dy/national/T120321004935.htm)

### Poor coordination between central and local governments

March, 2012

Poor coordination between central and local governments has been identified as a major problem in the evacuation of areas near the Fukushima plant, but local officials say little has been done to fix the problem or develop better evacuation plans. Local officials say they learned of evacuation orders only when they saw them on TV. They received little or no information on the situation inside the plant. The central government had prediction data from sophisticated monitors that suggested certain towns were in the path of spewing radiation, but that information was not shared with residents.

Only one plant has added a key safety measure—new kinds of vents to allow hydrogen to escape from the reactors. At Fukushima Daiichi, hydrogen built up and exploded containment buildings. Utilities said they were making technical studies or considering the measure.

Another plant has built new doors that will shut tight during a tsunami and keep delicate equipment dry. The government learns of such improvements only after they are made, and has no overall assessment on their progress, said Tomohiro Sawada of the government Nuclear and Industrial Safety Agency. “Their actions are not required by law and so we don’t have a way of checking,” he said.

[www.japantoday.com/category/politics/view/cozy-relations-continue-between-politicians-nuclear-industry](http://www.japantoday.com/category/politics/view/cozy-relations-continue-between-politicians-nuclear-industry)

### Unexpectedly high tsunami sank entire town center

April, 2012

At the time of the massive earthquake, there were seven people inside the Onagawa Chamber of Commerce and Industry building. After instructing the female staff to evacuate to the town hospital located on higher ground, the men were getting ready to go there themselves, when a local resident informed them that the chamber of commerce building was a designated tsunami evacuation site. None of the staff had known.

If there was a possibility that local residents would seek shelter at the building, the doors had to be unlocked. A police car was driving around, repeatedly announcing that six-meter waves were expected. Because six meters would come only as high as the second floor of the building, Aoyama and three others decided they would take shelter on the building's top floors.

At around 3:25 p.m., about 40 minutes after the temblor, water levels were about 1 meter high. But the muddy water surged quickly, and in a matter of a few minutes had reached the roof of the building. Realizing the water tower atop the building was their only hope, the four men climbed to its top. All around them, people were being swept away. When the water got within 50 centimeters of their feet, they knew they were next.

Except for some evacuation sites set on higher ground, all designated evacuation spots in Onagawa were destroyed. Most of the three buildings, including the chamber of commerce building, designated for tsunami evacuation were completely submerged underwater.

[mainichi.jp/english/english/newsselect/news/20120409p2a00m0na019000c.html](http://mainichi.jp/english/english/newsselect/news/20120409p2a00m0na019000c.html)

### Power blackout chaos

April, 2012

The government brought in mobile generators from outside. There were two problems with this tactic. First, all of the three electric panels in the reactors that needed to receive outside power were submerged in water. To make matters worse, the mobile generators couldn't plug in. The final straw was that the GE-built plants were on a 660-volt power line needed to run the plants, but the mobile generators brought in by the government were usually used on construction sites and they were limited to only 220 volts, the standard voltage in Japan. The mobile generators were useless in this situation.

[www.japantimes.co.jp/text/ea20120418a4.html#.UAAp0XAVk7A](http://www.japantimes.co.jp/text/ea20120418a4.html#.UAAp0XAVk7A)

### Kenichi Ohmae's report

April, 2012

A year has now passed since the complete core meltdowns of three boiling water reactors at Tokyo Electric Power Co.'s Fukushima No. 1 plant. Because of the limited and biased information issued by the Japanese government, the world does not know what really happened when the earthquake and the tsunami hit the six Fukushima nuclear reactors. There are many important lessons that must be learned to avoid a future disaster. These lessons can be applied to all the nuclear reactors globally. People around the world deserve the right to know what happened.

As a nuclear core designer and someone who earned a Ph.D. from the Massachusetts Institute of Technology in nuclear engineering, I volunteered to look into the situation at Fukushima No. 1 in June of 2011. Mr. Goushi Hosono, minister of nuclear power and environment, personally gave me access to the information and personnel who were directly involved in the containment operations of the post-disaster nuclear plants. After three months of

investigation, I analyzed and wrote a long report detailing minute by minute how the nuclear reactors were actually disabled ([pr.bbt757.com/eng/](http://pr.bbt757.com/eng/))

Here are the highlights of my findings:

1. Three of the six reactors of Fukushima No. 1 had a complete core meltdown a few days after the tsunami hit. The molten fuel penetrated not only through the bottom of the thick pressure vessel, but also poked holes at the bottom of the containment vessel, thus releasing fission materials into the environment. The meltdown itself started at 11p.m. on the day of the tsunami, March 11, 2011.
2. As expected, the meltdown caused the fuel cladding material, zircaloy (zirconium alloy), to react with vapor and to create large quantities of hydrogen and zirconium oxide, which caused the catastrophic hydrogen explosion that blew out three reactor buildings. The hydrogen explosion took place on March 12, 14 and 15. The Japanese Government did not admit to the meltdown until three months later, nor did they admit to the damage to the containment vessels until a half year later. Our government tried to hide this important information for some reason, though judging from the amount of fission material released and from the size of the hydrogen explosion, the meltdown of the entire core was undeniable for anyone who has studied reactor engineering.
3. The earthquake on March 11 damaged all of the five independent external power supply systems, and the 15-meter-high tsunami damaged all of the pumps and motors of the main and emergency cooling systems that were constructed along the shore line, thus disabling the cooling system that pumps in sea water.
4. The tsunami also sent massive amounts of water into the reactor buildings and the turbine housing, thus soaking the emergency diesel engines and batteries, which were stored in the basement of these buildings. This meant that all sources of emergency backup power stored in the basement of the reactors were totally destroyed.
5. There was an air-cooled diesel engine sitting atop a hill close to Reactor No. 6. Its airfins were too big to fit into the basement and was luckily placed outside, and as such, this engine started to generate electricity. With a pump brought in from outside, it started to cool not only Reactor No. 6, but had enough power to cool Reactor No. 5.

Of the 13 emergency generators associated with the six plants, this was the only one of the three air-cooled backups, and hence not dependent on water as the heat sink. This air-cooled diesel engine was the only one not entirely submerged in water, but in fact at one point the water level did reach up to half its height. A few weeks later Reactors No. 5 and No. 6 were brought to a cold shutdown.

6. The buildings of reactors No. 1 and No. 3 were blown away by an explosion of hydrogen generated by the core meltdown. Reactor No. 4 eventually exploded, though its core had no fuel inside due to a periodic inspection that meant the fuel rods were stored elsewhere. It turned out that the Reactor No. 4's building filled with hydrogen that leaked from Reactor No. 3 through their common gas release ducts. Reactor No. 2 escaped from the massive explosion, although its core had completely melted. Its windows were blown away most likely by the explosions from neighboring reactors No. 1 and No. 3 and the hydrogen inside Reactor No. 2 escaped into the air.

These facts teach us one important lesson: The Fukushima accident could have been avoided if the plant had had the capacity for electricity generation of any form along with the appropriate heat sink.

It is also clear that it was not the "unexpectedly high" tsunami that caused the accident. Reactors No. 5 and No. 6 remained intact, even though they were damaged to the same extent as the other four reactors by the earthquakes and tsunami. The difference was that they had a source of electricity through the air-cooled emergency diesel engine that had been installed ad hoc by the management because they wanted to save money when the government demanded increased back up from two to three emergency generator sets.

The most important lesson of Fukushima No. 1 plant, therefore, is that we should have multiple sources of electrical supply and cooling heat sinks. This is not to say that "you should not put all of your eggs in one basket." What I want to say is that we should have eggs and apples in a few different baskets.

The Japanese government has tried to explain and offer excuses for the disaster in Fukushima, but no one in the government has accurately analyzed the situation. They continue to claim that the magnitude of the earthquake and tsunami was a natural disaster far beyond anything anyone could have imagined or planned for. But is this true? Was it a catastrophe that could not have been avoided?

My analysis takes a totally different point of view. It shows in documented detail ([pr.bbt757.com/eng/](http://pr.bbt757.com/eng/)) that if you want to operate a nuclear reactor, then you should not assume anything about potential disasters — be they earthquakes, tsunamis, terrorists or a plane crash. No matter what happens, if you are operating a nuclear reactor, you must find a way to bring it down to a cold shutdown in any type of emergency. We now know from the Fukushima disaster that this will require electricity and heat sinks. It is a pretty simple principle.

But there is also another important lesson to be learned, and it applies to all operating nuclear facilities around the world: If you have to assume something, then you are not prepared.

All nuclear reactors in the world have been designed using probability assumptions. This idea was originally proposed by professor Norman Rasmussen of MIT. Put to use, it is a scientific way of expressing what the public will accept.

For example, what is the probability of a plane crashing into Yankee stadium with a full audience during the World Series? This can be calculated if one assumes that there is a level of probability for each element leading to the eventual accident. And, despite the probability, because it is infinitely small, the public tacitly accepts it. This principle was followed at Fukushima. Assumptions were made about possible causes of nuclear plant accidents. Engineering precautions were taken accordingly so that everyone could feel rest assured knowing "the reactor is safe."

In Japan, the Nuclear Safety Commission made this fatal mistake by relying casually on this probability theory. They assumed that the probability of a long-term stoppage of the external electric supply "in a country like Japan" was very unlikely, so they did not have to assume and plan for a prolonged power breakdown. With this assumption in mind, they insisted on

having three emergency generator sets per reactor. They gave no further thought to the possibility of a situation that could include the breakdown of all external electrical connections.

Fukushima No. 1 had five different paths for the grid to come in, but all of them were destroyed by the powerful earthquakes 45 minutes prior to the tsunami. It would have taken only one active electrical connection to stabilize the reactors after the tsunami hit.

The government did its best and brought in mobile generators from outside. There were two problems with this tactic. First, all of the three electric panels in the reactors that needed to receive outside power were submerged in water. To make matters worse, the mobile generators couldn't plug in. The final straw was that the GE-built plants were on a 660-volt power line needed to run the plants, but the mobile generators brought in by the government were usually used on construction sites and they were limited to only 220 volts, the standard voltage in Japan. The mobile generators were useless in this situation.

Had the Commission made assumptions about the possible loss of the external electrical supply and ordered the plant to be equipped on site with other external power generation, be that solar, wind, gas turbine or even small LNG power stations to back up the six gigantic reactors, this disaster could have been averted.

It is very important to note that the one small gas turbine generator that was on site worked, but unfortunately, the one generator that worked was connected only to the control room for administration, and this power could not be shared with the reactors.

There has been a lot of useless discussion about the tsunami's power and size. Historically, people have assumed that the maximum height of observed tsunamis along the eastern shore of Japan is no more than 10 meters. Until this disaster occurred, the probability of a 15 meter tsunami hitting the Japanese coast was so low that one did not have to plan for such an unlikely event. It was known in some circles that a major tsunami could in fact hit the Tohoku coast. History shows that extreme tsunamis hit Tohoku at least once every 10,000 years. What we learned in Fukushima is that even if an event is predicted to happen infrequently, it will happen! To then talk about the probability is moot. The probability is now 100 percent and we have to face the challenge at hand and find a way to safeguard the reactors.

As a nuclear core engineer I can tell you that reactors are built to withstand the expected hardships. In light of what happened in Fukushima No. 1, the assumptions were completely wrong. In order to make nuclear energy work we must build reactors that can reach cold shutdown with 100 percent certainty, no matter what happens.

Assumptions and probability are for the theoretical dreamers. If you have a hot reactor, submerged in water and this reactor is without the power to circulate the coolant that can shut it down, then you have to find another way to cool it no matter what. If you have lost your last resort of power and heat sink, you should not have taken on the responsibility to operate a nuclear plant in the first place. That is the lesson of Fukushima.

In this world nothing is absolutely safe. The public approval for nuclear reactor construction is normally very hard to get. To this end the reactor engineers have constructed what is now called the containment vessel. They explained that should something "unimaginable" happen

and fission materials leak from the nuclear core, the containment vessel will confine them and nothing will escape into the external environment. People living near the reactor were told to rest assured that they would never be exposed to radiation.

Many people compare this disaster to Chernobyl. The Russian reactor was very different. The Russians did not build a containment vessel to cover their reactor. They did not see a need for that precaution. Because Chernobyl did not have a containment vessel, when that nuclear accident occurred, the result was a massive release of radiation materials that were carried away into whichever direction the wind was blowing.

In the case of Three Mile Island, it did have the needed containment vessel and practically all of the fission materials were held inside the dome. Many long-held myths have been broken as a result of the Fukushima No. 1 meltdown.

As the molten fuel made its way through the pressure vessel and the molten "lava" melted the bottom of the containment vessel, it released huge amounts of fission gasses and particles to the air and water.

The assumed role of the containment vessel proved to be faulty against this type of melt through. If you go back to the original public discussions for the construction of these early nuclear plants, none of the safety devices, such as emergency cooling systems (ECCS), boric acid spray, etc., worked in Fukushima in 2011. What we found, regrettably, is that even the most critical emergency devices are dependent on the availability of power, either in alternating or direct current.

In the case of Fukushima, all power was lost for a prolonged period of time and the complete core meltdown could not be stopped.

My recommendation is very simple. We should not assume anything in the design of a nuclear reactor. We should be prepared to cool down the reactor and bring it to cold shutdown with at least one reliable power supply and heat sink. This means that the emergency power should be provided by a multiple of means and locations, and the heat sink should not be dependent on prevailing water alone, but on air and alternative water reservoirs.

If this is established, then the reactor can be safe not only against natural disasters but also against man-made catastrophes such as sabotage, plane crashes and terrorist attacks.

The Japanese government's official explanation of the Fukushima disaster focuses only on the inability of anyone to predict an extreme natural disaster. Because of this focus, the rest of the world is not taking notice of the important lessons we need to understand to make the world a safer place. Many countries rely on nuclear energy, and yet these same countries assume that because they do not have to worry about earthquakes and tsunamis, what happened in Japan on March 11, 2011 does not apply to them. This could become a fatal mistake.

All reactors should be scrutinized against the possible loss of power and coolants, regardless of the cause of the disaster. Nuclear reactors are all built around the same probability assumptions. This pattern of thinking developed in the 1970s to gain the otherwise hard-to-come-by public acceptance of nuclear generated energy. Nuclear engineers, utilities and

pronuclear governments around the world needed to persuade their public of the safety of nuclear energy.

With the hindsight of Fukushima, all of us who are engineers must challenge ourselves to once again think through the worst possible situation, such as a complete loss of power and coolant for a prolonged time, and we must work together to remedy the situation.

We must show how we can avoid core meltdowns under any circumstance. The challenge is no longer just the gaining of public acceptance but to realize that we are being tested by nature, and that God will keep testing us, checking to see if we are ready to ask the right questions.

Kenichi Ohmae — an MIT-trained nuclear engineer who is also a well-known management consultant — is dean of Business Breakthrough University. He was a founder of McKinsey & Co.'s strategic consulting practice and is the author of many books including "The Borderless World."

[www.japantimes.co.jp/text/ea20120418a4.html#.UAAP0XAVk7A](http://www.japantimes.co.jp/text/ea20120418a4.html#.UAAP0XAVk7A)

**Kan: 3/11 overwhelmed us**

May, 2012

Former Prime Minister Naoto Kan admitted Monday that the triple whammy that doomed the Fukushima No. 1 nuclear plant in March 2011 — the megaquake, tsunami and the meltdowns they unleashed — was beyond the scope of the national crisis-management system.

"The nuclear disaster special measures law does not assume a serious disaster" like Fukushima, Kan told a Diet panel probing the cause of the Fukushima crisis. Situations assumed under the law were "extremely insufficient."

This state of unpreparedness saw the prime minister's office fall into disarray, and saw communications with Tokyo Electric Power Co. — and even within the government itself — unravel, Kan said, adding he and his key ministers were not adequately briefed about the plant's situation in the first few days.

"We could hardly get information. We couldn't do anything," Kan said, adding that Tepco officials and the state's own nuclear experts could not explain what was going on in Fukushima.

[www.japantimes.co.jp/text/nn20120529a1.html](http://www.japantimes.co.jp/text/nn20120529a1.html)

**Science ministry admits failings in handling of SPEEDI data**

July, 2012

The science ministry admitted it was partly responsible for not releasing accurate data on the spread of radiation to evacuees fleeing from the Fukushima disaster, but argued its response to the crisis was in line with the government's basic disaster preparedness plan.

It took until about two weeks after the start of the nuclear crisis at the Fukushima No. 1 nuclear power plant, for the data to be released by the Nuclear Safety Commission, a body under the Cabinet Office. In the meantime, a large number of residents in the vicinity of the crippled plant fled to areas under the radioactive plume.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201207280073](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201207280073)

### Failure to anticipate long blackouts

2012

Japanese power companies and government agencies had not anticipated any possibility of long hours of “station blackout (SBO)” or the total loss of AC power to the station

‘Towards Long-term Sustainability: In Response to the 3/11 Earthquake and the Fukushima Nuclear Disaster’, Koichi Hasegawa, Tohoku University<sup>[1]</sup>

Electricity goes out at nuke plants  
November, 2012

Power transmission problems temporarily halted cooling systems for spent nuclear fuel facilities at both the Fukushima No. 1 and No. 2 nuclear plants, as well as nitrogen injections into the wrecked No. 1 plant's crippled reactors.

[www.japantimes.co.jp/text/nn20120119a5.html](http://www.japantimes.co.jp/text/nn20120119a5.html)

### Flimsy waste tanks cause new delay

December, 2012

Tanks designed to hold radioactive filtrate at the Fukushima No. 1 nuclear plant are proving too fragile to be used, and the operator has announced a further delay in starting up machinery that cleans contaminated water.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201212260032](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201212260032)

### A Dangerous Mix: Earthquakes and Nuclear Power Plants

December, 2012

In 1957, the United Kingdom, which exported the nuclear power plant for Tokaimura, announced that it could not take responsibility for any nuclear power plant accidents, due to faults with the technology. Lloyds of London, the famous insurance company, refused to cover the Japanese nuclear power plant in consideration of the possibility of a massive earthquake.

The Japanese government did not respond by giving up the idea of promoting nuclear energy, however. Instead, it decided to come up with alternative measures to promote and protect the industry. This was the Atomic Energy Compensation Act, which was adopted by the Diet in 1961. The Diet members of the day carried out their deliberations based on the secret

document. According to the minutes, opinions were expressed such as, "I do not think there is any place where we can build nuclear power plants in this earthquake-prone country." "What shall we do with the waste, and how shall we decommission the plants?" "There isn't any permissible dose of radiation, is there?" They were asking exactly the same questions as people are asking today. They knew all this from the beginning. Amazingly, however, the Act was adopted unanimously after just two months.

<http://www.stop-hamaoka.com/english/takenouchi-1.html>  
<https://savekidsjapan.blogspot.com/2012/02/?m=0>

### **TEPCO: Tech dearth behind N-accident**

2012

The reform task force of Tokyo Electric Power Co. has said the crisis at the Fukushima No. 1 nuclear power plant was caused by insufficient technical capacity and a failure to make consistent efforts to improve safety.

In an interim report, the task force said TEPCO had lacked technical capacity, as the plant design did not take into account the effects of earthquakes and tsunami.

The report cited the root cause of the meltdowns triggered by the huge tsunami unleashed by the magnitude-9 earthquake on March 11, 2011, as the company's failure to prepare well for a severe accident and tsunami, on the false belief that it had fully established nuclear plant safety measures.

It also blamed TEPCO for not reforming its management after various nuclear scandals came to light in the past by forcing officials in middle-level managerial positions and workers at plants involved to be held accountable.

[www.yomiuri.co.jp/dy/national/T121217003947.htm](http://www.yomiuri.co.jp/dy/national/T121217003947.htm)

### **Failed political leadership hobbles reconstruction in some disaster areas**

December, 2012

Little progress has been made on reconstruction in some disaster-ravaged areas as lack of political leadership hobbles conflict resolution among local residents. In particular, agreement cannot be reached on the relocation of tsunami-hit neighborhoods to higher ground, or plans to build high anti-tsunami dikes that could spoil the landscape.

<http://mainichi.jp/english/english/newsselect/news/20121214p2a00m0na014000c.html>

### **Asbestos safety measures lacking as workers dismantle buildings**

January, 2013

Work to remove asbestos when dismantling buildings in areas hard-hit by the 2011 Great East Japan Earthquake is not always being done properly, resulting in the spread of the harmful fibers.

At the site of a restaurant in Ishinomaki, Miyagi Prefecture -- a city where close to 4,000 people died or went missing in the Great East Japan Earthquake and tsunami -- dismantling work was forced to be halted for two months as the area was covered by sheets to prevent the spread of asbestos. Asbestos had originally been found to be exposed and to have spread at the site by Tokyo Occupational Safety & Health Center, an NPO, in December 2011. Dismantling work began in August 2012 after work to remove the asbestos, but a recheck by the NPO found that not all the asbestos had been removed, and it had spread to neighboring lots.

The company has been involved with over 100 asbestos removal projects, and it had taken all of the asbestos it could find from the inside of the building's walls. However, there was also asbestos on the exterior of pillars that it had failed to account for. Because it thought it had removed all the asbestos, its workers didn't wear adequate protection.

A city representative said, "Building blueprints were washed away in the tsunami, and confirming whether or not there is asbestos is difficult."

Companies show little awareness about anti-asbestos measures. A survey in June and July by the Ishinomaki labor standards supervising body found that of 110 companies handling 122 sites, only around 59 percent said they had "correctly carried out" pre-dismantling checks for asbestos. Furthermore, only around 56 percent had people making sure that workers used safety masks.

In November 2011, asbestos levels up to 36 times the World Health Organization's safety limit of 10 strands per liter of air were found at the site of a hotel dismantling site in front of Sendai Station. According to city officials, workers had been opening holes in the floors to toss down waste materials, leading to the spread of asbestos that had been in the steel frames of the floor.

An official of the Ishinomaki Municipal Government said, "We have to rely on businesses without dismantling experience or without asbestos knowledge because of the high number of projects. Miyagi Prefecture has few asbestos-removing companies."

