



Fukushima Fallout: 12 Months of Mishaps and Misery March 2013 – February 2014

*A shorter version of this chronology was published in Nuclear Monitor #780, 6 March 2013,
www.wiseinternational.org/node/4051*

*WISE/NIRS Nuclear Monitor / www.wiseinternational.org/nuclear-monitors
World Information Service on Energy / www.wiseinternational.org
Nuclear Information and Resource Service / www.nirs.org
email: monitor@wiseinternational.org*

*Compiled by Nuclear Monitor editor Jim Green, drawing in part from Nuclear Monitor articles
(www.wiseinternational.org/nuclear-monitors) and from Greenpeace updates
(www.greenpeace.org/international/en/news/Blogs/nuclear-reaction).*

*Greenpeace has compiled a chronology of Fukushima news from March 2011 to January 2014:
<http://www.greenpeace.org/international/Global/international/briefings/nuclear/2014/Fukushima-3rd/TimelineLong.pdf>*

March 2013

Of the eight members of a post-Fukushima energy advisory policy board who supported a non-nuclear future, six are removed by Prime Minister Shinzo Abe, so 13 of the 15 members of the reconstituted board are pro-nuclear – some with conflicts of interest.¹

The World Health Organisation released a report on health risks from the Fukushima disaster.² According to the WHO:

In terms of specific cancers, for people in the most contaminated location, the estimated increased risks over what would normally be expected are:

- *all solid cancers - around 4% in females exposed as infants;*
- *breast cancer - around 6% in females exposed as infants;*
- *leukaemia - around 7% in males exposed as infants;*
- *thyroid cancer - up to 70% in females exposed as infants (the normally expected risk of thyroid cancer in females over lifetime is 0.75% and the additional lifetime risk assessed for females exposed as infants in the most affected location is 0.50%).*

For people in the second most contaminated location of Fukushima Prefecture, the estimated risks are approximately one-half of those in the location with the highest doses. The report also references a section to the special case of the emergency workers inside the Fukushima NPP [Nuclear Power Plant]. Around two-thirds of emergency workers are estimated to have cancer risks in line with the general population, while one-third is estimated to have an increased risk.

Commenting on the WHO report, Dr Ian Fairlie states: "Despite the report containing some useful information (and some good members on its expert team) it fails in what should have been its most important task – i.e. to calculate collective doses to the people of Fukushima, to the people of Japan and to the people of the Northern hemisphere from the Fukushima accident. Indeed the phrase 'collective dose' does not appear in the report. ... Not only does the report not contain population doses, it appears to have been designed to prevent independent readers and scientists from doing their own calculations."³

How to clean a reactor site subject to multiple explosions, fires and meltdowns? "It's like going to war with bamboo sticks," said Takuya Hattori, president of the Japan Atomic Industrial Forum and a 36-year TEPCO veteran. Keiro Kitagami, a former lawmaker, said: "This kind of job has never been done ... The technology, the wherewithal, has never been developed. Basically, we are groping in the dark."⁴

¹ 16 March 2013, 'Abe purges energy board of antinuclear experts', www.japantimes.co.jp/news/2013/03/16/national/abe-purges-energy-board-of-antinuclear-experts/
18 Oct 2013, 'Pro-nuclear voices dominate energy policy committee', <http://ajw.asahi.com/article/0311disaster/analysis/AJ201310180073>

² www.who.int/mediacentre/news/releases/2013/fukushima_report_20130228/en/
www.who.int/ionizing_radiation/pub_meet/risk_assessment_radiation_japan_2013_exec_en.pdf

³ Ian Fairlie, 28 Feb 2013, 'WHO Health risk assessment from the nuclear accident after the 2011 Great East Japan Earthquake and Tsunami', www.ianfairlie.org/news/who-health-risk-assessment-from-the-nuclear-accident-after-the-2011-great-east-japan-earthquake-and-tsunami/

⁴ Reuters, 8 March 2013, 'Insight: Japan's "Long War" to shut down Fukushima', www.reuters.com/article/2013/03/08/us-japan-fukushima-idUSBRE92417Y20130308

Actions and vigils were held in an estimated 270 locations throughout Japan to mark the second anniversary of the Fukushima disaster. On March 10, an estimated 40,000 citizens demonstrated around Tokyo.