As the government cleaned up 170,000 damaged buildings after the 7.2 magnitude earthquake hit Kobe in 1995, it enacted no measures to limit the spread of dust or enforce the use of protective masks and did not immediately monitor asbestos, said Masahide Sakamoto, a Senshu University researcher who studied the government's clean-up after the quake.

[mainichi.jp/english/english/newsselect/news/20130114p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20130114p2a00m0na008000c.html)  
[http://news.yahoo.com/s/ap/20110427/ap\\_on\\_re\\_as/as\\_japan\\_earthquake\\_asbestos](http://news.yahoo.com/s/ap/20110427/ap_on_re_as/as_japan_earthquake_asbestos)

### **Police struggle to prevent gangsters from profiting in disaster areas** February, 2013

The huge demand for workers is making it difficult to keep yakuza out of the disaster areas. A number of gang-related arrests have been made, and workers and companies are being checked for ties to crime syndicates. At least two gangsters were arrested in 2011 on suspicion of sending laborers to construction sites in Iwate Prefecture.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201302010083](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302010083)

### **Fukushima deletes radiation data needed for exposure assessment**

March, 2013

The prefectural government deleted radiation data that it gathered at an evacuation shelter near the crippled Fukushima nuclear plant shortly after the disaster broke out. The move has made it impossible for the prefectural government to assess how much radiation residents near the nuclear power station were exposed to shortly after the accident -- although such assessment is required under national government guidelines.

[mainichi.jp/english/english/newsselect/news/20130309p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20130309p2a00m0na008000c.html)

### **Yoichi Funabashi — too much focus on laws and systems instead of true leadership**

March, 2013

Some of the conclusions of Yoichi Funabashi (chairman of the Rebuild Japan Initiative Foundation and a former editor in chief of The Asahi Shimbun):

... the four nuclear safety inspectors failed to live up to their tasks. In the first chapter I wrote about inspectors fleeing the scene even as the emergency was unfolding.

The United States quickly realized the situation was far more severe than Japan did. That led the United States to reach the conclusion that the SDF had to be used much earlier than the Japanese government realized. Japan was unable to decide whether the situation could be left entirely to TEPCO.

Japan did not have a unit to handle an emergency situation of this scale. There was no legal definition of the primary task for the SDF of spraying water into the nuclear plants and storage pools for spent nuclear fuel. The government had to use extralegal measures to deploy the SDF. As a result, the actual spraying of water on March 17 got under way barely in the nick of time.

Under the special measures law to deal with nuclear accidents, the Nuclear and Industrial Safety Agency (NISA) is legally supposed to serve as the secretariat. However, the head of the agency failed to function after being yelled at by Prime Minister Naoto Kan.

The local response headquarters did not work smoothly.

Given these circumstances, politicians in the ruling Democratic Party of Japan felt they had to take the initiative in dealing with the crisis.

At first, it was not clear who was really in charge in the government for giving out orders.

Haruki Madarame, the head of the then Nuclear Safety Commission of Japan, told Kan that no explosion would occur at the No. 1 reactor, but an explosion did happen. That led to an

immediate drop in the appraisal of Madarame so he was unable to play the role of science adviser.

Because he was head of one agency involved in safety regulation, he also became wrapped up in bureaucratic turf wars. That prevented him from rising above the crisis.

Although aerial monitoring can show what the temperature is over the pool area, it did not help in determining if there really was water in the pool. While the two sides did not always know what was occurring, the United States was much farther ahead in terms of around-the-clock monitoring to grasp what was happening on the ground.

While similar measurements were conducted by Japanese agencies, such as the science ministry, TEPCO and the Japan Atomic Energy Agency, the methods used were not uniform so there was a low capability for making a comprehensive appraisal. That led to the gap in understanding between the two sides.

In the report by the Independent Investigation Commission, the expression was used of "governance conducted by a village mentality and atmosphere." In a sense, governance means the use and distribution of state power and authority in the most effective way to make the most use of social, human and economic resources to obtain a certain objective. However, in the case of Japan, it often means only using homogeneous elements and eliminating what is considered heterogeneous. While it may stop short of not recognizing diversity at all, diversity is not always welcomed. Holding an independent viewpoint is not appreciated by others. In conducting discussions, the conclusion is decided beforehand so that no one loses face. No one is satisfied unless everything is settled beforehand. That is the same for training exercises. There is a tendency not to conduct real training without a predetermined scenario which could lead to everyone being made uncomfortable.

In that way, no one loses face and no one's authority is disparaged. Everything is settled within a predetermined plan and everyone is thinking about everyone else. Risks are considered taboo and not brought out into the open. Risk is also not appraised independently. Because risk is only considered in a way convenient to management and order, in the end, when it has to come into play, it is of absolutely no use.

Normally, there would be a need to incorporate a much more diverse set of viewpoints as well as heterogeneity, but in the past two years there has been almost no change in that respect. For example, regarding where to store topsoil contaminated by radiation, while many people may feel in their hearts that it should be kept somewhere in Fukushima Prefecture, if that feeling is actually voiced, discussions quickly come to a halt because some will say that would further hurt and bully the residents of Fukushima.

What has not changed is the ability to minimize loss through a process of bringing out risk into the open, discussing the issues in an objective manner and setting priorities before deciding how to keep the loss at a minimum.

Q: There was failure to conduct real training exercises and SPEEDI (the System for Prediction of Environmental Emergency Dose Information) was not helpful. What lessons can be learned from that?

A: There may have been the acquisition of better hardware over the past two years, but there are still many shortcomings with regard to software. There are doubts as to how much specialization was really improved, as well as whether a command structure was decided on. In terms of enforcement of measures, not much has changed. A true system to deal with crises has not yet been established.

For example, a major change might be possible if, in deciding to resume operations at nuclear plants, the decision was made to permanently base inspectors from the newly established Nuclear Regulation Authority at the plants and have them work together with officials of the plant operator when a crisis arose.

Another possibility would be to have those who would be actually manning the control rooms at the plants to inspect the new operation room and ask them if they would be satisfied that the changes incorporated would be sufficient even if earthquakes and tsunami led to a failure of the cooling system.

In the end, people will have to screen the changes proposed. Regardless of how skillfully the procedures, system and organization are put together, in the end it is people who determine if those factors actually work.

Those people who would handle operations at the control room should be asked if they feel satisfied that the changes will protect their safety and keep the plant under control.

That sort of thinking of asking the people who will actually use the procedures and systems to screen the changes is not currently found in Japan. Everything is about laws and systems.

But, in the end, it is about people and leadership.

Looking at municipalities in Fukushima Prefecture, those with true leadership have recovered to a much greater degree.

In order to respond effectively to a crisis, priorities have to be set and decisions made on what should be saved first. Only leadership is capable of achieving that. People will have to play central roles in screening whether proposed changes will really work.

However, I have doubts about the extent to which there have been changes in thinking along those lines over the past two years.

[ajw.asahi.com/article/0311disaster/opinion/AJ201303080085](http://ajw.asahi.com/article/0311disaster/opinion/AJ201303080085)

### TEPCO's rickety equipment

April, 2013

Radiation monitors and other devices have repeatedly broken down. Human error remains a constant problem. And the troubles plaguing the Fukushima No. 1 nuclear plant reached farcical levels when a rat caused a blackout and subsequent work to prevent a recurrence led to another system failure.

Such problems continue because the plant's operator, Tokyo Electric Power Co., is still using temporary equipment and makeshift facilities, such as power supply units critical to cooling

the crippled reactors and spent fuel rods, two years after the nuclear crisis unfolded on March 11, 2011.

The latest problem: leaks of radioactive water from two underground tanks, including 120 tons from the No. 2 tank.

Devices to measure airborne radiation have repeatedly broken down at the plant. A radiation meter at the main entrance malfunctioned on April 3, causing an alarm to ring. It was replaced, but the new one broke down only two days later.

Alps, a new system to decontaminate radioactive water, was suspended due to an operational error on April 4, only five days after a trial run began. The system was scheduled to begin operating last autumn. But the starting date has been postponed because the durability of containers for storing high-radiation waste has been called into question.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201304080104](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201304080104)

### TEPCO's handling of radioactive water 'sloppy'

April, 2013

After inspecting the three troubled underground storage tanks at the Fukushima No. 1 Nuclear Power Plant, the council tasked with monitoring safety involved with the decommissioning of the crippled atomic power station said, "It requires sophisticated supervision to store contaminated water. The work is sloppy."

[mainichi.jp/english/english/newsselect/news/20130425p2a00m0na013000c.html](http://mainichi.jp/english/english/newsselect/news/20130425p2a00m0na013000c.html)

### Care houses for disaster orphans face fund shortage

May, 2013

Officials trying to build centers for children who lost their parents to the March 2011 earthquake disaster have a rough road ahead due to increasing costs of labor and building materials in the disaster stricken areas.

[mainichi.jp/english/english/newsselect/news/20130513p2a00m0na010000c.html](http://mainichi.jp/english/english/newsselect/news/20130513p2a00m0na010000c.html)

### Stricken Fukushima nuke plant struggles to keep staff

May, 2013

Tokyo Electric Power Co. is finding that it can barely meet the headcount of workers required to keep the three broken reactors cool while fighting power outages and leaks of tons of radiated water.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201305230104](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201305230104)

### Post-quake employment budget used to hire locals, not disaster victims

June, 2013

Counting sea turtles, publicizing a green-haired mascot and promoting a manga event with an 'idol' group were among prefectural projects financed by an emergency employment budget intended to help victims of the March 2011 disaster. But no one displaced by the disaster was actually hired for these projects.

The employment measures budget, worth 200 billion yen (\$2 billion), was designed to provide livelihoods for people in the Tohoku region who lost their homes or jobs after the Great East Japan Earthquake. However, the government's ambiguous wording has allowed prefectures to freely spend the money on jobs for local residents.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201306030090](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201306030090)

**¥625 million too much in quake grants handed out**  
2013

The government has given out ¥625 million too much under a system to help local authorities rebuild areas devastated by the March 2011 earthquake and tsunami, the Board of Audit said Tuesday.

Some authorities requested grants for projects not directly related to post-disaster recovery or reconstruction. In other cases, numerous requests for grants were made for the same projects, according to the audit board.

[the-japan-news.com/news/article/0000757430](http://the-japan-news.com/news/article/0000757430)

**Trillions for rebuilding Tohoku go unused**  
July, 2013

The Reconstruction Agency said ¥3.4 trillion of the ¥9.74 trillion in the fiscal 2012 budget slated to rebuild areas hit by the March 2011 disasters went unused.

Difficulties coordinating reconstruction plans between different levels of government and forming a consensus among disaster-hit residents have hampered construction, the agency said. Shortages of workers and materials were also cited.

[www.japantimes.co.jp/news/2013/07/31/national/trillions-for-rebuilding-tohoku-go-unused/#.UfnEe1PZRGE](http://www.japantimes.co.jp/news/2013/07/31/national/trillions-for-rebuilding-tohoku-go-unused/#.UfnEe1PZRGE)

**Nuclear watchdog to beef up Fukushima monitoring team**  
July, 2013

Japan's nuclear watchdog will beef up monitoring at the crippled Fukushima power plant, an agency official said Tuesday, after leaks of radioactive groundwater into the ocean sparked heavy criticism of the site's operator.

The leaks have triggered alarm bells over the plant's precarious state and the capability of Tokyo Electric Power (TEPCO) to deal with a long list of problems two years after it was swamped by a tsunami that sent reactors into meltdown.

The Nuclear Regulation Authority (NRA) plans to pull together two dedicated teams to investigate water contamination and its impact on the ocean's ecosystem, according to the the official.

"We still don't know the root cause of the problems as they are more complicated than initially thought," the NRA official said.

[www.japantoday.com/category/national/view/nuclear-watchdog-to-beef-up-fukushima-monitoring-team](http://www.japantoday.com/category/national/view/nuclear-watchdog-to-beef-up-fukushima-monitoring-team)

### Tank leaks

August, 2013

... the discovery earlier this week of a leak from a tank used to store contaminated water used to cool the reactor cores. That 300-ton leak is the fifth and most serious since the disaster of March 2011.

Some 1,000 steel tanks built across the plant complex contain nearly 300,000 tons of partially treated contaminated water. About 350 of them have rubber seams intended to last only five years. Company spokesman Masayuki Ono said it plans to build additional tanks with welded seams that are more watertight, but will have to rely on rubber seams in the meantime.

Shinji Kinjo, a regulatory official in charge of the Fukushima disaster, said the rubber-seam tanks are mostly built in a rush when the contaminated water problem started, and often lacked adequate quality tests and require close attention.

Workers have already spotted two more questionable tanks during inspection Thursday.

[www.japantimes.co.jp/news/2013/08/23/national/tepc-hit-for-failing-to-foresee-menace-of-radioactive-groundwater-tank-leaks/#.UhrV8LyGpGG](http://www.japantimes.co.jp/news/2013/08/23/national/tepc-hit-for-failing-to-foresee-menace-of-radioactive-groundwater-tank-leaks/#.UhrV8LyGpGG)

### Tepeco failed to foresee radioactive groundwater, tank leaks

August, 2013

Deep beneath Fukushima's crippled nuclear power station a massive underground reservoir of contaminated water that began spilling from the plant's reactors after the 2011 earthquake and tsunami has been creeping slowly toward the sea. Now, 2½ years later, experts fear it is about to reach the Pacific and greatly worsen what is fast becoming a new crisis at Fukushima: the inability to contain vast quantities of radioactive water.

Scientists, pointing to stubbornly high radioactive cesium levels in bottom fish since the disaster, had for some time suspected the plant was leaking radioactive water into the ocean. Tepeco repeatedly denied that until last month, when it acknowledged contaminated water has been leaking into the ocean from early on in the crisis.

[www.japantimes.co.jp/news/2013/08/23/national/tepco-hit-for-failing-to-foresee-menace-of-radioactive-groundwater-tank-leaks/#.UhrV8LyGpGG](http://www.japantimes.co.jp/news/2013/08/23/national/tepco-hit-for-failing-to-foresee-menace-of-radioactive-groundwater-tank-leaks/#.UhrV8LyGpGG)

remove or change: [Editor 2021: With the decision to release the water, the effort to stop it leaking becomes a stupendous waste of money and time. If it wasn't dangerous, there would have been no reason to worry about it entering the ocean, no reason to stop it. And if it is really safe (to release it into the ocean), why not release at least some of it in Tokyo (as suggested by Pacific islanders), etc. (to show people it is safe)?]

### TEPCO's sloppy oversight of radioactive water tanks continued even after advice August, 2013

Tokyo Electric Power Co. (TEPCO) continued conducting sloppy oversight of tanks containing highly radioactive water at the Fukushima No. 1 Nuclear Power Plant even after advice was offered by the Nuclear Regulation Authority's secretariat from around a year ago, it has been learned. Had TEPCO improved its oversight according to the secretariat's advice, it may have been able to reduce the severity of the massive leak of contaminated water at the plant.

According to the secretariat, TEPCO has been conducting twice daily patrols of around 930 tanks holding radioactive water, sending two of nine workers at a time to carry out the inspections. Each worker checks over 450 tanks over the course of two to three hours, and the secretariat is worried that these patrols are insufficient for promptly discovering if one of the tanks is leaking.

[mainichi.jp/english/english/newsselect/news/20130829p2a00m0na006000c.html](http://mainichi.jp/english/english/newsselect/news/20130829p2a00m0na006000c.html)

### Japan's nuclear comedy just goes on and on August, 2013

The plant is being run on makeshift equipment and breakdowns are endemic. Among nearly a dozen serious problems this year there have been successive power outages, leaks of highly radioactive water from underground water pools — and a rat that chewed enough wires to short-circuit a switchboard, causing a power outage that interrupted cooling for nearly 30 hours. Later, the cooling system for a fuel-storage pool had to be switched off for safety checks when two dead rats were found in a transformer box.

[www.japantimes.co.jp/news/2013/08/31/national/japans-nuclear-comedy-just-goes-on-and-on/#.UiLE6byGpGE](http://www.japantimes.co.jp/news/2013/08/31/national/japans-nuclear-comedy-just-goes-on-and-on/#.UiLE6byGpGE)

### More tank leaks found at Japan nuke plant September, 2013

Japan's top nuclear regulator has raised safety concerns about hastily built storage tanks and their foundations amid reports of new leaks of radiation-contaminated water.

[mainichi.jp/english/english/newsselect/news/20130902p2g00m0dm069000c.html](http://mainichi.jp/english/english/newsselect/news/20130902p2g00m0dm069000c.html)

### Crime up among No. 1 plant staff

September, 2013

The number of decontamination workers in Fukushima Prefecture suspected of committing crimes has been rising, bringing the total to 101 as of the end of August, the National Police Agency said.

The rise is likely due to an increase in the number of workers brought into the prefecture to meet growing demand for decontamination work, an NPA official said Thursday.

[www.japantimes.co.jp/news/2013/09/06/national/crime-up-among-no-1-plant-staff/#.UixvkLzRzEZ](http://www.japantimes.co.jp/news/2013/09/06/national/crime-up-among-no-1-plant-staff/#.UixvkLzRzEZ)

### New spill at No. 1 laid to typhoon miscalculation

October, 2013

An apparent miscalculation amid a typhoon caused a storage tank to overflow at the wrecked Fukushima No. 1 power plant, releasing about 430 liters of radioactive water into the Pacific Ocean.

[www.japantimes.co.jp/news/2013/10/03/national/new-spill-at-no-1-laid-to-typhoon-miscalculation/#.Uk6kYyTRzEY](http://www.japantimes.co.jp/news/2013/10/03/national/new-spill-at-no-1-laid-to-typhoon-miscalculation/#.Uk6kYyTRzEY)

### Combination of TEPCO errors led to latest radioactive water leak

October, 2013

A Tokyo Electric Power Co. blunder allowed more radioactive water to spill into the ocean.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201310040068](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310040068)

### Background checks planned for N-workers

December, 2013

Japan is the only developed country with nuclear power plants that has not established a counterterrorism program to protect its nuclear facilities. Background checks have been in place for workers at nuclear facilities in Europe and the United States for more than 10 years.

[www.yomiuri.co.jp/dy/national/T130126003221.htm](http://www.yomiuri.co.jp/dy/national/T130126003221.htm)

### Tepco: No. 1 plant readings probably too low

February, 2014

The bulk of the radiation measurements taken at the crippled Fukushima No. 1 power plant since March 2011 will be reviewed because they were taken improperly and are probably too low, Tokyo Electric Power Co. revealed.

[www.japantimes.co.jp/news/2014/02/08/national/tepc-no-1-plant-readings-probably-too-low/#.UvYynPa69GE](http://www.japantimes.co.jp/news/2014/02/08/national/tepc-no-1-plant-readings-probably-too-low/#.UvYynPa69GE)

### Half of disaster-hit municipalities fear rise in unsuccessful bids

March, 2014

A total of 15 cities and towns out of 42 municipalities in Iwate, Miyagi and Fukushima prefectures say more than 10 percent of their public works projects in fiscal 2013 were not concluded. Some local leaders are worried that chronic shortages of labor and construction materials will worsen due to potential growing demand for labor and construction materials ahead of the 2020 Tokyo Olympics.

[mainichi.jp/english/english/newsselect/news/20140310p2a00m0na020000c.html](http://mainichi.jp/english/english/newsselect/news/20140310p2a00m0na020000c.html)

### U.N. panel takes issue with radiation exposure data submitted by TEPCO

April, 2014

A United Nations report on the effects of radiation released in the Fukushima nuclear disaster said findings by the plant operator, Tokyo Electric Power Co., may have underestimated the levels of exposure by contract workers.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201404030060](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201404030060)

### Over 200 tons of radioactive water pumped into wrong building at Fukushima plant

April, 2014

Tokyo Electric Power Co. (TEPCO) said that 203 tons of highly radioactive waste water was transferred to a building at its crippled Fukushima No. 1 Nuclear Power Plant by mistake.

[mainichi.jp/english/english/newsselect/news/20140414p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20140414p2a00m0na008000c.html)

### TEPCO using secondhand tanks

July, 2014

20 or more of the water tanks holding radioactively contaminated water at the Fukushima No. 1 Nuclear Power Plant are secondhand, it has been learned — a fact that plant owner Tokyo Electric Power Co. (TEPCO) had not previously disclosed.

In August 2013, highly radioactive water was found leaking from one of the plant's tanks. A TEPCO representative refused to comment on whether that tank was one of the used ones.

An inside source with a company that supplied TEPCO with the tanks told the Mainichi, "They are not made to be completely leak-proof in the first place."

[mainichi.jp/english/english/newsselect/news/20140723p2a00m0na015000c.html](http://mainichi.jp/english/english/newsselect/news/20140723p2a00m0na015000c.html)

### Heavy equipment falls into Fukushima reactor pool 2014

A 400-kilogram machine part fell into a nuclear fuel pool at Japan's crippled Fukushima plant Friday. The incident occurred during a remotely controlled operation to remove debris from the fuel pool at the unit where the broken reactor still lies untouched.

[www.japantoday.com/category/national/view/heavy-equipment-falls-into-fukushima-reactor-pool](http://www.japantoday.com/category/national/view/heavy-equipment-falls-into-fukushima-reactor-pool)

### Plan to build ice wall around Fukushima plant hits snag 2014

The operator of Japan's battered Fukushima nuclear power plant said Tuesday it was having trouble with the early stages of an ice wall being built under broken reactors to contain radioactive water.

[www.japantoday.com/category/national/view/plan-to-build-ice-wall-around-fukushima-plant-hits-snag](http://www.japantoday.com/category/national/view/plan-to-build-ice-wall-around-fukushima-plant-hits-snag)

### TEPCO to miss March target for Fukushima toxic water cleanup January, 2015

Tokyo Electric Power Co. said Friday it will fail to fulfill its commitment to process by the end of March all highly radioactive water stored at the crippled Fukushima Daiichi nuclear plant due mainly to equipment troubles.

Currently, some 280,000 tons of water needing treatment is stored in tanks, while around 350 tons of toxic water is newly generated every day in the process of cooling reactors that suffered meltdowns in the 2011 earthquake-tsunami disaster.

<http://mainichi.jp/english/english/newsselect/news/20150123p2g00m0dm078000c.html>

### House prices for Tohoku disaster victims up sharply January, 2015

The prices of single-family houses being built for people now living in temporary housing after the 2011 Great East Japan Earthquake are rising considerably from original estimates because of labor shortages and the soaring costs of construction materials, according to sources.

<http://the-japan-news.com/news/article/0001846543>

### **\$500 million wasted on cleanup**

March, 2015

Tokyo Electric Power Company (TEPCO)'s ineffective site cleanup program has wasted more than \$500 million on useless equipment and failed techniques, according to Japanese government auditors.

<https://readersupportednews.org/opinion2/277-75/29278-fukushima-in-year-five-of-endless-radioactive-contamination>

### **A tragic story of red tape and fatal ineptitude**

March, 2015

In a desperate effort to reboot the failed electric grid, Tepco headquarters ordered 1,000 spare car batteries to be sent to the plant. The subsequent delivery was held up for long, crucial hours by delays in securing the government permits necessary to approve the transport of the batteries along expressways.

<http://www.japantimes.co.jp/culture/2015/03/14/books/book-reviews/tragic-story-red-tape-fatal-ineptitude/#.VQZM10ayu3A>

### **Tepco — 48,000 PCs running Windows XP**

April, 2015

Embattled Tokyo Electric Power Co. has been slammed by an independent auditing watchdog for skimping on its computer network, which still uses the Windows XP operating system. The watchdog said it must replace the outdated computer system because of security concerns.

<http://www.japantimes.co.jp/news/2015/04/21/national/tepcos-frugality-rapped-after-48000-pcs-found-running-windows-xp/#.VThaxmYWM18>

### **Container for Fukushima waste found without gas venting holes**

May, 2015

Tokyo Electric Power Co. (TEPCO) revealed on May 22 that one of its containers for waste liquid remaining after the processing of contaminated water at the Fukushima No. 1 Nuclear Power Plant did not have the necessary holes in its lid for venting out gas.

<http://mainichi.jp/english/english/newsselect/news/20150523p2a00m0na015000c.html>

### **Accidental power cable damage briefly disables frozen soil shields at Fukushima No. 1**

July, 2015

Frozen soil shields aimed at curbing the buildup of radioactive water were temporarily disabled at Tokyo Electric Power Co.'s stricken Fukushima No. 1 nuclear power plant on Tuesday. The problem occurred after a power cable was damaged by mistake, Tepco said.

<http://www.japantimes.co.jp/news/2015/07/29/national/accidental-power-cable-damage-briefly-disables-frozen-soil-shields-fukushima-no-1/#.VbhVjrckeQk>

### **Flooding swept away radiation cleanup bags in Fukushima** September, 2015

1,000-liter bags filled with grass and soil from work to remove radioactive substances spewed by the crippled Fukushima No. 1 nuclear plant were swept away in the flooding of rivers in Iitate, Fukushima Prefecture. It remained unclear how many had been washed away.

<http://www.japantimes.co.jp/news/2015/09/12/national/flooding-swept-away-radiation-cleanup-bags-in-fukushima/#.VfOWO86HkZ0>

### **Protective Fukushima Sea Wall Cracking** November, 2015

The barrier constructed at the Fukushima nuclear power plant to prevent contaminated water from leaking into the ocean has tilted, developing a crack about 500 meters (0.3 miles) in length along its base, local media report.

<http://sputniknews.com/asia/20151126/1030771408/fukushima-sea-wall-crack.html#ixzz3wvWTOJZn>

<http://sputniknews.com/asia/20151126/1030771408/fukushima-sea-wall-crack.html>

### **Only 16% of Fukushima residents knew of emergency declaration** December, 2015

The government's declaration of a nuclear emergency on March 11, 2011, reached only 16.5 percent of residents in Fukushima Prefecture by the following day. A key reason for this seems to have been that the communication structure in coastal areas was wiped out by the towering tsunami.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201512190021>

### **TEPCO refusing to pay for decontamination work** December, 2015

Tokyo Electric Power Co. (TEPCO) has refused to foot the costs of decontamination work that has been planned and conducted after a December 2013 Cabinet decision.

As the Environment Ministry is in conflict with the Economy, Trade and Industry Ministry that supports TEPCO's position, a massive amount of taxpayers' money is being invested in such work without clarifying who should bear the expenses.

<http://mainichi.jp/english/articles/20151228/p2a/00m/0na/010000c>

### Father seeks accountability for daughter's death

February, 2016

Takahiro Shito is part of a civil lawsuit involving 23 families who lost children at Okawa Elementary School on March 11. They are seeking ¥2.3 billion in damages from the city and prefectural governments.

Shito says that, inexplicably, teachers ignored warnings for nearly 50 minutes before the school, some 4 kilometers inland, was inundated by two tsunami waves: one from the ocean that powerfully plowed over fields and swept away a housing complex adjacent to the school, and another wave that sped down the Kitakami River, which swelled relentlessly over the embankment as accumulated debris caught in the nearby bridge became a dam blocking the onrushing waters, diverting them to where the students waited.

Only one teacher survived and he later committed suicide. The surviving children have reportedly told people that after the powerful jolts they were instructed to gather in the schoolyard. The teachers appeared uncertain about what to do, some say there were heated exchanges, but when students suggested that they escape up the adjacent hill, they were scolded. So almost everyone remained in the schoolyard for nearly 50 minutes until the tsunami surged over the embankment, sparking a panic.

According to Shito, teachers belatedly evacuated students into the maelstrom by moving toward the bridge where the river was already sweeping inland. Why, Shito asks, would they wait to evacuate until it was too late? Why would they head toward the evident dangers near the bridge when they had access to high ground away from danger? Given the clear warnings, plenty of time to evacuate and safe ground at hand, why did all those children have to die? For the parents, these are questions that will never go away.

<http://www.japantimes.co.jp/opinion/2016/02/06/commentary/tohoku-father-seeks-accountability-daughters-death/>

### TEPCO could have known Fukushima meltdown days after disaster

February, 2016

Tokyo Electric Power Co. said Wednesday it could have determined nuclear core meltdown occurred at the Fukushima plant sooner than it did.

The utility did not admit until May 2011 that core meltdown occurred.

This month TEPCO discovered its internal operation manual defines core meltdown as damage to more than 5 percent of a reactor core.

<http://mainichi.jp/english/articles/20160225/p2g/00m/0dm/001000c>

### Meltdown criteria manual not found for 5 years

February, 2016

A third-party investigative panel to be set up by Tokyo Electric Power Co. (TEPCO) will focus on why the company failed to find its own manual containing criteria for judging nuclear reactor core meltdowns until nearly five years after the onset of the Fukushima nuclear disaster, and whether the document was covered up.

<https://mainichi.jp/english/articles/20160229/p2a/00m/0na/015000c>

### Local evacuation plans ignore central govt instructions

March, 2016

Local officials in the town of Namie are at odds with the central government over evacuation plans for any future crisis. In its draft emergency plan, the town decrees that residents can flee in a future accident even if radiation levels are below those warranting evacuation as dictated by the central government.

The draft was drawn up based on the lesson the disaster-hit town learned from the chaos that erupted in the wake of the triple meltdown at the Fukushima No. 1 nuclear power plant.

Although local governments are legally entitled to issue an order independently, the central government is not happy about Namie's plan. Minami-Soma, the city adjacent to Namie, takes a similar approach in the evacuation plan it crafted in 2013.

The secretariat of the Nuclear Regulation Authority would not give a nod to the plans by Namie and Minami-Soma, saying such actions could compromise the evacuation of people facing imminent danger.

“In the Fukushima accident, more damage was done partly because people who were not in need of evacuation raced to flee,” said an official with the secretariat’s Emergency Preparedness/ Response and Nuclear Security Division. “The central government’s guidelines are designed to minimize radiation exposure risks.”

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201603100018>

### State ignored predictions 10 years before 3/11 tsunami, says seismologist

March, 2016

The March 2011 tsunami that crippled the Fukushima No. 1 nuclear power plant was foreshadowed almost 10 years earlier, but government interference meant the threat was not acted on, seismologist Kunihiko Shimazaki has said.

He said that just before the release of a report on the prediction, the secretariat of the research headquarters added a paragraph stressing the uncertainty of the forecast. “An official of the

Cabinet Office responsible for anti-disaster measures insisted on having a different committee discuss long-term tsunami prediction,” he said. “This was something that had never happened before, and I felt pressure.” He added, “It was puzzling and frightening.”

<http://www.japantimes.co.jp/news/2016/03/23/national/state-ignored-predictions-10-years-311-tsunami-says-seismologist/>

### Workers and managers inadequately trained

March, 2016

Workers made critical errors in shutting off automated emergency cooling systems and wrongly assumed part of the cooling system was working when it was not. These workers and their managers were inadequately trained to cope with an emergency situation and lacked basic knowledge concerning the emergency reactor cooling system.

<http://www.japantimes.co.jp/opinion/2016/03/26/commentary/tepcos-executives-get-taste-citizens-wrath/>

### TEPCO switched off alarms at No. 2 plant years ago

September, 2016

Tokyo Electric Power Co. felt the wrath of the nation's nuclear watchdog after it was discovered that entry alarms at the Fukushima No. 2 nuclear power plant don't work even if sensors detect movement.

The Nuclear Regulation Authority issued a strong warning against a recurrence as TEPCO was in violation of the law.

<http://www.asahi.com/ajw/articles/AJ201609130076.html>

### Who will pay for decommissioning the reactors?

2016

Prime Minister Shinzo Abe, the Japanese people and the country's power companies are facing a difficult question over the fate of the future of nuclear power in Japan: who will foot the costly bill for decommissioning the crippled Fukushima Daiichi nuclear power plant?

"Decommissioning is a project that will last 30 or 40 years, and we will have to pass the work on to future generations," said Akira Ono, who stepped down as the plant's manager at the end of June.

"The overall decommissioning is estimated to cost over 10 trillion yen (\$98 billion)," a government official said. But nobody mentions who will pay the bill and how.

<http://asia.nikkei.com/Business/Trends/Who-will-pay-for-decommissioning-the-Fukushima-reactors>

### More support officials needed in disaster-hit areas

2016

There is a chronic shortage of municipal officials temporarily dispatched to help with administrative services in regions affected by the Great East Japan Earthquake — about 200 government workers are needed in these areas, according to the Internal Affairs and Communications Ministry, but local governments cannot afford to send them.

<http://the-japan-news.com/news/article/0002730111>

### Just 22% of new seawalls are finished

March, 2017

Only a fifth of the planned seawalls have been constructed in northeastern areas devastated by the March 2011 earthquake and tsunami. Some residents oppose the building of seawalls, saying they would no longer be able to see the water.

<http://www.japantimes.co.jp/news/2017/03/11/national/22-new-seawalls-finished-areas-hit-2011-tsunami/#.WMPbrxA-kik>

### Some Fukushima municipalities lack nuclear evacuation plans

March, 2017

Of the 11 municipalities in Fukushima Prefecture which came under evacuation orders after the 2011 Fukushima No. 1 nuclear plant meltdowns, five do not have evacuation plans in case a nuclear accident occurs again, even though no-entry orders are gradually being lifted.

<http://mainichi.jp/english/articles/20170327/p2a/00m/0na/012000c#csidxe9349936fa8703dba33266c14470cb> SEP

### Plant manager disobeyed HQ

April, 2017

Masao Yoshida was in charge of the Fukushima No. 1 nuclear power plant during the disaster in 2011. When Tepco HQ in Tokyo ordered staff to evacuate, Yoshida knew that the executives had little idea of what was actually happening at the plant. Going behind the backs of his superiors, he contacted then-Prime Minister Naoto Kan, insisting that leaving the plant would be reckless.

The utility also ordered that seawater not be pumped through the reactor as coolant, since that would render it useless for energy generation in the future. Exposed to life-threatening levels of radiation, Yoshida and his team defied the order, scrambling to cool the overheating reactor with seawater.

<http://www.japantimes.co.jp/culture/2017/04/29/books/book-reviews/yoshidas-dilemma-one-mans-struggle-avert-nuclear-catastrophe-fukushima-much-worse/>

The ‘Yoshida Testimony’ from the governmental hearings on the accident revealed that plant manager Masao Yoshida could not tell what was going on inside the nuclear reactors for nearly three days.

[Catholic Bishops pp. 103-104](#)

### **Botched gauge settings**

September, 2017

The discovery of falsely configured monitoring equipment at the stricken Fukushima No. 1 nuclear power plant means the groundwater flowing underneath it might have gotten contaminated from April onward, Tokyo Electric said Friday. The utility said incorrect gauge settings were used to measure groundwater levels in six of the wells near reactors 1 and 4. This resulted in groundwater readings about 70 cm higher than reality, which means the beleaguered power utility has been mismanaging the groundwater there for months.

<https://www.japantimes.co.jp/news/2017/09/29/national/radioactive-water-may-leaking-fukushima-reactor-buildings-since-april-tepco/#.Wc4w6tFcWhA>

### **Thousands of radiation monitoring glitches**

June, 2018

3,000 radiation monitoring devices installed in Fukushima Prefecture after the 2011 nuclear accident have been hit by glitches and other problems nearly 4,000 times.

Just a couple weeks ago there was a JT post about the thousands of faulty radiation monitors in Fukushima which have cost millions in repairs.

Managing the monitoring posts has cost the central government about 500 million yen (\$4.5 million) a year.

<https://japantoday.com/category/national/as-fukushima-residents-return-some-see-hope-in-nuclear-tourism>

### **Tepco's 'ice wall' fails to freeze Fukushima's toxic water buildup**

March, 2018

A costly “ice wall” is failing to keep groundwater from seeping into the stricken Fukushima Dai-ichi nuclear plant, data from operator Tokyo Electric Power Co shows, preventing it from removing radioactive melted fuel at the site seven years after the disaster.

When the ice wall was announced in 2013, Tepco 9501.T assured skeptics that it would limit the flow of groundwater into the plant's basements, where it mixes with highly radioactive debris from the site's reactors, to "nearly nothing."

However, since the ice wall became fully operational at the end of August, an average of 141 metric tonnes a day of water has seeped into the reactor and turbine areas, more than the average of 132 metric tonnes a day during the prior nine months, a Reuters analysis of the Tepco data showed.

The cost was 34.5 billion yen (\$324 million) in public funds.

In addition to the building costs, the ice wall needs an estimated 44 million kilowatt hours of electricity a year to run, enough to power about 15,000 typical Japanese homes.

<https://www.reuters.com/article/us-japan-disaster-nuclear-icewall-idUSKCN1GK0SY>

### **Fukushima looks to renewable energy**

March, 2018

Tomas Kaberger, former director of the Swedish Energy Agency, believes the government is willing to restart more reactors because it fears the financial consequences of failing to do so.

“Nuclear power companies are not prepared for the cost of decommissioning and could in some cases go bankrupt. Banks and pension funds have lent them a lot of money because they have been regarded as stable, so bankruptcies could become a national financial problem. This would be difficult for the government to handle and might directly hurt pensioners,” he says. “But now the government is just hiding the problem and postponing managing it.”

<https://www.japantimes.co.jp/life/2018/03/10/environment/fukushima-looks-renewable-energy-sources-aftermath-nuclear-disaster/>

### **Fukushima tsunami plans to be expedited at stricken N-plant**

August, 2018

Tokyo Electric Power Company Holdings Inc. will strengthen its protections against tsunami at its Fukushima No. 1 nuclear power plant to prevent water contaminated with high levels of radiation from spilling outside the plant, The Yomiuri Shimbun has learned.

<http://the-japan-news.com/news/article/0004670847>

### **Ministry loses radioactive soil sent to Tokyo**

August, 2018

The Environment Ministry said it has mislaid a 10-kilogram sample of radioactive soil and other materials sent to it after the 2011 disaster at the Fukushima No. 1 nuclear power plant.

<http://www.asahi.com/ajw/articles/AJ201808150059.html>

### **Project to Create New Industries Facing Delay**

March, 2019

A national project to create new industries in Fukushima Prefecture, northeastern Japan, has been facing a delay despite expectations for contributions to the recovery of the regional economy hit hard by the nuclear disaster that occurred eight years ago. [L] [SEP] The project's detailed goals have yet to be worked out, while there are no estimates yet on its economic effects.

<https://jen.jiji.com/jc/eng?g=eco&k=2019030900553>

### **Tepco employees killed by earthquake and tsunami**

April, 2021

Three Tepco employees at the Daiichi and Daini plants were killed directly by the earthquake and tsunami, but there have been no fatalities from the nuclear accident.

<https://world-nuclear.org/information-library/safety-and-security/safety-of-plants/fukushima-daiichi-accident.aspx>

### **31 highly radioactive waste containers past lifespans**

June, 2021

Thirty-one containers of highly radioactive sediments at the Fukushima Daiichi nuclear plant have exceeded their lifespans. The NRA blamed the problem on TEPCO underestimating the radiation the 31 plastic cylinders were exposed to.

TEPCO measured the density of the sediment at 20 centimeters from each container's bottom. However, the NRA insisted that the density measurement should have been taken at the bottom of containers where the sediment is thickest, meaning the radiation levels are also higher.

<https://mainichi.jp/english/articles/20210608/p2a/00m/0bu/008000c>

### **Institutions failed**

September, 2021

One of the most shocking things about the Tōhoku disasters is that it highlighted a yawning gap between the stereotype of Japanese hyper-competency and the abject failure of institutions to effectively address the immediate needs of the moment as these severe disasters wreaked havoc, and it exposed an inability to care for people in their darkest hours of need.

A lack of governmental coordination left local authorities to fend for themselves, playing catch-up in a reactive mode that left them feeling embittered and abandoned.

<https://apjpf.org/2021/17/Cleveland.html>



## The Accident was Avoidable

### TEPCO ignored latest research on tsunami

March, 2011

Tokyo Electric Power Co., the plant's operator, chose not to consider advances in tsunami research when considering safety measures.

As far back as 20 years or so ago, experts realized that a giant tsunami could pound the region where the nuclear plant is located.

The central government was also slow to mount new inspections of older nuclear plants, partly because it bent to pressure from the business sector which feared higher costs.

Even a NISA safety inspector admitted that TEPCO's estimates were inadequate and would have to be reviewed.

"There was pressure from the business sector not to change the guidelines until construction plans were completed to a certain degree."

The business sector was concerned that the revision of the guidelines would force electric power companies to scrap or improve existing reactors and review new construction plans, incurring huge costs for them. "For that reason, a political decision was made to shelve the review into the future."

<http://www.asahi.com/english/TKY201103250387.html>

### Researcher warned 2 years ago of massive tsunami striking nuke plant

March, 2011

A researcher said he had warned two years ago about the possible risk of a massive tsunami hitting a nuclear power plant in Japan, but Tokyo Electric Power Co., the operator of the Fukushima Daiichi nuclear plant crippled by the March 11 earthquake and ensuing tsunami, had brushed off the warning.

<http://mdn.mainichi.jp/mdnnews/news/20110327p2g00m0dm004000c.html>

### Nuclear experts say Fukushima accident was avoidable

April, 2011

A group of 16 nuclear safety experts has issued proposals for preventing a recurrence of the Fukushima No. 1 nuclear power plant accident, saying that "relatively inexpensive improvements, detectable by more extensive analysis beforehand" may have prevented it altogether.

<http://www.asahi.com/english/TKY201104220212.html>

### Japan turned deaf ear to warnings about quake risks

June, 2011

Kojiro Irikura, 70, professor emeritus at Kyoto University, who has chaired the Nuclear Safety Commission of Japan's Investigatory Advisory Board on Assessment of Seismic Safety since 2007, believes that warnings about earthquake risks to nuclear power plants were not taken seriously for many years.

Irikura argued that hidden active faults near the facility should be taken into account. But his calls fell on deaf ears, and he was not invited to the screening process after several sessions.

<http://www.asahi.com/english/TKY201106100215.html>

### Former nuclear industry insider speaks out on lessons and disillusionment

December, 2011

Toshiro Kitamura, 66, spent many years working at the Tokai and Tsuruga nuclear plants. Through his job, he gained comprehensive knowledge of nuclear power stations.

Even a layperson could've imagined the possibility of nuclear plants being damaged by major quakes and tsunami in a quake-prone country like Japan with long coastlines. So why couldn't the experts?

"You know why?" Kitamura began. "Because experts reached conclusions based merely on statistics that 'in Japan, the country with the world's best record of non-interrupted power supply, it would be very difficult to imagine having no power supply for long periods of time,' and refused to entertain other possibilities. They did not go to the scene to check for themselves whether power could actually be restored. Therein lies the major problem."

Kitamura also points out that the government and power companies dismissed any lessons that could have been learned from the Chernobyl accident, citing the different types of reactors used in the former U.S.S.R. and Japan. As a result of underestimating the potential for disaster, emergency drills were oversimplified, and residents failed to maintain a disaster-ready mentality.

<http://mdn.mainichi.jp/mdnnews/news/20111218p2a00m0na004000c.html>

### TEPCO dismissed important scientific evidence in planning nuclear plant's defense

2011

In planning their defense against a killer tsunami, the people running Japan's now-hobbled nuclear power plant dismissed important scientific evidence and all but disregarded 3,000 years of geological history.

And while TEPCO and government officials have said no one could have anticipated such a massive tsunami, there is ample evidence that such waves have struck the northeast coast of

Japan before — and that it could happen again along the culprit fault line, which runs roughly north to south, offshore, about 350 kilometers east of the plant.

What is clear: TEPCO officials discounted important readings from a network of GPS units that showed that the two tectonic plates that create the fault were strongly ‘coupled’ or stuck together, thus storing up extra stress along a line hundreds of kilometers long. The greater the distance and stickiness of such coupling, experts say, the higher the stress buildup — pressure that can be violently released in an earthquake.

That evidence, published in scientific journals starting a decade ago, represented the kind of telltale characteristics of a fault being able to produce the truly overwhelming quake — and therefore tsunami — that it did.

On top of that, TEPCO modeled the worst-case tsunami using its own computer program instead of an internationally accepted prediction method.

<http://www.japantoday.com/category/commentary/view/tepcO-dismissed-important-scientific-evidence-in-planning-nuclear-plants-defense>  
<https://www.pressdemocrat.com/article/news/report-japan-nuclear-plant-downplayed-tsunami-risk/>

**Fukushima nuclear crisis was preventable: U.S. experts**  
March, 2012

The nuclear meltdown at the Fukushima Daiichi nuclear power plant in northeastern Japan could have been prevented if Japanese authorities and the operator of the plant had strengthened safety measures in accordance with international standards, U.S. experts said Tuesday.

[mdn.mainichi.jp/mdnnews/news/20120307p2g00m0dm047000c.html](http://mdn.mainichi.jp/mdnnews/news/20120307p2g00m0dm047000c.html)

**Nuclear industry ignored threat of tsunami on eve of 3/11**  
July, 2012

More than 20 years before the disaster at the Fukushima No. 1 nuclear power plant, a scientist was issuing warnings that a tsunami of an unanticipated scale could knock out a nuclear reactor. The scientist's article ran in a trade journal for electrical engineers in Japanese. For his efforts, the utilities basically blacklisted the author.

[ajw.asahi.com/article/0311disaster/analysis/AJ201207090011](http://ajw.asahi.com/article/0311disaster/analysis/AJ201207090011)

**Ministry ignored call to enhance Fukushima off-site center**  
March, 2013

The industry ministry failed to improve nuclear protection at an off-site center (OFC) of the crippled Fukushima No. 1 nuclear power plant at the request of the internal affairs ministry

because it assumed a similar crisis at the plant was not possible, according to government sources.

The Internal Affairs and Communications Ministry pointed out two years before the outbreak of the nuclear crisis at the plant in March 2011 that the OFC, which is supposed to serve as a control center during a nuclear disaster, had such flaws as insufficient protection against radioactive substances.

[www.yomiuri.co.jp/dy/national/T130324002698.htm](http://www.yomiuri.co.jp/dy/national/T130324002698.htm)

**Document shows TEPCO recognized risk of huge tsunami at Fukushima plant in 2008**  
June, 2015

Tokyo Electric Power Co. in 2008 recognized the “indispensable” need for countermeasures against a towering tsunami at the Fukushima No. 1 nuclear plant, but it ended up doing nothing, an internal document showed.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201506180062>

**TEPCO rejected requests for anti-tsunami steps**  
2015

Tokyo Electric Power Co turned down requests in 2009 by the nuclear safety agency to consider concrete steps against tsunami waves at the Fukushima Daiichi nuclear plant, which suffered a tsunami-triggered disaster two years later, government documents showed Friday.

“Do you think you can stop the reactors?” a TEPCO official was quoted as telling Shigeaki Nagura of the now-defunct Nuclear and Industrial Safety Agency, who was then assigned to review the plant’s safety, in response to one of his requests.

<http://www.japantoday.com/category/national/view/tepco-rejected-requests-for-anti-tsunami-steps-before-nuclear-crisis>

**Anti-tsunami policy shift**  
July, 2017

The utility itself estimated in 2008 that tsunami with a maximum height of 15.7 meters could hit its Fukushima No. 1 nuclear plant.

... the 2002 long-term assessment report by the government's Headquarters for Earthquake Research Promotion stating that massive tsunami could occur off the Pacific Coast from the Sanriku to the Boso areas.

Based on the government's 2002 assessment, a TEPCO-affiliated company in March 2008 reported to the utility headquarters that tsunami with a maximum height of 15.7 meters could strike the Fukushima No. 1 plant. TEPCO officials at the nuclear power facility management department immediately ordered the affiliated firm to determine how tall a levee was required

to prevent flooding of the plant, which stands 10 meters above sea level. The firm reported that a 10-meter-tall seawall would be necessary.

These figures were then reported to then Fukushima plant chief Masao Yoshida and then vice president Muto, who was in charge of the matter at the time. Muto, however, asked the Japan Society of Civil Engineers to re-evaluate the tsunami height estimates, and shelved countermeasures at TEPCO facilities as a whole.

This "policy shift" continued to be debated within the utility. A note saying "tsunami prevention measures cannot be avoided" was circulated at a September 2008 meeting, and Yoshida told a February 2009 executive meeting that "some say tsunami of about 14 meters tall could hit the plant."

<http://mainichi.jp/english/articles/20170701/p2a/00m/0na/031000c>

### **Court told ex-Tepco Execs were informed barriers could prevent tsunami flooding at Fukushima plant**

February, 2018

An employee with a subsidiary of Tokyo Electric Power Company Holdings Inc. testified in court Wednesday that the unit reported a need to install tide barriers to prevent flooding from a tsunami well before the March 2011 nuclear accident at Tepco's Fukushima No. 1 nuclear plant.

According to the worker, the Tepco unit produced an estimate in March 2008 on the basis of long-term assessments released by a government organization, saying that a tsunami could occur with a height of 15.7 meters, which is above ground level at the nuclear plant site.

<https://www.japantimes.co.jp/news/2018/02/28/national/court-told-ex-tepco-execs-informed-barriers-prevent-tsunami-flooding-fukushima-plant/>

### **Radioactive piece spills from rusty container at Fukushima plant**

May, 2021

An alarm was triggered after radioactive material apparently leaked from a rusted container storing contaminated waste from the early days of the Fukushima nuclear disaster.

Tokyo Electric Power Co. has tens of thousands of containers of radioactive debris and waste at the site. A decision on the final disposal of their contents has not been made, and now, the containers are showing their age.

<https://www.asahi.com/ajw/articles/14343306>

### **Plant failed to probe cause of faulty filters**

September, 2021

Officials at Japan's wrecked Fukushima nuclear power plant have acknowledged they neglected to investigate the cause of faulty exhaust filters that are key to preventing radioactive pollution, after being forced to replace them twice.

<https://www.asahi.com/ajw/articles/14440728>

### Conflict of Interest

September, 2021

One major problem is the inherent conflict of interest in having both nuclear power promotion and regulation under one roof — something the U.S. had warned Japan about and Tokyo had rebuffed. Government and private investigations into the accident cited that conflict as one of the most important factors leading to the unprecedented and preventable triple reactor meltdowns.

<https://apjff.org/2021/17/Simms.html>

## Red Tape

### Regulations hinder return to normalcy in Tohoku

June, 2011

When the Great East Japan Earthquake and tsunami destroyed most of the city of Rikuzentakata in Iwate Prefecture on March 11, convenience store chain operator Lawson Inc. stood ready to dispatch one of its blue-and-white "Mobile Lawson" vehicles to the scene. But the prefecture health department turned down a business permit for the mobile store, saying the vehicle's 160-liter water tank didn't meet its requirement for a 200-liter one.

<http://www.asahi.com/english/TKY201106020169.html>

### Tepco's simplified form just 34 pages, 1,005 sections

November, 2011

Tokyo Electric Power Co. has created a simplified application form for people seeking compensation related to the nuclear accident, after victims criticized the original 60-page forms as too long and complicated. Under the simplified application form, which is 34 pages long, the total number of sections an applicant could have to fill out has been reduced to 1,005 from the original 2,115.

[www.japantimes.co.jp/text/nm20111125a6.html](http://www.japantimes.co.jp/text/nm20111125a6.html)

### Rehab Subsidies Stymied by Delays in Infrastructure Work

September, 2012

State-backed subsidies to help the rehabilitation of small businesses hit hard by the March 2011 earthquake and tsunami have been held up by delays in the restoration of infrastructure in ruined areas. Some 18 months after the disaster, 61 pct of the subsidies approved by prefectural governments in fiscal 2011 have not yet been distributed to applicants, because work to restore areas with subsidence and to overhaul and zone submerged land has not made smooth headway.

[jen.jiji.com/jc/eng?g=eco](http://jen.jiji.com/jc/eng?g=eco)

### A tragic story of red tape and fatal ineptitude

March, 2015

In a desperate effort to reboot the failed electric grid, Tepco headquarters ordered 1,000 spare car batteries to be sent to the plant. The subsequent delivery was held up for long, crucial hours by delays in securing the government permits necessary to approve the transport of the batteries along expressways.

<http://www.japantimes.co.jp/culture/2015/03/14/books/book-reviews/tragic-story-red-tape-fatal-ineptitude/#.VQZM10ayu3A>

**A mountain of papers to fill out**  
February, 2016

Survivors who lost their homes and other properties have faced a mountain of papers to fill out in their efforts to rebuild and move on from the catastrophe.

<http://ajw.asahi.com/article/0311disaster/recovery/AJ201602010043>

**Broken devices at Fukushima plant fail to record vital quake data**  
February, 2021

Two broken seismometers at the crippled Fukushima No. 1 nuclear plant failed to record data from a powerful earthquake that struck off the coast of the prefecture on Feb. 13.

Tokyo Electric Power Co. became aware last year that the seismometers installed at the No. 3 reactor building were on the blink but didn't repair them, company officials told a meeting of the Nuclear Regulation Authority on Feb. 22.

<https://www.asahi.com/ajw/articles/14213851>

## Corruption

### Corruption — general

**Fukushima Engineer Says He Helped Cover Up Flaw at Dai-Ichi Reactor No. 4**  
March, 2011

One of the reactors in the crippled Fukushima nuclear plant may have been relying on flawed steel to hold the radiation in its core, according to an engineer who helped build its containment vessel four decades ago.

Mitsuhiko Tanaka says he helped conceal a manufacturing defect in the \$250 million steel vessel installed at the Fukushima Dai-Ichi No. 4 reactor while working for a unit of Hitachi Ltd. in 1974.

Tanaka's allegations, which he says he brought to the attention of Japan's Trade Ministry in 1988 and chronicled in a book two years later called 'Why Nuclear Power is Dangerous', have resurfaced after Japan's worst nuclear accident on record. The government refused to investigate and Hitachi denied his accusations, he said.

The vessel had sagged so that its height and width differed by more than 34 millimeters, meaning it should have been scrapped, according to nuclear regulations. Rather than sacrifice years of work and risk the company's survival, Tanaka's boss asked him to reshape the vessel so that no-one would know it had ever been damaged. Tanaka had been working as an engineer for the company's nuclear reactor division and was known for his programming skills.

When Tokyo Electric sent a representative to check on their progress, Hitachi distracted him by wining and dining him, according to Tanaka. Rather than inspecting the part, they spent the day playing golf and soaking in a hot spring, he said.

<http://www.bloomberg.com/news/2011-03-23/fukushima-engineer-says-he-covered-up-flaw-at-shut-reactor.html>

**Regulators never questioned one-page document**  
May, 2011

Nuclear regulators trusted that the reactors at the Fukushima No. 1 complex were safe from the worst waves an earthquake could muster based on a single-page memo from Tokyo Electric Power Co. nearly a decade ago.

<http://search.japantimes.co.jp/cgi-bin/nn20110529a1.html>

**'Nuclear village' rules itself in TEPCO hierarchy**  
June, 2011

A fiefdom of nuclear experts at Tokyo Electric Power Co. has survived past crises and appears likely to withstand fallout from the controversy at the embattled Fukushima No. 1 nuclear power plant. The "nuclear village," as it is known, has maintained its independence for decades, virtually shielded from other parts of the company by the specialized nature of its operations.

<http://www.asahi.com/english/TKY201106070161.html>

### 'Nuclear power village' a cozy, closed community

June, 2011

Tetsunari Iida worked in the private sector as an engineer in charge of radiation safety evaluations at the Fukushima No. 1 plant. Plant operator Tokyo Electric Power Co. had commissioned Toshiba Corp. to do the job, and Toshiba subcontracted it to Iida's firm. His company's safety analyses were submitted to Toshiba, then to TEPCO and finally to the then International Trade and Industry Ministry.

Iida recalled being shocked when he once saw a safety assessment released by the ministry. The report's cover had been changed, but the contents were almost identical to one prepared by Iida and his fellow engineers. "They didn't do their own checks of our analyses or confirm whether things were really safe. No wonder accidents happen," Iida said.

<http://www.yomiuri.co.jp/dy/national/T110615005652.htm>

### Nuclear Workers and Fukushima Residents at Risk: Cancer Expert on Fukushima Situation

July, 2011

An article by Hokkaido Cancer Center director Nishio Masamichi, a radiation treatment specialist.

Nishio writes, "Japan, with its history of having suffered radiation exposure from the atomic bombs, should have the most [direct] knowledge of radiation, but in fact, in the approach to the nuclear accident, has simply fallen into confusion." He places blame on a number of groups:

1. TEPCO executives, who he accuses of having hidden the truth and prioritized the survival of the company over public health.
2. Bureaucrats who were unable to put together an accurate body of information about radiation effects from which to formulate policy.
3. A prime minister and cabinet lacking both leadership and an appropriate sense of urgency.
4. Politicians who sought to use the crisis in intra- or inter-party struggles.
5. Nuclear industry lobbyists and 'academic flunkies' (goyo gakusha) of the government who built up the myth of nuclear safety in the first place.

Looking at these groups, he writes, "I just cannot feel any hope for Japan's future. These circumstances are simply tragic."

<http://www.japanfocus.org/events/view/100>

### TEPCO duplicity

September, 2011

We're not sure whether it's cause for celebration of Japan's ability to 'gaman' or not, but in any case, consumers and industry really rose to the call when told that they had to suffer for the sake of the country, by not using air conditioners. We did our bit, sweating it out many a day at the office. Now it turns out that TEPCO has more than 35% power reserves and the power saving measures will be ended September 9th.

Source: TT commentary from [e.nikkei.com](http://e.nikkei.com), Sep 3, 2011  
<http://e.nikkei.com/e/ac/tnks/Nni20110902D0209N04.htm>  
[http://www.japaninc.com/tt628\\_McDonald%27s-food-ATMs](http://www.japaninc.com/tt628_McDonald%27s-food-ATMs)

### NISA kept U.S. plans for nuke plant failure to itself

January, 2012

Secret U.S. contingency plans that might have helped emergency teams trying to deal with the total power failure at the Fukushima No.1 nuclear power plant were sat on by Japan's Nuclear Industry Safety Agency (NISA) because its officials didn't believe Japan would ever face such a situation.

[ajw.asahi.com/article/0311disaster/life\\_and\\_death/AJ201201270058](http://ajw.asahi.com/article/0311disaster/life_and_death/AJ201201270058)

### Tepeco manipulates public meeting

July, 2012

Meanwhile, a parliamentary investigation panel into the Fukushima Daiichi plant disaster has found that Tokyo Electric Power Co. had urged its employees and those of subcontractors to attend a 2003 meeting in Fukushima Prefecture to explain nuclear safety to local residents, and how to fill in questionnaires afterward about the meeting.

"It has been common to conceal and manipulate information on risks that could be obstacles to promoting nuclear power," the panel said.

[www.japantimes.co.jp/text/nn20120709a3.html#.T\\_pen3B0Ey4](http://www.japantimes.co.jp/text/nn20120709a3.html#.T_pen3B0Ey4)

### Nuclear lobby strangled guidelines on plant power failures at birth

2012

Japan's nuclear regulators considered exactly the sort of total power loss that helped trigger the Fukushima disaster more than 18 years before it occurred, but decided not to do anything about it apparently because nuclear operators said it would never happen.

Documents belatedly released by the Nuclear Safety Commission of Japan (NSC) on June 4 show that one of its working groups considered taking measures to deal with total power losses, but eventually dismissed the idea in 1993 after facing resistance from power firms.

[www.asahi.com/english/newsfeatures.html](http://www.asahi.com/english/newsfeatures.html)

### Experts say new nuclear safety oversight still too lax 2013

Experts who investigated Japan's nuclear crisis say that government oversight of the crippled plant's operator is still too lax. They told parliament that the recently formed Nuclear Regulation Authority is merely rubber-stamping TEPCO's work at the plant, which is still using makeshift equipment put together after the March 2011 disaster. The NRA began in September as a more independent, tougher regulator.

[www.japantoday.com/category/national/view/experts-say-new-nuclear-safety-oversight-still-too-lax](http://www.japantoday.com/category/national/view/experts-say-new-nuclear-safety-oversight-still-too-lax)

### Ministry continued promoting nuclear power right after Fukushima accident December, 2013

The industry ministry began working to continue promoting nuclear power even immediately following the disastrous meltdowns at the Fukushima No. 1 nuclear power plant in March 2011.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201312020059](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201312020059)

### A tragic story of red tape and fatal ineptitude March, 2015

(Review of Fukushima: The Story of a Nuclear Disaster, by David Lochbaum, Edwin Lyman, Susan Q. Stranahan and The Union of Concerned Scientists)

Suspecting that some locals might object to the planned nuclear plant, meetings between local officials and Tepco were held in secret.

...

As radiation began spreading, Tokyo Electric Power Co.'s efforts at containment involved not only the plant under their management, but limiting access to procedural records, downplaying vulnerabilities and disseminating misinformation.

The Japanese public, as the authors point out, were not entirely blameless. They ignored the signs: minor nuclear accidents, warnings from professional bodies about the risks of constructing reactors on the world's most seismically volatile terrain and press reports about reactor managers falsifying accident reports and other cover-ups.

<http://www.japantimes.co.jp/culture/2015/03/14/books/book-reviews/tragic-story-red-tape-fatal-ineptitude/#.VQZM10ayu3A>

**Document shows TEPCO recognized risk of huge tsunami at Fukushima plant in 2008**  
June, 2015

Tokyo Electric Power Co. in 2008 recognized the “indispensable” need for countermeasures against a towering tsunami at the Fukushima No. 1 nuclear plant, but it ended up doing nothing, an internal document showed.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201506180062>

**Few knew meltdown manual existed**  
May, 2016

Although a manual existed that outlined the criteria for a meltdown, Tokyo Electric Power Co. admitted that only five or so employees at its main office knew of it at the onset of the 2011 nuclear crisis.

Those employees belonged to a section that manages the manual at the company’s Tokyo headquarters.

It took the company five years to disclose the existence of the manual.

<http://www.asahi.com/ajw/articles/AJ201605310068.html>

**Secret deal reached to have new firms also pay nuclear compensation**  
January, 2017

Major power companies, ruling Liberal Democratic Party (LDP) legislators promoting nuclear power and bureaucrats have agreed behind closed doors to require new companies, which have entered the liberalized power market, to shoulder part of the compensation costs to those affected by the Fukushima nuclear crisis.

<http://mainichi.jp/english/articles/20170110/p2a/00m/0na/006000c#csidx59bb46fe9a2d13a837a83a44b5ba70>

**Fukushima mulls criminal complaint over fake forest decontamination work**  
May, 2017

The municipal government is considering filing a criminal complaint against parties concerned for allegedly fabricating bamboo forest decontamination work to receive 10 times the normal compensation, it has been learned.

<http://mainichi.jp/english/articles/20170511/p2a/00m/0na/018000c>

## Victimizers disappear 2020

The interests of the people causing others to sacrifice are supported by the sacrifices their victims make. Furthermore, this victimization is normally glorified and justified by the community (nation, citizenry, society, corporations, etc.) as “noble sacrifices.” However, as seen in Japan’s defeat, and now the nuclear accident, when defeat becomes so clear that it can no longer be concealed, the people who are victimizing others abandon their own responsibility and disappear, leaving only their victims to bear the consequences.

The regions that took on the duty of creating “energy for a bright future” with nuclear power were depopulated areas, and they were sacrificed when the accident occurred. If problems occur, the truth is concealed, organizations with political authority and economic power are protected, and the rest are cast away. Rural, peripheral and outlying regions are sacrificed and the center benefits — isn’t that just like the system of colonial rule?

The nuclear disaster that started on March 2011 may be a big setback for part of the “rich country” policy of aiming for competitive growth of gargantuan enterprises under governmental leadership. In that way, it is comparable to a second defeat following upon the first one in 1945 of the “strong army” part of the “rich country, strong army” slogan pursued since the Meiji Era. In the revitalization and reconstruction from this historical catastrophe, for both Japan and the world, would it not be better this time to overcome this system of victimization and work toward realizing the opposite kind of society, where individual human beings matter?

[Catholic Bishops p. 72](#)

## Corruption — Legal System

**Governor: Why no arrests over crisis?**  
February, 2012

Saitama Gov. Kiyoshi Ueda wants to see Tokyo Electric Power Co. held criminally responsible for the Fukushima nuclear crisis. He questioned why nobody in Tepco has been arrested.

[www.japantimes.co.jp/text/nn20120215a3.html](http://www.japantimes.co.jp/text/nn20120215a3.html)

**Prosecutors not to indict ex-TEPCO execs again**  
January, 2015

The Tokyo District Public Prosecutors Office is set to decide soon not to indict three former executives of Tokyo Electric Power Co., including then Chairman Tsunehisa Katsumata, on charges of professional negligence resulting in death and injury over the 2011 Fukushima nuclear disaster.

<http://mainichi.jp/english/english/newsselect/news/20150122p2a00m0na001000c.html>

## **Corruption — Media**

### **Media cozy with Tepco**

May, 2011

Tsunehisa Katsumata, chairman of Tokyo Electric Power Co., admitted in a news conference on March 30 that on the 11th, the day the twin disasters hit the Tohoku region and crippled Tepco's Fukushima No. 1 nuclear plant, he was traveling to Beijing with retired Japanese journalists, expenses for which were partially paid by the utility.

The incident laid bare the oft-assumed cozy relationship between Tepco and major Japanese media organizations that critics claim are preventing reporters from asking the utility tough questions about the nuclear accident.

Freelance journalist Takashi Uesugi, a former reporter for The New York Times in Tokyo, said he was astonished that no one had asked Tepco about whether a plutonium leak from the stricken plant was detected until he raised the question on March 27.

"For two weeks, not one reporter asked about plutonium in the press conference," said Uesugi. "When I raised the question, Tepco said it didn't have a detector to check it."

<http://search.japantimes.co.jp/cgi-bin/nn20110503f1.html>

### **Power companies are the largest advertisers.**

April, 2012

For media, power companies are the largest advertisers. (TEPCO is the largest private electric power company in the world.)

*Koichi Hasegawa, Tohoku University [Toward a Post-Nuclear Society: Examining the 3/11 Disaster and Nuclear Risks](#)*

*Paper presented at the Symposium, Towards Long-term Sustainability: In Response to the 3/11 Earthquake and the Fukushima Nuclear Disaster. The Center for Japanese Studies, University of California, Berkeley, April 20-21, 2012.*

## **Corruption — Organized Crime**

### **The Japanese Mafia Is Making Millions From The Fukushima Cleanup**

2013

In Tohoku – the region devastated by the earthquake and tsunami – crime gangs are allegedly implicated in all different aspects of the reconstruction, from demolition to waste removal.

The close ties between the yakuza and the nuclear industry have been known for a long time. Journalist Tomohiko Suzuki wrote about it in 2011 in his book: *Yakuza and Nuclear Energy: Diary of An Undercover Reporter Working at the Fukushima Plant*.

He reports that yakuza have been around the Fukushima site since the nuclear disaster -- working to stem the effects of the plant's meltdown. They "find people and send them to the site," recruiting men who owed money to the yakuza, who were homeless, unemployed or even mentally handicapped. According to Suzuki, the nuclear industry has always used the yakuza to recruit people for the most dangerous tasks, the jobs no one else wants.

[www.worldcrunch.com/culture-society/how-the-japanese-mafia-is-making-millions-from-the-fukushima-cleanup/japan-corruption-yakuza-mob-nuclear/c3s10837/#.UIVQxySGpGF](http://www.worldcrunch.com/culture-society/how-the-japanese-mafia-is-making-millions-from-the-fukushima-cleanup/japan-corruption-yakuza-mob-nuclear/c3s10837/#.UIVQxySGpGF)  
<http://theweek.com/article/index/217202/fukushimas-nuclear-gypsies>

### **Yakuza taking slice of lucrative decontamination work**

May, 2013

The central government expects to spend trillions of yen over several years to decontaminate communities that were polluted with radioactive materials after the crisis unfolded at the Fukushima No. 1 nuclear power plant.

An official with a subcontractor said it is so short-handed that it will not be able to come up with enough workers if it must check prospective workers' backgrounds.

There are tens of thousands of subcontractors involved in cleanup programs awarded to general contractors as primary contracts by the Environment Ministry and local governments.

Day laborers are obtained for their efforts through conventional hiring practices in the construction industry, where small subcontractors across the nation do the recruiting.

However, if subcontractors send their laborers to the work site in the same fashion that temporary workers are dispatched by staffing agencies, that is illegal.

Subcontractors are required to provide their own equipment and oversee the safety of their workers, in contrast to a temporary work force that comes under the supervision of a client company, like their regular employees.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201305060062](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201305060062)

### **Yakuza hide IDs to secretly thrive in disaster zones**

March, 2017

Police uncovered that the mobster received about 40 million yen between 2009 and 2011 by sending workers to nuclear plants and thermal power plants across the country.

<http://www.asahi.com/ajw/articles/AJ201703230055.html>

### 3 nabbed over alleged illicit job mediation for cleanup workers

September, 2017

Police on Sept. 27 arrested three people, including a high-ranking member of a gang affiliated with the Yamaguchi-gumi crime syndicate, on suspicion of illicitly introducing workers to other businesses to engage in Fukushima decontamination work.

<http://mainichi.jp/english/articles/20170927/p2a/00m/0na/015000c>

## Corruption — Bribery and questionable payments

### Nuclear power industry's shady payments since Fukushima crisis

August, 2012

The nuclear power industry has made behind-the-scenes payments to the tune of at least 3.18 billion yen (\$40 million) to six local governments hosting nuclear-power related facilities since the Fukushima disaster last year.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201208200103](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201208200103)

### Familiar faces win ¥1.6 billion in nuclear public relations projects after Fukushima disaster

June, 2013

Nearly 70% of government spending to regain public trust in nuclear energy has landed at organizations that employ retired bureaucrats or former executives of electric power companies.

[ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201306170069](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201306170069)

### Funds from disaster relief budget given to nuclear operators

2013

Funds set aside to help earthquake, tsunami and nuclear victims have been allocated to power companies.

About 10 billion yen of the 25 trillion yen pledged for disaster recovery over several years has been reserved to offset costs for utility companies that were ordered to shut nuclear power plants in the aftermath of the Fukushima disaster.

The news comes after it was revealed public cash had been used in areas seemingly unaffected by the natural catastrophe, including on beefing up security for Japan's controversial whale hunt and on paying people to count turtles.

Reader's comment: If the power companies suffered losses because of the TEPCO human-made nuclear disaster, then surely they should be joining the TEPCO compensation cue and not getting funds meant for reconstruction.

[www.japantoday.com/category/national/view/funds-from-disaster-relief-budget-given-to-nuclear-operators](http://www.japantoday.com/category/national/view/funds-from-disaster-relief-budget-given-to-nuclear-operators)

### **Aomori municipalities ask prefecture to cover lost 'power industry money'**

October, 2013

A group of municipal governments in Aomori Prefecture have petitioned the prefectural government for financial relief in place of donations that the power industry is going to discontinue from spring.

The massive donations were initiated in fiscal 1994 by the Federation of Electric Power Companies of Japan and Japan Nuclear Fuel Ltd in return for Aomori Prefecture's hosting of nuclear fuel cycle facilities. The municipalities utilized the donated money in regional promotional projects such as local festivals and fireworks events.

Over the past 20 years, a total amount of some 13 billion yen was paid to those municipalities, which was distributed by a public utility foundation. The donations were renewed every five years. Following the Great East Japan Earthquake, the donations totaled 1.37 billion yen in fiscal 2011 and 2012, respectively. Around 872 million yen is scheduled to be contributed to the municipalities this fiscal year.

[mainichi.jp/english/english/newsselect/news/20131029p2a00m0na007000c.html](http://mainichi.jp/english/english/newsselect/news/20131029p2a00m0na007000c.html)

### **Bidding system unclear**

December, 2016

“When it comes to Japan’s nuclear industry, the bidding system is completely unclear,” Hiroaki Koide, a former assistant professor at Kyoto University Research Reactor Institute, said in an e-mail. “The system is designed to strengthen the profits of Japan’s nuclear village,” he added, referring to the alliance of pro-nuclear politicians, bureaucrats and power companies that promote reactors.

Independent investigators said in a 2012 report that collusion between the government, regulators and the plant’s operator contributed to the scale of the disaster.

The Japan Fair Trade Commission raided the offices of five companies last year in relation to rigged bids for maintenance contracts from Tepco.

<http://www.japantimes.co.jp/news/2016/12/21/business/fukushimas-¥8-trillion-cleanup-leaves-foreign-firms-cold/#.WFsR1bF3wUE>

### **Court: ex-environment ministry official guilty of taking bribes**

June, 2017

The Fukushima District Court on Thursday sentenced a former Environment Ministry official to one year in prison, suspended for three years, for accepting bribes to help a company win a decontamination project in Fukushima Prefecture.

<http://www.japantimes.co.jp/news/2017/06/29/national/crime-legal/court-finds-ex-environment-ministry-official-guilty-taking-bribes/>

## Subsidies

### A town built on nuclear subsidies

June, 2011

Futaba Mayor Katsutaka Idogawa scrimped and saved. He cut expenses, reviewed projects and slashed his take-home pay to zero. But in the end, he was forced to return to the one reliable source of income to save the town in Fukushima Prefecture from bankruptcy.

Now, Idogawa and the 1,500 Futaba residents live in an evacuation center in Kazo, Saitama Prefecture. "I have no idea when everyone can return to their homes," he said.

Futaba is now a ghost town. A large arch still stands holding a sign that reads, "Nuclear energy/ development of our hometown/ an affluent future."

Like other communities that host nuclear power facilities, Futaba ended up being overly dependent on subsidies from the central government while failing to develop other industries.

"All regions at first want to develop their communities by using the nuclear plants as a catalyst," said Shuji Shimizu, vice president of Fukushima University and an expert in public finance. "However, the amount of nuclear plant money that flows toward an isolated region that has little industry to begin with was huge. As a result, those communities were forced to become a distorted economy that was heavily dependent on that money."

Futaba, co-host of the crippled Fukushima No. 1 nuclear power plant, followed this pattern of a town in desperate need of cash.

Idogawa, now, 65, said he had little time to celebrate his first election victory, a narrow win over another newcomer candidate.

When Idogawa arrived at the Futaba town government office for the first time as mayor on Dec. 8, 2005, the head of the general affairs department told him, "We cannot compile a budget for the next fiscal year."

Idogawa knew the town had a mountain of debt. He ran for mayor promising to use his managerial experience as the president of a housing equipment company to rebuild the town. Voters believed his words.

"But I never imagined the situation was as bad as it was," Idogawa said.

Futaba is part of an area that local residents dub the Ginza strip of nuclear plants. Instead of the bright lights and posh stores in the fashionable area of central Tokyo, the area around Futaba has 10 reactors operated by Tokyo Electric Power Co.

The Fukushima No. 1 nuclear power plant is located in the towns of Futaba and Okuma. The Fukushima No. 2 plant is situated in the towns of Tomioka and Naraha.

The No. 5 and No. 6 reactors in Futaba began operating from 1978 and 1979, respectively. Around that time, the town had a population of about 8,000, and the town treasury was

flooded with "nuclear plant money" in the form of subsidies from three separate laws designed to promote the hosting of nuclear plants.

In addition, TEPCO paid huge property taxes on the plants. In fiscal 1983, property taxes from the nuclear plant alone came to about 1.8 billion yen (\$21.9 million), the peak figure. That represented 54 percent of the town's total revenues of 3.3 billion yen. Futaba used the money to install a sewage system and build roads and public facilities.

The three other towns had similar experiences.

Kazumi Kuroki, 75, a former official with the Okuma town government, said, "Our lives became better and better."

The town went ahead with a major farmland development project that other towns of its size might hesitate to undertake because of the huge burden.

"We enjoyed a huge pile of sweets from the nuclear plant," Kuroki said.

But the bubble economy created by the nuclear plants did not last long for Futaba.

Property tax revenues plummeted as plant facilities declined in value over the years. The subsidies also had their time limits.

But Futaba had difficulty tightening its fiscal belt, which was all but thrown away when the money freely flowed in. The town piled up debt to build a health and welfare facility with a heated pool. Eventually, Futaba was unable to compile a budget.

Futaba found itself in the worst fiscal condition of any of the four towns in the prefecture that host a nuclear plant. The ratio of the amount of debt repayments to total annual income in fiscal 2007 was 3.9 percent for Okuma, 11 percent for Naraha, 17.9 percent for Tomioka-- and 30.1 percent for Futaba.

The town exceeded by far the 25-percent line that requires a municipal government to put together a plan to return to a sound fiscal condition. Idogawa did try. He reviewed large public works projects and worked for free as mayor.

He warned residents that Futaba was in danger of becoming a second Yubari, the municipality in Hokkaido that went bankrupt. Various subsidies were cut, but expenditure reductions only went so far. Futaba had to return to accepting nuclear plant money.

In 1991, under Idogawa's predecessor, the Futaba town assembly passed a resolution requesting that additional reactors be constructed. That resolution was placed on hold after TEPCO was found to have covered up problems at its plants.

But in June 2007, Idogawa told the town assembly that he was of the opinion that TEPCO's problems had been solved. The next day, the town assembly passed a resolution in favor of building more reactors.

One assembly member who voted for the resolution said, "Approving additional construction was the key to rebuilding the town's fiscal condition."

The result was that 3.92 billion yen in subsidies was paid to Futaba over a four-year period as an initial measure for constructing the No. 7 and No. 8 reactors in the town.

When the Great East Japan Earthquake struck on March 11, the first thing that flashed through Idogawa's mind was the Fukushima No. 1 nuclear power plant.

His fears became reality. Now, the town lies at the center of the no-entry zone around the crippled plant.

Former Fukushima Governor Eisaku Sato, 71, said local governments dependent on nuclear plant money that repeatedly approved the building of reactors were "like drug addicts."

Sato first realized the extent of the problem when the Futaba town assembly passed the resolution in 1991 asking that more reactors be built.

Under Sato's instructions, a study group looking into energy policy for Fukushima Prefecture compiled a publication in 2002 that raised questions about Fukushima and its hosting of nuclear plants.

"There has been no accumulation of industries besides nuclear plants," the document said.

"As the number of operating years increases, there has been a large decrease in subsidies and property tax revenues."

<http://www.asahi.com/english/TKY201106090181.html>

## Decommissioning

### Reactors may take three decades to decommission

March, 2011

Damaged reactors at the crippled Fukushima No. 1 nuclear plant may take three decades to decommission and cost operator Tokyo Electric Power Co. more than ¥1 trillion, engineers and analysts said.

<http://search.japantimes.co.jp/cgi-bin/nn20110331n1.html>

### Radiation makes decommissioning a bigger task than usual

April, 2011

Radiation has covered the area around the Fukushima No. 1 plant and blanketed parts of the complex, making the job of ‘decommissioning’ the plant — rendering it safe so it doesn't threaten public health and the environment — a bigger task than usual.

Decommissioning usually takes three forms: dismantling or decontaminating parts of the reactors so the land can be used; safely sealing off and monitoring the nuclear plant while the radiation inside decays; and entombing radioactive parts in concrete and steel.

<http://search.japantimes.co.jp/cgi-bin/nn20110411f1.html>

### Removal of reactor fuel won't start until 2021

July, 2011

Removal of fuel that melted down in reactors at the Fukushima No. 1 nuclear power plant will start in 2021, and demolition of the reactors will not be completed until decades from now, according to a government draft of a mid- to long-term schedule for a clean-up of the site.

<http://www.yomiuri.co.jp/dy/national/T110711004878.htm>

### Stricken Fukushima nuke plant struggles to keep staff

May, 2013

Thousands of spent nuclear fuel rods that are outside the reactors also have to be removed and safely stored. Taking them out is complex because the explosions at the plant have destroyed parts of the structure used to move the rods under normal conditions. The process of taking out the rods, one by one, hasn't even begun yet. The spent rods have been used as fuel for the reactors but remain highly radioactive.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201305230104](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201305230104)

### Tepco feeling heat over fuel removal

November, 2013

With Tepco due to begin removing more than 1,300 spent-fuel rod assemblies and nearly 200 fresh ones from the reactor 4 pool at the Fukushima No. 1 plant this month, global pressure is mounting to allow an international task force to monitor and assist the highly hazardous operation.

[www.japantimes.co.jp/news/2013/11/05/national/tepc-feeling-heat-over-fuel-removal/#.Unl\\_dySGpGE](http://www.japantimes.co.jp/news/2013/11/05/national/tepc-feeling-heat-over-fuel-removal/#.Unl_dySGpGE)

### Japan lacks decommissioning experts for Fukushima

December, 2013

Japan is incapable of safely decommissioning the devastated Fukushima nuclear plant alone and must stitch together an international team for the massive undertaking, experts say, but has made only halting progress in that direction.

Unlike the U.S. and some European countries, Japan has never decommissioned a full-fledged reactor. Now it must do so at the Fukushima Dai-Ichi plant. Three of its six reactors melted down after the 2011 earthquake and tsunami, making what is ordinarily a technically challenging operation even more complex.

"Even for the U.S. nuclear industry, such a cleanup and decommissioning would be a great challenge," said Akira Tokuhiko, a University of Idaho professor of mechanical and nuclear engineering who is among those calling for a larger international role at Fukushima.

Decommissioning a nuclear power plant normally involves first bringing the reactor cores to stable shutdown, and then eventually removing them for long-term storage. It is a process that takes years. Throughout, radiation levels and worker exposure must be monitored.

At Fukushima, there is the daunting challenge of taking out cores that suffered meltdown, which is the most dangerous type of nuclear power accident. Their exact location within the reactor units isn't known and needs to be ascertained so their condition can be analyzed. That will require development of nimble robots capable of withstanding high radiation.

The lack of experts is worse at the regulatory level. The tally is zero. Japan's Nuclear Regulation Authority has no one devoted to decommissioning.

The government-funded Nuclear Energy Safety Organization has one expert on decommissioning, a person who studies overseas regulations on the process.

In contrast, the U.S. Nuclear Regulatory Commission has 10 people devoted to decommissioning including four project managers, four health physicists, and a hydrogeologist.

[mainichi.jp/english/english/newsselect/news/20131215p2g00m0dm043000c.html](http://mainichi.jp/english/english/newsselect/news/20131215p2g00m0dm043000c.html)

## Technology and working conditions for decommissioning process still lacking

March, 2014

The biggest hurdle TEPCO faces is the removal of molten fuel in the No. 1-3 reactors. Effects of the March 11, 2011 tsunami left the three reactors without their cooling capacity, and temperatures in the reactor containment vessels rose at one point to at least 2,000 degrees Celsius. The majority of the reactors' 1,496 fuel rods are believed to have melted.

To remove the fuel, the containment vessels must be filled with water to block radiation. To do so, however, it is essential that working conditions are improved, damage to the vessels is identified and repaired, and more advanced technologies are developed.

It is unclear whether the quantity and quality necessary for upcoming work at the nuclear plant can be maintained. TEPCO calculates that radiation exposure levels among workers by the time spent fuel extraction from the No. 4 reactor's cooling pool is completed will be a maximum 32 millisieverts per person. While the figure falls below the maximum permitted figure of 50 millisieverts per year and 100 millisieverts within a five-year period, radiation levels at reactors No. 1-3 is high, and the success of the decommissioning process relies heavily on whether TEPCO can continue to secure technical staff and other workers.

[mainichi.jp/english/english/newsselect/news/20140304p2a00m0na012000c.html](http://mainichi.jp/english/english/newsselect/news/20140304p2a00m0na012000c.html)

## Tepco has no realistic plan

June, 2014

At a press tour of the power plant in mid-April, the full face mask and protective suit made it difficult to move and breathe. The radiation dosimeter showed that a couple of hours there exposed visitors to 30 microsieverts of radiation. Humans are exposed to an average of 2,400 microsieverts of radiation annually. If you work at that plant daily, you will reach the maximum exposure limit for humans before you know it. That is where the problems begin. There is no realistic plan for effectively treating radioactive water or for decommissioning the reactors. Solving the myriad issues at Fukushima Daiichi will require an enormous number of workers, an enormous amount of time and an enormous cost.

[asia.nikkei.com/Markets/Equities/Tepco-crisis-has-decades-to-go](http://asia.nikkei.com/Markets/Equities/Tepco-crisis-has-decades-to-go)

## Tepco completes removal of reactor 4 pool's spent fuel rods

November, 2014

All of the spent-fuel rods from the reactor 4 building at the crippled Fukushima No. 1 nuclear power plant have been removed from the spent fuel pool, indicating Tokyo Electric Power Co. has cleared a major hurdle in its ongoing decommissioning of the reactors.

[www.japantimes.co.jp/news/2014/11/05/national/tepc-completes-removal-of-reactor-4-pools-spent-fuel-rods/#.VFmjRta-\\_dQ](http://www.japantimes.co.jp/news/2014/11/05/national/tepc-completes-removal-of-reactor-4-pools-spent-fuel-rods/#.VFmjRta-_dQ)

## Nuclear expert tasked with leading Fukushima decommissioning

July, 2015

Toru Ogawa, a 64-year-old nuclear research expert, has been entrusted with leading the decommissioning process at the Fukushima No. 1 nuclear plant. Looking back on the disaster, Ogawa said, “The government and the agency should have envisioned the worst-case scenario, in which all multiple layers of defense are destroyed.”

<http://www.japantimes.co.jp/news/2015/07/27/national/nuclear-expert-tasked-with-leading-fukushima-decommissioning/#.VbYCirckdpk>

### **Fukushima decommissioning costs to soar**

2016

The combined costs of paying compensation for the Fukushima nuclear disaster and the decommissioning of the plant's reactors may be double the initial estimate, rising to more than 20 trillion yen (\$176 billion), according to estimates by the country's industry ministry.

<http://asia.nikkei.com/Politics-Economy/Economy/Fukushima-decommissioning-costs-to-soar?page=2>

### **Full-scale model used to test decommissioning for Fukushima reactor**

November, 2016

The International Research Institute for Nuclear Decommissioning (IRID) was established in 2013 by nuclear plant makers, power firms and government organizations to develop technology needed for the decommissioning of the Fukushima plant.

<http://www.japantimes.co.jp/news/2016/11/29/national/full-scale-model-used-test-decommissioning-fukushima-reactor/>

### **Law to make Tepco retain money for decommissioning costs**

2017

The government plans to legally oblige Tokyo Electric Power Company Holdings Inc. to retain money to cover costs for decommissioning its crippled Fukushima No. 1 nuclear power plant.

<http://www.japantimes.co.jp/news/2017/01/14/national/law-make-tepco-retain-money-decommissioning-costs/>

### **Footage from reactor 3 may force rewrite of Fukushima road map**

July, 2017

The first images of melted fuel from the crippled Fukushima No. 1 power plant indicate that it did not burn through the pressure vessel of reactor 3, but exited through the holes used to insert the control rods, officials say.

While the landmark robot footage from the primary containment vessel of unit 3 is helping Tokyo Electric grasp the reality of the damaged fuel assemblies, it may also force it to rewrite the road map for decommissioning the meltdown-hit plant.

<http://www.japantimes.co.jp/news/2017/07/30/national/footage-reactor-3-may-force-rewrite-fukushima-road-map-officials-say/>

**TEPCO says it will make plan this summer to clean up Fukushima plant**  
February, 2017

The operator of Japan's stricken Fukushima nuclear plant says it will craft a plan this summer to extract highly radioactive fuel from the damaged reactors.

<https://www.japantoday.com/category/national/view/tepcu-says-it-will-make-plan-to-clean-up-fukushima-plant>

**Tepco probe to directly touch melted fuel debris at Fukushima plant**  
July, 2018

The operator of the crippled Fukushima No. 1 nuclear plant is planning to survey melted fuel debris at the No. 2 reactor by the end of March — using a special device — in an operation it hopes will help it determine the best method for its removal, sources said Wednesday.

<https://www.japantimes.co.jp/news/2018/07/25/national/tepcu-probe-directly-touch-melted-fuel-debris-fukushima-plant/>

**Robotic probes show tough task ahead**  
March, 2018

In January 2017, a remote-controlled camera hanging from a pole snapped images of dark chunks scattered in the area beneath the No. 2 reactor's pressure vessel. It was the first confirmation of conditions in that area of any of the three reactors. Gaping holes were seen in a platform used by plant workers. The following month, a robotic probe called Scorpion was deployed, but it got stuck and was unable to transmit data.

A further probe by a remote-controlled camera in January turned up images of a nuclear fuel assembly handle near the bottom of the containment vessel. Given that fuel assemblies are about 4 meters long and the handle is mounted on the top, TEPCO said most of the nuclear fuel assemblies must have melted through the pressure vessel to land at the bottom of the containment vessel. Pebbly deposits strewn around the handle are believed to be the nuclear fuel debris, officials said.

An underwater robot used to explore the No. 3 reactor in July showed that the unit lies submerged in more water than the No. 1 and No. 2 reactors.

The government and TEPCO have set a goal of starting a test project in 2021 to retrieve nuclear fuel debris at one of the reactors. But sticking to that plan is proving to be increasingly difficult. The robotic probes drove home the extent of damage inside the reactors. It is more serious than initially thought.

<http://www.asahi.com/ajw/articles/AJ201803070054.html>

### TEPCO grants 1st peek at work to scrap Fukushima No. 2 plant

July, 2021

Work to prepare for the decommissioning of Tokyo Electric Power Co.'s Fukushima No. 2 nuclear plant is under way in Fukushima Prefecture, a mammoth project the operator plans to complete in about 44 years.

The project is expected to prove an enormous challenge to TEPCO as the utility needs to proceed with it while simultaneously taking on the even more formidable task of cleaning up the crippled Fukushima No. 1 nuclear plant.

The company will need to train workers for the decommissioning, secure a workforce for the lengthy project that will span decades, and put measures in place to ensure the safety of the facilities when hit by natural disasters such as torrential rain, earthquakes and tsunami.

The work to decommission the No. 2 plant will be divided into four stages, with each stage spanning a decade or so, according to TEPCO.

In the first stage, operators will focus on decontaminating the facility to prepare for the following stages.

After that, TEPCO expects to move on to the second stage, which involves the demolition and removal of equipment surrounding the nuclear reactors. The reactors will be dismantled and cleared in the third stage, and then finally the reactor buildings in the fourth stage.

<http://www.asahi.com/ajw/articles/14389389>

### 40-Year goal in doubt

March, 2021

The Japan Atomic Energy Commission's report, dated Dec. 13, 2011, contained no reference to 40 years.

A member of an expert group in the commission recalled that some colleagues said it would take 50 to 60 years just to develop technology to decommission the crippled reactors.

"I was under the impression that the government at the time had no other option but to show a specific goal because evacuees from the affected communities were closely watching what the government would say," the member said.

“It is a gross understatement that the decommissioning will get done in 40 years at the earliest,” he said.

One scenario envisages a full cleanup, including the complete removal of the melted fuel, that would turn the premises into a decontaminated vacant lot. The group estimates that 100 years or so would be needed to finish this plan and involve the removal of 7.6 million tons of radioactive waste.

<https://www.asahi.com/ajw/articles/14232870>

### Regulators backtrack

September, 2021

Even with Japan’s nuclear regulatory reforms, critics were concerned that regulators could backtrack once public and media attention waned and memories became fuzzy. Some of those more concrete fears were realized. Examples include the watering down of guidelines for dealing with volcanic explosions that could wreck reactor cooling systems, the continuing lack of realistic post-accident evacuation plans, including sheltering in place, for residents around plants, and the extension of operating licenses beyond the set 40 years, under what were supposed to be only exceptions.

<https://apjff.org/2021/17/Simms.html>

## Cost

### Nuclear insurance group won't renew Fukushima plant's liability insurance

November, 2011

The Japan Atomic Energy Insurance Pool has decided not to renew the Fukushima No. 1 Nuclear Power Plant's insurance contract when it expires in January next year, it has been learned.

[mdn.mainichi.jp/mdnnews/news/20111128p2a00m0na020000c.html](http://mdn.mainichi.jp/mdnnews/news/20111128p2a00m0na020000c.html)

### TEPCO gets ¥1 tril in public funds, putting it under gov't control

2012

Tokyo Electric Power on Tuesday received an injection of 1 billion yen in public funds, effectively putting the utility under government control. The 1 trillion yen is part of a 10-year restructuring aimed at preventing the vast regional power monopoly from going bankrupt.

The liability that power companies pay in the event of a nuclear disaster. Currently limited to ¥120 billion.

The clean up and decommissioning of the atomic plant will take more than 50 years and will cost more than ¥30 trillion. The cost of compensation claims will be ¥5 trillion. All of it paid by the taxpayer.

[www.japantoday.com/category/national/view/tepcu-gets-y1-tril-in-public-funds-putting-it-under-govt-control](http://www.japantoday.com/category/national/view/tepcu-gets-y1-tril-in-public-funds-putting-it-under-govt-control)

### Nuke plant operators put tab on new safety standards at 1 trillion yen

February, 2013

Japan's 10 nuclear power plant operators said it will cost close to 1 trillion yen (\$10.87 billion) to bring them in compliance with government-mandated safety standards on disaster preparedness.

The final tab could increase further because the companies currently cannot accurately estimate the expenses that will be required to take measures against disasters.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201302270063](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201302270063)

### Decontamination law loophole? Tepco snubs ¥10.5 billion cleanup tab

March, 2013

Tokyo Electric Power Co. is ¥10.55 billion in arrears to the Environment Ministry over work to decontaminate land around the Fukushima No. 1 nuclear plant, government officials said Friday.

The sum is part of a total ¥14.9 billion the ministry asked Tepco to pay by February, based on a special law on decontamination enacted after the March 2011 meltdowns. But its provisions do not clarify the extent to which the utility is obliged to pay back the money. Tepco has not yet agreed to pay back the ¥10.55 billion, with one of the company's officials saying it "cannot judge whether it is a demand based on the special law."

[www.japantimes.co.jp/news/2013/03/22/national/tepcosnubs-¥10-5-billion-cleanup-tab/#.UU6z\\_hmK4eN](http://www.japantimes.co.jp/news/2013/03/22/national/tepcosnubs-¥10-5-billion-cleanup-tab/#.UU6z_hmK4eN)

### Japan to use public funds to deal with radioactive water

August, 2013

The central government is going ahead with a plan to use public funds in an attempt to stop radioactive water at the crippled Fukushima No. 1 nuclear power plant from flowing into the ocean, as operator Tokyo Electric Power Co. is seen as incapable of coping with the problem on its own.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201308080053](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308080053)

### Government seeking 100 billion yen for decommissioning reactors

November, 2013

In a potentially controversial move, the Ministry of Economy, Trade and Industry will seek about 100 billion yen (\$1.1 billion) in the supplementary budget for the current fiscal year as well as in the fiscal 2013 budget to support the decommissioning of reactors at the Fukushima No. 1 nuclear plant.

Normally, decommissioning would be handled by Tokyo Electric Power Co., the Fukushima plant operator, and not the government. Having the ministry pay for a program to establish a research facility for decommissioning work would mean taxpayers, rather than the utility, were shouldering the burden.

In addition to concerns about using taxpayer money for work that should be handled by the utility, TEPCO has already said it might need an additional 10 trillion yen from the central government to help cover compensation requests and decontamination of areas polluted by radioactive materials.

[ajw.asahi.com/article/behind\\_news/politics/AJ201301110060](http://ajw.asahi.com/article/behind_news/politics/AJ201301110060)

### Tepco to limit annual repayment to government to ¥50 billion

November, 2013

Tokyo Electric Power Co. will limit its annual repayments of financial aid from the government to pay compensation related to its nuclear catastrophe to ¥50 billion, which means taxpayers face shouldering higher interest payments.

[www.japantimes.co.jp/news/2013/11/27/national/tepc-to-limit-annual-repayment-to-government-to-¥50-billion/#.UpmWZY2GpGF](http://www.japantimes.co.jp/news/2013/11/27/national/tepc-to-limit-annual-repayment-to-government-to-¥50-billion/#.UpmWZY2GpGF)

### Taxpayers face 79 billion yen tab for TEPCO assistance 2013

The cost to taxpayers to help Tokyo Electric Power Co. compensate victims of the Fukushima nuclear disaster and clean up radioactive contamination could total 79.4 billion yen (\$810 million), according to Board of Audit estimates.

[www.asahi.com/english/list/newsfeatures.html](http://www.asahi.com/english/list/newsfeatures.html)

### Costs mount for idled nuclear reactors 2014

Now, the bill is coming due for another unbudgeted consequence of that disaster — shutting down the nation's 48 remaining nuclear reactors for costly safety reviews that could see many of them mothballed.

While their reactors have been idled, Japan's nuclear plant operators have had to spend around 8.7 trillion yen to burn replacement fossil fuels.

[www.japantoday.com/category/national/view/costs-mount-for-idled-nuclear-reactors](http://www.japantoday.com/category/national/view/costs-mount-for-idled-nuclear-reactors)

### Tohoku Electric seeks damages from TEPCO for Fukushima disaster March, 2014

Tohoku Electric Power Co. said March 27 it will seek compensation from Tokyo Electric Power Co. for damages caused by the Fukushima nuclear disaster. The Sendai-based regional utility said it will send TEPCO an initial bill of 170 million yen (\$1.67 million) to cover expenses for relocating Tohoku Electric facilities out of evacuation zones in Fukushima Prefecture, and for the purchase of protective gear to guard against radiation.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201403280043](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201403280043)

### Tepco crisis has decades to go June, 2014

Tepco claims decommissioning costs will reach 2 trillion yen (\$19.4 billion). On top of that, trillions of yen may be required for compensation and decontamination costs.

[asia.nikkei.com/Markets/Equities/Tepco-crisis-has-decades-to-go](http://asia.nikkei.com/Markets/Equities/Tepco-crisis-has-decades-to-go)

### Nuclear safety expenditures top ¥2 trillion July, 2014

The cost of taking nuclear safety measures at the nation's 10 major power companies has reached ¥2.2 trillion.

Most of the costs involve complying with the new safety standards introduced in July last year as a result of the Fukushima disaster .

[www.japantimes.co.jp/news/2014/07/05/national/nuclear-safety-expenditures-top-¥2-trillion/#.U7j6rKi-8aE](http://www.japantimes.co.jp/news/2014/07/05/national/nuclear-safety-expenditures-top-¥2-trillion/#.U7j6rKi-8aE)

### 25 trillion yen for rebuilding efforts

March, 2015

The central government has set aside 25 trillion yen (\$208 billion) to spend on rebuilding efforts from the Great East Japan Earthquake, tsunami and nuclear disaster during a five-year “intensive reconstruction period.” That period will expire at the end of fiscal 2015.

<http://ajw.asahi.com/article/views/opinion/AJ201503190009>

### Local bodies to bear part of financial burden

May, 2015

The Reconstruction Agency has announced a basic policy of restoring areas devastated by the March 2011 Great East Japan Earthquake, tsunami and ensuing nuclear crisis that would require local governments to shoulder part of the costs.

<http://mainichi.jp/english/english/newsselect/news/20150512p2a00m0na015000c.html>

### Gov't to have disaster-hit municipalities shoulder 30 billion yen in reconstruction costs

June, 2015

The Reconstruction Agency announced a plan to have municipalities in regions hit by the 2011 Great East Japan Earthquake shoulder between 1 to 3.3 percent of total costs of reconstruction projects.

<http://mainichi.jp/english/english/newsselect/news/20150604p2a00m0na016000c.html>

### Government plans ¥6.5 trillion in 2016-2020 Tohoku reconstruction spending

June, 2015

The government plans to spend about ¥6.5 trillion between fiscal 2016 and fiscal 2020 on measures to rebuild areas damaged by the March 2011 earthquake and tsunami in northeastern Japan, and the subsequent nuclear calamity.

By comparison, in fiscal 2011 to fiscal 2015, which was designated as an intensive reconstruction period, the government expects to spend a total of ¥26.3 trillion.

<http://www.japantimes.co.jp/news/2015/06/17/national/government-plans-%c2%a56-5-trillion-2016-2020-tohoku-reconstruction-spending/#.VYK6AeckeQk>

**Tohoku governors agree to chip in on ¥6.5 trillion tab for reconstruction over next five years**  
June, 2015

The governors of the three Tohoku prefectures hit hardest by the March 2011 earthquake and tsunami have accepted a request by the central government to shoulder part of costs for the reconstruction of afflicted areas. The new five-year reconstruction plan will cost ¥6.5 trillion.

<http://www.japantimes.co.jp/news/2015/06/23/national/tohoku-governors-agree-chip-%c2%a56-5-trillion-tab-reconstruction-next-five-years/#.VYkFy-ckeQk>

**TEPCO refusing to pay for decontamination work**  
December, 2015

Tokyo Electric Power Co. has refused to foot the costs of decontamination work that has been planned and conducted after a December 2013 Cabinet decision.

<http://mainichi.jp/english/articles/20151228/p2a/00m/0na/010000c>

**17,000 items wait for owners in Fukushima lost and found center**  
March, 2016

In a former gift shop along National Route 6, more than 17,000 items are housed here in a lost and found facility, including disfigured school backpacks, discolored stuffed animals and stained photos. They are belongings found in the aftermath of the Great East Japan Earthquake and tsunami and waiting to be returned to their rightful owners.

[http://ajw.asahi.com/article/0311disaster/quake\\_tsunami/AJ201603130021](http://ajw.asahi.com/article/0311disaster/quake_tsunami/AJ201603130021)

**Monument commemorates cows**  
April, 2016

A monument has been set up in the town of Tomioka to remember the cows that either died of starvation or were euthanized after being left behind following the nuclear disaster.

<http://mainichi.jp/english/articles/20160424/p2a/00m/0na/005000c>

**The public cost of Fukushima nuclear accident cleanup topped ¥4.2 trillion**  
August, 2016

A total of ¥2.34 trillion was disbursed for decontamination of affected areas, disposal of contaminated waste and an interim storage facility for tainted soil.

Tepco and six other power utilities charged their customers at least ¥327 billion in electricity rate hikes after Japan's worst-ever nuclear accident. Moreover, consumers paid ¥219.3 billion or more for Tepco, chiefly to finance the maintenance of equipment to clean up radioactive water at the plant and the operation of call centers to deal with inquiries about compensation payments.

<http://www.japantimes.co.jp/news/2016/08/28/national/public-cost-fukushima-nuclear-accident-cleanup-topped-%c2%a54-2-trillion-end-march/>

### Japan's new utilities object to footing part of Fukushima bill

November 3, 2016

Japanese independent power providers are up in arms over a government proposal to have them shoulder some costs related to the fallout of the 2011 Fukushima Daiichi nuclear disaster, including compensating victims and decommissioning old reactors.

<http://asia.nikkei.com/Politics-Economy/Policy-Politics/Japan-s-new-utilities-object-to-footing-part-of-Fukushima-bill>

### New power suppliers won't have to pay Fukushima decommissioning costs

November, 2016

The Ministry of Economy, Trade and Industry has decided not to have new power industry entrants shoulder some of the costs of decommissioning the crippled Fukushima No. 1 Nuclear Power Plant, it has been learned.

<http://mainichi.jp/english/articles/20161129/p2a/00m/0na/013000c>

### Fukushima cleanup to cost 21.5 trillion yen, double original estimate

December, 2016

The cost of dealing with the aftermath of the disaster at the Fukushima No. 1 Nuclear Power Plant will reach 21.5 trillion yen, roughly double the government's initial prediction of 11 trillion yen, preliminary calculations released on Dec. 8 by the Ministry of Economy, Trade and Industry have shown.

The government plans to have new electricity suppliers and major utilities including the plant's operator, Tokyo Electric Power Co., tack a portion of the additional costs onto power bills.

<http://mainichi.jp/english/articles/20161209/p2a/00m/0na/009000c#csidx4d7f0493dfb52de96c773f807e25a7e>

### Tepco customers have paid ¥2.4 trillion for nuclear power-related costs since 2012 rate hike

December, 2016

Customers of Tokyo Electric have paid over ¥2.4 trillion to cover nuclear-related costs since the beleaguered utility hiked electricity prices in September 2012.

The amount covers the costs of clerical work for processing applications for compensation related to the Fukushima disaster, totaling ¥25.9 billion, as well as ¥56.7 billion set aside as resources to repay the government for compensation paid on its behalf, and ¥41.4 billion in depreciation costs for two reactors at Fukushima No. 1 that were decommissioned, and for all four reactors at the Fukushima No. 2 plant, which Fukushima Prefecture and others want decommissioned.

<http://www.japantimes.co.jp/news/2016/12/30/business/tepcos-customers-shelled-%c2%a52-4-trillion-nuke-related-costs-since-2012-rate-hike/>

### Who will pay for decommissioning the Fukushima reactors?

2016

Prime Minister Shinzo Abe, the Japanese people and the country's power companies are facing a difficult question over the fate of the future of nuclear power in Japan: who will foot the costly bill for decommissioning the crippled Fukushima Daiichi nuclear power plant?

"Decommissioning is a project that will last 30 or 40 years, and we will have to pass the work on to future generations," said Akira Ono, who stepped down as the plant's manager at the end of June.

"The overall decommissioning is estimated to cost over 10 trillion yen (\$98 billion)," a government official said. But nobody mentions who will pay the bill and how.

<http://asia.nikkei.com/Business/Trends/Who-will-pay-for-decommissioning-the-Fukushima-reactors>

### Tepco again ordered to pay damages in nuclear disaster, but not state

September, 2017

A Japanese court ordered Tokyo Electric Power Company Holdings Inc. on Friday to pay damages over the nuclear disaster at its Fukushima Daiichi nuclear power plant following a deadly 2011 earthquake and tsunami, but dismissed claims against the state.

The Chiba District Court ruling follows a Maebashi District Court decision in March that found negligence on the part of both Tepco and the government played a part in the worst nuclear catastrophe since Chernobyl and ordered them to pay damages.

<https://mainichi.jp/english/articles/20170922/p2g/00m/0dm/081000c>

### Supermarket throws out the manual

November, 2017

York-Benimaru, a Japanese supermarket chain, re-opened a store 10km away from the stricken Fukushima Daiichi nuclear plant on March 30. Eight months on, what began as a partly charitable and partly experimental project is becoming a model for retailing in anything-but-ideal conditions.

The biggest hurdle is finding enough workers. Tomioka used to have 16,000 residents, but only 200 to 300 have returned.

The biggest customers for the store are the 20,000 or so Fukushima Daiichi dismantlers who live in temporary accommodations and dormitories in the vicinity of the crippled power plant.

York-Benimaru opened in the longtime no-go zone out of a sense of responsibility. But at the end of the day, a business has to be profitable. The chain spent more than a year looking for a way to take care of its social responsibilities and business.

<https://asia.nikkei.com/Japan-Update/Fukushima-supermarket-throws-out-the-manual-and-adapts>

### Local bodies that made loans struggling to get repayments

March, 2018

Municipal governments that loaned money to people affected by the March 2011 Great East Japan Earthquake and tsunami are struggling to collect repayments in some cases, causing a dilemma. Local governments need the money to help with their programs of recovery but if they are too strict regarding collections, then they can be accused of going after vulnerable victims.

<http://mainichi.jp/english/articles/20180306/p2a/00m/0na/015000c>

### Scrapping crippled Fukushima plant to cost ¥220 bil annually

2018

Work to scrap the crippled Fukushima Daiichi nuclear plant and deal with radioactive water buildup at the site is expected to cost around 220 billion yen annually over the three-year period from fiscal 2018.

<https://japantoday.com/category/national/scrapping-crippled-fukushima-plant-to-cost-220-bil.-yen-annually>

### TEPCO at fault for balking at payouts to disaster victims

February, 2019

Nearly eight years have passed since the 2011 Fukushima nuclear disaster, yet many victims seeking compensation for damages from Tokyo Electric Power Co., face uncertainty as the talks are getting nowhere. This is an outrageous situation.

The number of cases in which TEPCO rejected an out-of-court settlement proposal from a government body for so-called alternative dispute resolution, or ADR, has increased sharply since last year.

<http://www.asahi.com/ajw/articles/AJ201902090021.html>

### Think tank: cost to address disaster up to 81 trillion yen

March, 2019

A private think tank puts the cost of addressing the 2011 Fukushima nuclear disaster between 35 trillion yen and 81 trillion yen (\$315 billion and \$728 billion), compared with the government estimate of 22 trillion yen.

<http://www.asahi.com/ajw/articles/AJ201903100044.html>

### Government to buy fish

September, 2021

TEPCO recently announced it would construct a tunnel to discharge radioactive water about 1 kilometer offshore. At the same time, the government unveiled its strategy for responding to concerns the discharge could cause irreparable reputational damage to local businesses, the fishing industry, in particular.

The government decided to establish a fund to buy catches that can be put in frozen storage. The fund is framed as an emergency relief measure to assist fishermen and fisheries businesses expecting to face sharp drops in sales.

<https://www.asahi.com/ajw/articles/14435063>

## Compensation

### Govt to pay compensation for radiation damage

March, 2011

Farmers and businesses near the troubled Fukushima No. 1 nuclear power plant will face huge losses caused by radiation leaks from the power station, and the government could pay between 120 billion yen and 240 billion yen based on the Compensation for Nuclear Damages Law, which stipulates the accountability of nuclear power plant operators when accidents occur. The government would also likely have to shoulder any portion Tokyo Electric Power Co.--the plant's operator--was financially incapable of paying.

The law stipulates a nuclear plant operator should, in principle, pay for damages caused by a nuclear accident at their plants.

In the event of natural disasters such as earthquakes and tsunami, however, the government is obliged to cover up to 120 billion yen in losses caused by each nuclear plant. The government is leaning toward paying for damages caused by radiation leaks at the Fukushima No. 1 plant. It could face an additional 120 billion yen to cover losses incurred by the evacuation order around the Fukushima No. 2 plant.

<http://www.yomiuri.co.jp/dy/national/T110323003541.htm>

### Compensation framework not clear

April, 2011

TEPCO began paying provisional compensation to evacuees from the nuclear power plant on April 26, but the overall compensation framework is not yet clear.

The government proposed to set no limits on TEPCO's liability. That would be in line with the law on compensation for nuclear accidents, which stipulates that a company that caused an accident bears unlimited liability.

The total bill would be in the range of trillions of yen.

But a senior official of a government ministry said: "Banks and businesses have urged the government to cap TEPCO's compensation."

Three megabanks and other financial institutions, which together extended 2 trillion yen in emergency loans to TEPCO after the accident, fear that the company will not be able to repay them because of the compensation liabilities.

"The market will not favorably evaluate the government proposal," said a senior official at a major bank. "If liabilities are unlimited, credit rating agencies will conclude that TEPCO is insolvent."

Under the draft plan, electric power companies that operate nuclear power plants would jointly set up an agency to enable the payment of compensation.

If TEPCO was unable to pay all the compensation, the government would provide public funds to the agency and the agency would lend the money to TEPCO.

Under the government proposal, the public funds would be repaid by the electric power companies.

But if upper limits were set on TEPCO's compensation bill, the government would be required to provide supplementary payments to the victims.

<http://www.asahi.com/english/TKY201104270132.html>

### **Farmers demand Fukushima compensation but obstacles remain**

April, 2011

Farmers demanding compensation for the accident at the Fukushima No. 1 nuclear power plant paraded cattle in front of Tokyo Electric Power Co.'s headquarters.

<http://www.asahi.com/english/TKY201104270132.html>

### **Money not reaching victims**

May, 2011

Only a tiny fraction of the money donated to help survivors of the Great East Japan Earthquake has made it into the hands of disaster victims nearly two months since the devastation of March 11.

The standstill has been attributed to lack of staff at local governments as well as difficulty in identifying recipients and informing them the donations are available. Also, many victims have lost their bankbooks and automatic teller machine cards, making it difficult to transfer payments.

Reissuing ATM cards and bankbooks can take time.

<http://www.yomiuri.co.jp/dy/national/T110504002700.htm>

### **Serious inequalities in disaster relief donation distribution**

May, 2011

Serious inequality has emerged in the allocation of citizens' donations for the surviving family of those who died in the March 11 quake and tsunami because the range of relatives entitled to payments is different in the three hardest-hit prefectures.

The Fukushima Prefectural Government has decided to pay relief money to the brothers and sisters of victims if the victims had no relative of a direct line, while the Iwate and Miyagi prefectural governments exclude victims' siblings.

<http://mdn.mainichi.jp/mdnnews/news/20110514p2a00m0na015000c.html>

### **U.S. sailors sue Tepco for millions for falsely downplaying Fukushima radiation exposure** December, 2012

In July, the Nuclear Damage Liability Facilitation Fund took control of Tepco in return for a ¥1 trillion capital injection after the disaster left the utility on the brink of bankruptcy. The utility received ¥1.4 trillion in state funds to compensate those affected by the disaster.

[www.japantimes.co.jp/text/nn20121228a3.html](http://www.japantimes.co.jp/text/nn20121228a3.html)

### **Hundreds seek damages in Japan nuclear crisis** May, 2013

Hundreds of residents and evacuees from just outside Fukushima say they have been unfairly denied full compensation despite high radiation levels in their area caused by Japan's 2011 nuclear disaster.

Nearly 700 residents from the Hippo district of Miyagi prefecture, just north of Fukushima, are demanding equal compensation to the residents of Fukushima prefecture where the accident occurred.

[mainichi.jp/english/english/newsselect/news/20130521p2g00m0dm075000c.html](http://mainichi.jp/english/english/newsselect/news/20130521p2g00m0dm075000c.html)

### **Nuclear redress gap angers Fukushima residents** March, 2014

A sense of unfairness is spreading among Fukushima Prefecture residents over different amounts of compensation over the Fukushima No. 1 Nuclear Power Plant meltdowns in 2011. The gap stems from guidelines by the government's Dispute Reconciliation Committee for Nuclear Damage Compensation, which sets redress according to evacuation zones.

[mainichi.jp/english/english/newsselect/news/20140303p2a00m0na013000c.html](http://mainichi.jp/english/english/newsselect/news/20140303p2a00m0na013000c.html)

### **Out-of-court settlement cut nuke disaster victim's compensation without explanation** July, 2014

An out-of-court center for disputes about compensation to victims of the Fukushima nuclear disaster used a lower-than-standard compensation base for those who died during evacuation, it has been learned.

In the case of at least one man, the center did not explain why it recommended a lower compensation amount.

[mainichi.jp/english/english/newsselect/news/20140710p2a00m0na014000c.html](http://mainichi.jp/english/english/newsselect/news/20140710p2a00m0na014000c.html)

**Ministry, TEPCO seek to end compensation for Fukushima businesses in Feb. 2016**  
December, 2014

The government and Tokyo Electric Power Co. (TEPCO) have proposed to Fukushima Prefecture's commerce and industry federation a plan to end nuclear disaster compensation for businesses in February 2016.

An executive of local inspection firm Tohoku Ekkususen, which is based in the town of Namie, whose residents remain evacuated, says the company will have to close down if its compensation payments are withdrawn.

<http://mainichi.jp/english/english/newsselect/news/20141227p2a00m0na007000c.html>

**Gov't, TEPCO plan 2-year lump sum payments for firms in Fukushima evacuated areas**  
June, 2015

The government and Tokyo Electric Power Co. (TEPCO) disclosed on June 7 that they have informally decided to pay two years' worth of compensation in a lump sum to the operators of businesses in areas that remain under evacuation orders following the outbreak of the Fukushima nuclear disaster.

<http://mainichi.jp/english/english/newsselect/news/20150608p2a00m0na005000c.html>

**Compensation increased to ¥7 trillion**  
July, 2015

The government has approved an increase in compensation payments for the Fukushima nuclear crisis to ¥7.07 trillion as tens of thousands of evacuees remain in temporary housing more than four years after the disaster.

The increase, agreed after a request by Tepco, adds to the bill for taxpayers for the disaster.

<http://www.japantimes.co.jp/news/2015/07/28/national/fukushima-compensation-increased-%c2%a57-trillion/#.Vbd7HbckeQk>

**TEPCO facing compensation demands from dozens of local gov'ts**  
October, 2015

Seventeen prefectures including Fukushima Prefecture and seven major cities have filed compensation claims totaling 56.36 billion yen against Tokyo Electric Power Co.

TEPCO has refused to pay over 20 billion yen of the claimed amount. The utility has not agreed to cover the drop in residence tax and other tax revenues in Fukushima Prefecture, caused by many moving out the prefecture due to the disaster.

TEPCO has agreed to pay a total of 36.29 billion yen in compensation for the drop in revenues of public businesses such as those managing water and sewage systems, the cost of

radiation tests on school meals and agricultural and livestock products, and the cost of processing and storing waste contaminated with radioactive substances, among other damage.

<http://mainichi.jp/english/english/newsselect/news/20151012p2a00m0na006000c.html>

### **Tainted cities irate over Tepco's slow compensation payments**

November, 2015

Tokyo Electric Power Co. has paid a mere 11.4 percent of the ¥55.3 billion in nuclear redress claims filed by municipalities damaged by the Fukushima disaster. The municipalities demand compensation because the evacuations decimated their populations, causing residential and fixed asset tax revenues to evaporate. Rising labor costs are another reason as new officials had to be hired to deal with the nuclear crisis.

<http://www.japantimes.co.jp/news/2015/11/15/national/tainted-cities-irate-tepcos-slow-compensation-payments-survey/>

### **2.4 trillion yen in Fukushima crisis compensation costs to be tacked onto power bills**

December, 2016

The Economy, Trade and Industry Ministry plans to require power companies including new market entrants to tack approximately 2.4 trillion yen in compensation costs for those affected by the Fukushima nuclear crisis onto power bills.

<http://mainichi.jp/english/articles/20161210/p2a/00m/0na/002000c>

### **Govt, TEPCO ruled liable for N-crisis for 1st time**

March, 2017

A district court handed down on Friday a ruling recognizing for the first time ever the national government's responsibility for compensation to evacuees from the March 2011 nuclear accident at Tokyo Electric Power Company Holdings Inc.'s Fukushima No. 1 power plant.

<http://the-japan-news.com/news/article/0003584893>

### **Court orders TEPCO, state to pay evacuees**

March, 2017

A court here on March 17 held the government and Tokyo Electric Power Co. accountable for the Fukushima nuclear disaster and ordered them to pay compensation to evacuees.

The court ordered the government and TEPCO to pay a total of 38.55 million yen (\$340,000) to 62 plaintiffs who evacuated to Gunma Prefecture after the disaster started to unfold at the Fukushima No. 1 nuclear power plant in March 2011.

<http://www.asahi.com/ajw/articles/AJ201703170069.html>

### TEPCO compensates individual evacuees

March, 2017

TEPCO currently pays 100,000 yen a month to each person who was living in government-designated evacuation zones around the nuclear plant. The utility has also paid 40,000 yen to 720,000 yen to each person who lived outside the evacuation zones but evacuated “voluntarily.”

<http://www.asahi.com/ajw/articles/AJ201703170069.html>

### Gov't, TEPCO ordered to pay damages to evacuees

March, 2018

A Japanese district court on Thursday ordered the state and the operator of the crippled Fukushima nuclear plant to pay damages to evacuees over the March 2011 earthquake and tsunami disaster.

<http://mainichi.jp/english/articles/20180315/p2g/00m/0dm/051000c>

### Courts award damages in excess of guidelines

March, 2018

All the seven rulings so far, including on cases with TEPCO as the sole defendant, have awarded damages in excess of the amounts prescribed in the guidelines that have been set forth by a government committee. The rulings indicate the government guidelines, along with TEPCO's compensation standards that are based thereon, have failed to address the reality of suffering that is at once diverse and serious.

<http://www.asahi.com/ajw/articles/AJ201803260013.html>

### Top court orders TEPCO to pay compensation for voluntary evacuation

December, 2018

The Supreme Court on Dec. 13 upheld the lower court ruling ordering Tokyo Electric Power Co. to pay about 16 million yen in compensation to a man in his 40s and his family that voluntarily evacuated Fukushima Prefecture to western Japan.

TEPCO had already paid around 2.9 million yen to the family of five based on the government's compensation standards. However, the man and his family deemed the amount inadequate and filed a lawsuit demanding about 180 million yen from TEPCO.

<https://mainichi.jp/english/articles/20181218/p2a/00m/0na/021000c>

## Decontamination cost

September, 2021

The government has so far spent some 3 trillion yen (\$27.45 billion) on decontaminating areas subject to the evacuation order. This effort has allowed some 14,000 residents, or 30% of the local population, to return home. It will cost taxpayers a huge additional amount of money to accelerate the cleanup work in the difficult-to-return zone, where nearly 22,000 people are still registered as residents.

<https://www.asahi.com/ajw/articles/14441441>

## Opposition

### The Fukushima Syndrome

September, 2011

The disaster was vindication for people like Atsuko Ogasawara. Many in her fishing community had decided to take compensation payments and buyouts from a power company busily establishing a nuclear plant on the town's outskirts. The Ogasawaras weren't among them. First Atsuko's mother refused to take the company's ever escalating offers of cash for her small wooden home. Then, when she died, Atsuko continued the resistance. Her's is the last home standing - all but enveloped by the power plant - but she's not giving in. And her stand is inspiring others across Japan mobilizing against the construction of nuclear power plants.

<http://www.abc.net.au/foreign/content/2011/s3317005.htm>

### Fukushima woman raises voice against nuclear power

June, 2012

Like many, Ruiko Muto made her first stand against nuclear energy in Japan soon after the Chernobyl accident of 1986. She joined demonstrations and laid down in front of trucks delivering material to nuclear construction sites.

"We protested, we went to court, but in the end nothing changed," she says. "So many lost heart and dwindled away. Meanwhile the number of reactors grew."

"We've never had a chance to look back until now," Muto says. "After what happened at the Fukushima plant I first thought, 'Finally, it's time for change' but instead the government is set on restarting."

Yet the reluctant orator is still fighting. On June 11, Muto led a group of 1,324 plaintiffs to the Fukushima courthouse to file a lawsuit against TEPCO and the Japanese government, for criminal negligence resulting in death. It's not the first such attempt: Last July two journalists went to Tokyo prosecutors but received no reply.

A case would be practically impossible: Prosecutors would have to prove that radiation emitted so far has resulted in injury when, officially and scientifically, the consensus is that the radiation is too miniscule to affect health.

"At the very least, we've accomplished something if we can point out this absurdity," Muto says.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201206160009](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201206160009)

### Public should use stopped nuclear reactors to consider atomic power-free society

September, 2013

We have insisted that nuclear power plants should be permanently done away with as early as possible, because we believe it is extremely risky to keep them operating in this quake-prone archipelago.

The situation in Fukushima has shown the type of serious disasters that such a nuclear plant accident can lead to. Considering the accumulating radioactive water, the decontamination of areas tainted by radioactive substances, and the situation of those who lost their homes, jobs and farmland, the costs of such an accident are intolerably huge. There is also no prospect for deciding how to dispose of radioactive waste, which only keeps increasing as long as nuclear power stations remain in operation. Continuing to operate nuclear plants accomplishes nothing beyond leaving a heavy burden upon future generations.

[mainichi.jp/english/english/perspectives/news/20130914p2a00m0na014000c.html](http://mainichi.jp/english/english/perspectives/news/20130914p2a00m0na014000c.html)

### **Ex-top U.S. nuclear regulator counsels end to atomic power** September, 2013

The ongoing crisis at the Fukushima No. 1 plant is a sign that the world needs to seriously rethink nuclear safety and consider possibly ending its dependence on atomic power, Gregory Jaczko, the former chairman of the U.S. Nuclear Regulatory Commission, said Tuesday in Tokyo.

“When you look at what happened around the Fukushima Daiichi (No. 1) area, it’s simply unacceptable,” as tens of thousands of people have been unable to return to their homes due to radioactive contamination, said Gregory Jaczko, who served as the top U.S. nuclear regulatory official for nearly three years until July 2012.

[www.japantimes.co.jp/news/2013/09/24/national/ex-top-u-s-nuclear-regulator-counsels-end-to-atomic-power/#.UkZKDLyGpGF](http://www.japantimes.co.jp/news/2013/09/24/national/ex-top-u-s-nuclear-regulator-counsels-end-to-atomic-power/#.UkZKDLyGpGF)

### **Nearly one-third of localities call for end to nuclear power** 2014

Nearly one-third of the nation’s local assemblies, including those at the prefectural level, have submitted statements calling for the abolition of nuclear power plants to the Diet since the Fukushima crisis in 2011.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201401190021](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401190021)

### **Famous anti-nuclear mayor in Fukushima Pref. wins re-election** January, 2014

Minamisoma Mayor Katsunobu Sakurai was re-elected Jan. 19, capitalizing on his campaign against nuclear power which drew global sympathy and attention in the aftermath of the Fukushima nuclear disaster.

[mainichi.jp/english/english/newsselect/news/20140120p2a00m0na008000c.html](http://mainichi.jp/english/english/newsselect/news/20140120p2a00m0na008000c.html)

## Angry scenes as TEPCO shareholders demand end to nuclear power 2014

Furious shareholders of the company that runs Japan's crippled Fukushima nuclear power plant joined campaigners on Thursday to demand the permanent closure of the utility's nuclear plants as it held its annual meeting.

Katsutaka Idogawa, former mayor of Futaba town, which hosts the plant, lashed out at supporters of nuclear power, including TEPCO's management, urging them to put their own ancestral land at risk. "Why don't you get exposed to radiation yourself? Why don't you lose your homeland?" he asked as shareholders filed into Tokyo International Forum for the company's annual meeting.

[www.japantoday.com/category/national/view/angry-scenes-as-tepc-shareholders-demand-end-to-nuclear](http://www.japantoday.com/category/national/view/angry-scenes-as-tepc-shareholders-demand-end-to-nuclear)

## Ex-PM Koizumi likens nuclear plants to 'time bombs' February, 2015

Former Prime Minister Junichiro Koizumi likened nuclear plants in Japan to "time bombs" in reiterating his opposition to nuclear power Tuesday. "Nuclear plants are like time bombs. They are never safe" in a country where earthquakes are frequent and active volcanoes abound, said Koizumi.

<http://mainichi.jp/english/english/newsselect/news/20150218p2g00m0dm026000c.html>

## Residents of proposed nuke waste dump venues block Environment Ministry survey September, 2015

Residents of three Miyagi Prefecture towns selected as candidate sites for hosting a permanent nuclear waste disposal facility barred the entry of Environment Ministry officials seeking to visit to carry out survey work on Monday.

<http://www.japantimes.co.jp/news/2015/09/01/national/residents-proposed-miyagi-nuke-waste-dump-venues-block-environment-ministry-officials-survey/#.VeUXiM6HkZ1>

## 57% oppose rebooting nuclear reactors, 29% in favor 2016

Fifty-seven percent of citizens nationwide are against restarting nuclear power plants, nearly double the 29 percent who want reactors brought back online, according to an Asahi Shimbun survey.

<http://www.asahi.com/ajw/articles/AJ201610180076.html>

**84% didn't trust the government or utilities to be truthful**  
September, 2021

According to a study in an in-house journal of the Atomic Energy Society of Japan, 84% of survey respondents in 2012 said that they didn't trust the government or utilities to release "truthful information" to the public about safety issues at nuclear plants.

<https://apjef.org/2021/17/Simms.html>

## Residents' Action

### Fukushima residents to sue gov't for inaction on nuke disaster support law

August, 2013

A group of residents from Fukushima Prefecture is poised to sue the government for its "illegal" failure to implement provisions of a law to support nuclear disaster victims more than a year after its enactment.

[mainichi.jp/english/english/newsselect/news/20130820p2a00m0na013000c.html](http://mainichi.jp/english/english/newsselect/news/20130820p2a00m0na013000c.html)

### Hundreds protest dropped charges over Fukushima crisis

March, 2014

Hundreds rallied in Tokyo Saturday to protest Japanese prosecutors' decision to drop charges over the Fukushima nuclear crisis, with no one yet punished nearly three years after the "man-made" disaster.

No one is officially recorded as having died as a direct result of radiation released when a 9.0-magnitude earthquake crashed into the Fukushima nuclear plant in March 2011, swamping cooling systems and sparking reactor meltdowns.

However, some Fukushima residents committed suicide owing to fears over radiation, while others died during evacuation. Official data released last week showed that 1,656 people have died in the prefecture from stress and other illnesses related to the disaster three years ago.

[www.japantoday.com/category/national/view/hundreds-protest-dropped-charges-over-fukushima-crisis](http://www.japantoday.com/category/national/view/hundreds-protest-dropped-charges-over-fukushima-crisis)

### TEPCO shareholders to demand disclosure of accident interviews

June, 2014

A group of Tokyo Electric Power Co. shareholders looks set to file a lawsuit to force the government to release records of interviews it had with 772 people to determine the cause of the Fukushima nuclear disaster in 2011.

The group first plans to ask the Cabinet Secretariat, which keeps the records, to disclose them. If it refuses, as is expected, the group will immediately file an administrative lawsuit with the Tokyo District Court.

It is also waging a separate legal action against TEPCO to determine the responsibility of company executives for the nuclear accident.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201406050055](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201406050055)

### Fukushima residents torn over nuclear waste storage plan

March, 2015

Norio Kimura lost his wife, father and 7-year-old daughter Yuna in the March 2011 tsunami. Now, he fears he may lose his land, too, as Japan's government wants to build a storage site for 30 million tons of radioactive debris on his former doorstep.

<http://www.japantoday.com/category/national/view/fukushima-residents-torn-over-nuclear-waste-storage-plan>

### Residents suing government for lifting evacuation advisories

April, 2015

Hundreds of residents here plan to sue the central government for lifting evacuation advisories near the crippled Fukushima nuclear plant, saying the decision endangered their lives because radiation levels remained high around their homes.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201504010062>

### Over 3,000 Fukushima residents seek compensation for mental distress

July, 2015

More than 3,000 residents here have filed for compensation for mental distress over radiation emanating from the Fukushima No. 1 Nuclear Power Plant disaster through an out-of-court settlement system, it has been learned.

<http://mainichi.jp/english/english/newsselect/news/20150721p2a00m0na014000c.html>

### 117 Fukushima town residents sue TEPCO, gov't

September, 2015

Over 100 residents of Namie, Fukushima Prefecture, have jointly sued Tokyo Electric Power Co. the operator of the crippled nuclear plant, and the central government.

<http://mainichi.jp/english/english/newsselect/news/20150930p2a00m0na015000c.html>

### Two-thirds of Japanese opposed to nuclear power

September, 2021

Two-thirds of Japanese want either an immediate or a gradual termination of the use of nuclear power, and the most frequently cited reason for that desire is concern about safety.

<https://apjff.org/2021/17/Simms.html>

## Legal

### Complaint filed against government officials over data

August, 2012

The Tokyo District Public Prosecutors Office has accepted a complaint filed against 27 officials of government agencies for their distribution of yet-to-be-released data concerning Japan's nuclear fuel cycle to power companies before they were presented to a subcommittee of the Atomic Energy Commission.

[www.yomiuri.co.jp/dy/national/T120816005002.htm](http://www.yomiuri.co.jp/dy/national/T120816005002.htm)

### U.S. sailors sue Tepco for falsely downplaying radiation exposure

December, 2012

Tokyo Electric Power Co. is being sued for tens of millions of dollars by eight U.S. Navy sailors who claim that they were unwittingly exposed to radiation from the Fukushima No. 1 nuclear plant meltdowns and that Tepco lied about the dangers.

The sailors were aboard the nuclear-powered aircraft carrier USS Ronald Reagan was involved in the Operation Tomodachi disaster relief operations.

[www.japantimes.co.jp/text/nm20121228a3.html](http://www.japantimes.co.jp/text/nm20121228a3.html)

### Ministry may sue Tepco for ¥16 billion

June, 2013

The Environment Ministry is considering filing a lawsuit against Tokyo Electric Power Co., seeking payment of about ¥16.5 billion in decontamination expenses.

The unpaid amount includes expenses for decontamination work by the government near the Fukushima No. 1 facility undertaken based on a special law to deal with radioactive contamination, as well as central government subsidies allocated to local governments that conducted decontamination work. Under the law, the government is supposed to cover decontamination expenses first and ask Tepco to reimburse the sum later. Tepco's failure to pay means the government is continuing to use taxpayer money for decontamination projects.

[www.japantimes.co.jp/news/2013/06/03/national/ministry-may-sue-tepco-for-¥16-billion/#.Ua-rz-tXFqB](http://www.japantimes.co.jp/news/2013/06/03/national/ministry-may-sue-tepco-for-¥16-billion/#.Ua-rz-tXFqB)

### Suit over patient deaths

June, 2013

A damages suit has been filed against Tokyo Electric Power Co. by 15 relatives of four patients who died in 2011 in the early days of the Fukushima No. 1 nuclear plant meltdown

catastrophe due to alleged improper medical care blamed on chaotic evacuations and power outages.

The central government has acknowledged that the four deaths were nuclear disaster-related.

[www.japantimes.co.jp/news/2013/06/12/national/suit-over-patient-deaths/#.UblRlUvRzK1](http://www.japantimes.co.jp/news/2013/06/12/national/suit-over-patient-deaths/#.UblRlUvRzK1)

### **Fukushima residents to sue gov't for inaction on nuke disaster support law**

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A group of residents from Fukushima Prefecture is poised to sue the government for its "illegal" failure to implement provisions of a law to support nuclear disaster victims more than a year after its enactment.

[mainichi.jp/english/english/newsselect/news/20130820p2a00m0na013000c.html](http://mainichi.jp/english/english/newsselect/news/20130820p2a00m0na013000c.html)

### **Fukushima victims angered at decision not to prosecute officials**

September, 2013

Survivors of the 2011 Fukushima nuclear accident expressed disappointment and anger at the announcement Sept. 9 by the Tokyo District Public Prosecutors Office that it will not seek to indict any high-ranking government or Tokyo Electric Power Co. officials connected with the meltdown.

"How can they say they conducted a thorough investigation when they did not carry out any raids on relevant offices?" Hiroyuki Kawai, lead lawyer for a group of about 15,000 disaster victims, asked.

"From the very beginning, it was not an investigation seeking indictments, but rather, one conducted so no indictments would be handed down," the lawyer said.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201309100060](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309100060)

### **Hundreds protest dropped charges over Fukushima crisis**

March, 2014

Hundreds rallied in Tokyo Saturday to protest Japanese prosecutors' decision to drop charges over the Fukushima nuclear crisis, with no one yet punished nearly three years after the "man-made" disaster.

[www.japantoday.com/category/national/view/hundreds-protest-dropped-charges-over-fukushima-crisis](http://www.japantoday.com/category/national/view/hundreds-protest-dropped-charges-over-fukushima-crisis)

### **1,415 sue builders of Fukushima nuclear plant**

2014

About 1,400 people filed a joint lawsuit against three companies that manufactured reactors at Japan's Fukushima Daiichi nuclear plant.

Current regulations give manufacturers immunity from liability in nuclear accidents. Under Japan's nuclear damage compensation policy, only the operator of the plant, Tokyo Electric Power Co, has been held responsible for the accident.

The plaintiffs said the manufacturers — Toshiba, GE and Hitachi — failed to make needed safety improvements to the four decade-old reactors at the Fukushima plant.

[www.japantoday.com/category/national/view/1415-sue-builders-of-fukushima-nuclear-plant](http://www.japantoday.com/category/national/view/1415-sue-builders-of-fukushima-nuclear-plant)

### TEPCO shareholders to demand disclosure of accident interviews

June, 2014

A group of Tokyo Electric Power Co. shareholders looks set to file a lawsuit to force the government to release records of interviews it had with 772 people to determine the cause of the Fukushima nuclear disaster in 2011.

The group first plans to ask the Cabinet Secretariat, which keeps the records, to disclose them. If it refuses, as is expected, the group will immediately file an administrative lawsuit with the Tokyo District Court.

It is also waging a separate legal action against TEPCO to determine the responsibility of company executives for the nuclear accident.

[ajw.asahi.com/article/0311disaster/fukushima/AJ201406050055](http://ajw.asahi.com/article/0311disaster/fukushima/AJ201406050055)

### Fukushima families sue prefecture, gov't for radiation exposure during meltdown crisis

August, 2014

A group of parents and children who were residing in Fukushima Prefecture when the nuclear disaster unfolded in March 2011 is suing the central and prefectural governments for failing to take sufficient steps to protect children from radiation exposure during the crisis.

[www.japantimes.co.jp/news/2014/08/30/national/fukushima-families-sue-prefecture-government-for-radiation-exposure-during-meltdown-crisis/#.VASFw0i-8aF](http://www.japantimes.co.jp/news/2014/08/30/national/fukushima-families-sue-prefecture-government-for-radiation-exposure-during-meltdown-crisis/#.VASFw0i-8aF)

### Residents suing government for lifting evacuation advisories

April, 2015

Hundreds of residents here plan to sue the central government for lifting evacuation advisories near the crippled Fukushima nuclear plant, saying the decision endangered their lives because radiation levels remained high around their homes.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201504010062>

**Plaintiffs soon to exceed 10,000 in lawsuits against TEPCO seeking extra compensation**  
May, 2015

Dissatisfied with government-orchestrated compensation, the number of local residents and others affected by the Fukushima nuclear crisis who have sued Tokyo Electric Power Co. is expected to soon top 10,000 plaintiffs.

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201505050033>

**Plaintiffs suing over Fukushima nuclear disaster form nationwide network**  
May, 2015

Ten groups of plaintiffs in lawsuits and other legal actions over the Fukushima nuclear disaster have joined forces to demand compensation and accountability from the government and Tokyo Electric Power Co.

[http://ajw.asahi.com/article/behind\\_news/social\\_affairs/AJ201505260003](http://ajw.asahi.com/article/behind_news/social_affairs/AJ201505260003)

**Over 3,000 Fukushima residents seek compensation for mental distress**  
July, 2015

More than 3,000 residents here have filed for compensation for mental distress over radiation emanating from the Fukushima No. 1 Nuclear Power Plant disaster through an out-of-court settlement system, it has been learned.

<http://mainichi.jp/english/english/newsselect/news/20150721p2a00m0na014000c.html>

**117 Fukushima town residents sue TEPCO, gov't**  
September, 2015

Over 100 residents of Namie, Fukushima Prefecture, have jointly sued Tokyo Electric Power Co., the operator of the crippled nuclear plant, and the central government.

<http://mainichi.jp/english/english/newsselect/news/20150930p2a00m0na015000c.html>

**Court denies disclosure of Tepco officials' testimony about Fukushima crisis**  
December, 2016

The Tokyo District Court has dismissed an appeal by Tepco shareholders calling for disclosure of a government panel's records of questioning of executives over the March 2011 crisis at the Fukushima No. 1 nuclear power plant.

<http://www.japantimes.co.jp/news/2016/12/27/national/court-denies-disclosure-tepco-officials-testimony-fukushima-crisis/>

**Chiba court recognizes nuke disaster evacuees' 'loss of hometown' for first time**  
September, 2017

When on Sept. 22 the Chiba District Court ordered Tokyo Electric Power Co. (TEPCO) to pay some 376 million yen in damages to a group of Fukushima nuclear disaster evacuees, it gave concrete recognition to the evacuees' loss -- of hometowns, jobs and personal relationships -- for the first time.

<http://mainichi.jp/english/articles/20170923/p2a/00m/0na/018000c>

**Seventh court orders TEPCO to pay evacuees from Fukushima**  
March, 2018

A seventh court ruling has ordered Tokyo Electric Power Co. to pay compensation to evacuees. The Iwaki branch awarded a compensation amount that went beyond the central government's guidelines.

<http://www.asahi.com/ajw/articles/AJ201803230033.html>

**Courts rule government is responsible**  
March, 2018

The Kyoto and Tokyo district courts have ruled that the government is responsible, along with Tokyo Electric Power Co. (TEPCO), for the disaster at the utility's Fukushima No. 1 nuclear power plant.

The opinion of the judiciary says the tsunami was foreseeable and the disaster could have been prevented if only the government had appropriately exercised its authority.

<http://www.asahi.com/ajw/articles/AJ201803260013.html>

**Court accepts statement in TEPCO trial to show negligence**  
September, 2018

The Tokyo District Court accepted the written statement of a former Tokyo Electric Power Co. executive who claimed that his boss abruptly postponed tsunami prevention measures at the Fukushima No. 1 nuclear power plant in 2008.

<http://www.asahi.com/ajw/articles/AJ201809060062.html>

## Responsibility

### Public split on nuclear energy, but long-time warning deserves serious debate

April, 2011

Katsuto Uchihashi is an economics expert who has long been blowing the whistle on nuclear energy.

He says that the ‘safety myth’ of nuclear energy that the Japanese public has been fed for years has no basis. The pros and cons of nuclear energy have never been put up to nationwide public debate via the Diet or the media. The issue has been governed by an economic structure whose purpose is the relentless pursuit of profit, and the very parties who should be challenging questionable claims — including academics and the media — are knee deep in this web of interests and profit. It is this reality, Uchihashi declares, that was exposed by the March 11 disaster.

In one of his books Uchihashi quotes a war historian's analysis of the reason for Japan's defeat in World War II.

"It originated in the bad habit -- unique to the Japanese government -- of lending its ears only to favorable information while ignoring the bad, but it also exposed the flaws of the Japanese decision-making process in which people gather but do not debate, debate but do not decide ... It takes a long time to make a decision, but once one is reached, it is not easily changed. Japan went about war -- which by nature entails constantly changing circumstances -- in this way, the worst way possible, and found itself lagging behind time and time again, which ultimately led to its demise ..."

<http://mdn.mainichi.jp/perspectives/news/20110426p2a00m0na001000c.html>

### Stand tall on reconstruction

June, 2011

The government's response to the disaster is not speedy or systematic partly because of a mistaken political initiative that eliminates bureaucrats' involvement. What makes things worse is the government's weak sense of responsibility.

<http://www.yomiuri.co.jp/dy/national/T110626002373.htm>

### Head of investigation commission defends report

2012

The head of a major investigation into Japan's nuclear disaster is defending his report against criticism that his panel avoided blaming individuals and instead blamed elements of the nation's culture. Kiyoshi Kurokawa, a doctor who headed the Fukushima Nuclear Accident Independent Investigation Commission, said that the catastrophe was “Made in Japan,” underlining collusion between the regulators and the utility.

[www.japantoday.com/category/national/view/head-of-fukushima-investigation-commission-defends-report](http://www.japantoday.com/category/national/view/head-of-fukushima-investigation-commission-defends-report)

### Investigators fault nuclear culture

September, 2012

The failure of utilities and nuclear regulatory authorities to prepare for monster tsunami and other crises, made obvious by last year's catastrophe at the Fukushima No. 1 power plant, was the result of a Japanese institutional problem that blurred where the responsibilities lie.

That conclusion was shared by the chairmen of three independent panels probing the Fukushima crisis at a recent symposium in Tokyo organized by the Science Council of Japan.

[www.japantimes.co.jp/text/nm20120906f1.html](http://www.japantimes.co.jp/text/nm20120906f1.html)

### PM Kan

February, 2013

Much as after World War II — when guilt was sublimated and liability evaded — the aftermath of the explosions and meltdowns at the Fukushima No. 1 nuclear power plant has seen a concerted campaign of obfuscation and coverup by business leaders and government officials in what might be called “The Great Nasuri-tsukeru Hoax,” with nasuri-tsukeru meaning “shifting the blame to others.”

[www.japantimes.co.jp/opinion/2013/02/03/commentary/citizens-lack-of-resolve-leaves-nuclear-door-wide-open-for-next-disaster/#.UQ3AqejW4y4](http://www.japantimes.co.jp/opinion/2013/02/03/commentary/citizens-lack-of-resolve-leaves-nuclear-door-wide-open-for-next-disaster/#.UQ3AqejW4y4)

### TEPCO takes blame for Fukushima nuclear crisis

March, 2013

The utility that operates Japan's crippled atomic plant said Friday that it deserves most of the blame for the country's nuclear crisis, in its strongest remarks about its own shortcomings.

[www.japantoday.com/category/national/view/tepcu-takes-blame-for-fukushima-nuclear-crisis](http://www.japantoday.com/category/national/view/tepcu-takes-blame-for-fukushima-nuclear-crisis)

### “No one wants to be held accountable”

April, 2015

As one central government official said, "It all comes down to the fact that no one wants to be held accountable."

<http://mainichi.jp/english/english/newsselect/news/20150417p2a00m0na006000c.html>

### Lack of clarity around responsibility remains

March, 2016

Seismologist Kunihiro Shimazaki said he doubts anything has changed. “I see lack of clarity and responsibility in committees of experts organized by the state,” he said.

“In the world of science, we can together look for facts and can reach agreement to a certain extent. That is not the case when the state is involved, and mistakes will be repeated if we are not aware of the difference.”

Science is used for decision-making by the state, but scientists do not challenge how this is done, he said.

“They have to say ‘no’ if they think something is wrong, but they are not doing this,” Shimazaki said, adding that the lack of clarity around responsibility remains after five years.

<http://www.japantimes.co.jp/news/2016/03/23/national/state-ignored-predictions-10-years-311-tsunami-says-seismologist/>

### Courts rule government is responsible

March, 2018

The Kyoto and Tokyo district courts have ruled that the government is responsible, along with Tokyo Electric Power Co. (TEPCO), for the disaster at the utility’s Fukushima No. 1 nuclear power plant.

The opinion of the judiciary says the tsunami was foreseeable and the disaster could have been prevented if only the government had appropriately exercised its authority.

<http://www.asahi.com/ajw/articles/AJ201803260013.html>

### Taboo topic

Under conditions in which interests among multiple diverging parties could not be balanced, dubious choices were made, and minority views were drowned out. This resulted in deep divisions among the victims and produced conditions in which the problems of nuclear power became a taboo topic they could not openly discuss.

### Catholic Bishops p. 58

There has also been stress from pressure to conform to cliquish expectations arising from the close ties among people in these communities. Rather than expressing dissatisfaction or criticism, they have a tendency to suffer silently at home, not raising waves. As time passes, apathy tends to increase on its own as memories fade, like sharp features weathering away. While they are like other victims in many ways, disaster victims suffer more than others from having to live their lives hidden away. It is arguable whether anything should be done to address this injustice. People would rather forget the accident, or they may have decided they would like to live as though they had recovered already and had restored stability to their lives, so to speak.

Catholic Bishops pp. 61-62

**Why are Olympics going on despite public, medical warnings?**

June, 2021

"You notice how nobody seems to be in charge. You have all these different entities: the Tokyo organizing committee, the Japanese Olympic Committee, the Prime Minister's office, the Governor of Tokyo, the Japan Sports Agency, the Foreign Ministry, the Ministry of Education, Culture, Sports, Science and Technology. Prime Minister Suga is asked in the Diet about canceling the games and says it's not his responsibility. Nobody wants to lose face. You saw the same in the run up to the 1964 Games. In fact, it wasn't until Feb. 11, 1963 that Japan found somebody willing to accept the presidency of the local organizing committee."

<https://mainichi.jp/english/articles/20210617/p2g/00m/0na/047000c>

**Little solace or justice offered by authorities**

September, 2021

The manner in which the disaster has been addressed betrays a callous disregard for human suffering in the aftermath, as communities have been destroyed and people have been offered little solace nor justice by the institutional authorities who were charged with looking after their best interests.

<https://apjff.org/2021/17/Cleveland.html>

## Tokyo Electric Power Company

### For TEPCO, fresh financing masks long-term problems

October, 2013

Its stock price has nearly trebled this year, its near-term debt trades at par, banks have extended credit, and an enterprise value of \$83 billion makes it Asia's biggest listed electricity utility. Yet Tokyo Electric Power Co (TEPCO) has lost \$27 billion since the 2011 disaster, and faces massive liabilities as it decommissions the facility, compensates tens of thousands of residents forced to evacuate, and pays for decontamination of an area nearly the size of Connecticut.

Japan has given TEPCO a 5 trillion yen credit line for compensating 160,000 evacuees and damaged businesses, but TEPCO has already said that's not enough. The Japan Center for Economic Research, an independent think-tank, reckons total decontamination costs could be at least \$100 billion.

[www.japantoday.com/category/national/view/for-tepco-fresh-financing-masks-long-term-problems](http://www.japantoday.com/category/national/view/for-tepco-fresh-financing-masks-long-term-problems)

### Tokyo Electric loses 5,800 big clients in six months

October, 2013

Tokyo Electric Power Co. lost about 5,800 large clients in the six months through Oct. 1, informed sources said Sunday.

[www.japantimes.co.jp/news/2013/10/27/national/tokyo-electric-loses-5800-big-clients-in-six-months/#.UnCEiSGpGF](http://www.japantimes.co.jp/news/2013/10/27/national/tokyo-electric-loses-5800-big-clients-in-six-months/#.UnCEiSGpGF)

### Tepco expects 1,700 to quit by March

December, 2013

As part of cost-cutting efforts, Tepco is seeking to reduce its workforce by 3,600 to 36,000. Although the company is likely to meet this target, it is losing skilled personnel in core divisions, which could further complicate its decommissioning work.

[www.japantimes.co.jp/news/2013/12/03/business/tepco-expects-1700-to-quit-by-march/#.Up3j6o2GpGE](http://www.japantimes.co.jp/news/2013/12/03/business/tepco-expects-1700-to-quit-by-march/#.Up3j6o2GpGE)

### Without TEPCO, nuclear plant builders left with export risks

December, 2013

Nuclear reactor manufacturers in Japan are finding it tough to do business abroad, partly because their main potential partner is so caught up in bringing the crippled Fukushima plant under control.

It is often difficult for the companies to win overseas contracts unless they take part in nuclear power generation, in which they have little expertise.

Prior to the nuclear crisis that unfolded in March 2011, the government hoped that Mitsubishi Heavy Industries Ltd., Toshiba Corp. and Hitachi Ltd. would export reactors in tandem with Tokyo Electric Power Co.

[ajw.asahi.com/article/economy/business/AJ201312250069](http://ajw.asahi.com/article/economy/business/AJ201312250069)

## Chronology of major events in the Fukushima nuclear crisis

The following is a chronology of events related to the nuclear crisis at Tokyo Electric Power Co.'s six-reactor Fukushima Daiichi nuclear power plant in Fukushima Prefecture, triggered by the earthquake and tsunami on March 11, 2011.

March 11, 2011 -- Magnitude 9.0 earthquake and subsequent tsunami cripple plant, resulting in loss of power at Nos. 1-4 reactor facilities. Government declares nuclear emergency, directing residents in 3-kilometer radius of plant to evacuate.

March 12 -- Prime Minister Naoto Kan inspects plant. Hydrogen explosion occurs at No. 1 reactor building. Government expands evacuation zone to 10-km radius of plant, then to 20-km radius.

March 14 -- Hydrogen explosion occurs at No. 3 reactor building.

March 15 -- Hydrogen explosion occurs at No. 4 reactor building.

March 20 -- Nos. 5-6 reactors achieve cold shutdown.

April 12 -- Government raises nuclear crisis severity level to highest 7 on international scale, on par with 1986 Chernobyl disaster.

April 22 -- Government designates 20-km radius of plant as no-go zone.

June 6 -- The Nuclear and Industrial Safety Agency releases assessment that meltdown occurred at reactor cores of Nos. 1-3 units.

June 27 -- TEPCO starts cooling damaged reactors using water decontaminated through newly installed water treatment system.

September 28 -- Temperatures at bottom of pressure vessels of reactors Nos. 1-3 fall below 100 C.

December 16 -- Government declares state of cold shutdown achieved at plant.

December 21 -- Government and TEPCO announce plan to scrap the plant's Nos. 1-4 reactors in 30 to 40 years.

February 28, 2012 -- Private-sector panel says in report that Kan's response to nuclear crisis created unnecessary confusion.

March 11 -- TEPCO President Toshio Nishizawa issues statement on first anniversary, apologizing again for accident and vowing to continue efforts to keep plant under control.

March 30 -- The government decides to revise its designation of evacuation zones in municipalities near the Fukushima plant.

April 19 -- Nos. 1-4 reactors at the plant are declared defunct, bringing total of Japan's commercial nuclear reactors to 50.

May 5 -- The last of Japan's commercial reactors goes offline.

June 27 -- TEPCO Chairman Tsunehisa Katsumata and President Toshio Nishizawa step down, succeeded by lawyer Kazuhiko Shimokobe and TEPCO Managing Director Naomi Hirose, respectively.

July 1 -- A reactor at Kansai Electric Power Co.'s Oi nuclear power plant in Fukui Prefecture becomes the first in Japan to be reactivated after regular checks since the Fukushima crisis. Another unit at the Oi plant is restarted on July 18.

July 5 -- Diet-appointed panel investigating the Fukushima crisis releases a report saying the disaster was "human-made."

July 18-19 -- TEPCO finishes trial removal of two unused nuclear fuel assemblies from a fuel storage pool at the No. 4 reactor of the Fukushima Daiichi plant.

July 23 -- A government-appointed panel investigating the Fukushima disaster releases final report saying TEPCO mishandled its response to the crisis.

July 31 -- TEPCO receives 1 trillion yen in capital injection from a state-backed bailout fund, falling under effective state control.

August 6 -- TEPCO discloses to the media part of the video recordings of its teleconferences in the first days of the nuclear crisis.

September 19 -- Japan launches new nuclear regulatory body known as the Nuclear Regulation Authority.

January 1, 2013 -- TEPCO sets up its Fukushima headquarters to deal with issues stemming from Japan's worst-ever nuclear accident.

[mainichi.jp/english/english/newsselect/news/20130311p2g00m0dm027000c.html](http://mainichi.jp/english/english/newsselect/news/20130311p2g00m0dm027000c.html)