Hundreds of survivors of the Fukushima disaster filed a class action lawsuit seeking restitution of the region contaminated by radioactive materials. Lawyers for about 800 plaintiffs said the case has been filed with the Fukushima District Court. The plaintiffs are seeking around US\$540 (€390) a month from the government and TEPCO until the area is restored.⁵

A power outage left 8,800 nuclear fuel assemblies, each holding 60 fuel rods, without fresh cooling water for 21–29 hours from March 18–20.⁶ A brief power outage shut down three switchboxes, and although power was quickly restored, the switchbox failure persisted, leading to failure of the cooling systems. TEPCO said a rat, found dead inside a switchbox that had been operating outdoors on a truck for more than two years, caused the problem. A TEPCO spokesperson said: "Fukushima Daiichi still runs on makeshift equipment". TEPCO delayed notifying the Nuclear Regulation Authority and local municipal officials about the incident. "We sincerely apologise. We are deeply regretful over the delay in reporting the incident and for causing anxiety to residents," said a TEPCO spokesperson.⁷

A worker said he was ordered in to the Fukushima plant to tackle the March 2011 meltdowns wearing insufficient protection gear and that two of his ill-equipped colleagues suffered beta-ray burns after they had to wade through radioactive water. The team leader told workers to ignore warnings from their radiation monitors, saying they must be broken.⁸

Japan's health ministry revealed that at least 63 Fukushima Daiichi workers were exposed to radiation levels higher than those registered in their personal records between November 2011 and October 2012.⁹

Three workers came forward to confirm illegal dumping of radioactive materials by subcontractors involved in the clean-up and decontamination operations in Fukushima Prefecture.¹⁰

The *Asahi Shimbun* newspaper revealed that contractors accused of underpaying decontamination workers were tipped off before "surprise" visits by government investigators. Some contractors ordered workers to lie about receiving hazard pay.¹¹

⁵ 11 March 2013, 'Hundreds of Fukushima survivors launch class action', www.abc.net.au/news/2013-03-11/fukushima-survivors-launch-class-action/4566180

⁶ www.nytimes.com/2013/03/21/world/asia/rat-at-fukushima-plant.html
<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303260044>
www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-march-29t/blog/44539/

⁷ 22 March 2013, 'TEPCO apologizes for delay in reporting plant power outage', Mainichi, <http://fukushima-is-still-news.over-blog.com/article-apologies---again-116471049.html>

⁸ Australian Broadcasting Corporation, 7 March 2013, 'Fukushima worker sent in despite the radiation, without proper protection', www.abc.net.au/news/2013-03-07/fukushima-worker-sent-in-despite-the-radiation/4557768

⁹ 6 March 2013, 'Life as a Fukushima clean-up worker', www.theguardian.com/environment/2013/mar/06/fukushima-clean-up-radiation-public-criticism

2 March 2013, '63 workers exposed to higher radiation than logged in their records', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303020048>

¹⁰ 1 March 2013, 'Workers break silence to allege boss ordered corner-cutting', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303010084>

A probe by the Health, Labor and Welfare Ministry found violations – such as inadequate education and protection from radiation exposure, a lack of medical checks and unpaid salaries and hazard pay – at nearly half of the clean-up operations in Fukushima. About half of the 242 contractors were reprimanded for violations.¹²

TEPCO reported that it has captured a greenling fish near the Fukushima plant containing 510,000 becquerels/kg of radioactive cesium – the highest level recorded in the utility's seafood sampling surveys since the March 2011 disaster.¹³

Tests on food conducted between April 2012 and January 2013 found that approximately 2,000 samples of mushrooms, seafood, and wild game contained more than 100 becquerels/kg of radioactive cesium, the government's limit for human consumption.¹⁴

April 2013

TEPCO acknowledged at least five leaks and spills of contaminated water in April, including a spill of around 110,000 litres from a polyethylene-lined tank (TEPCO waited two days before informing the Nuclear Regulation Authority about this spill). The leaks were found in holding tanks and in pipes connecting tanks. Some of the leaks were continuing because TEPCO has been unable to locate their source. TEPCO President Naomi Hirose apologised for the fiasco.¹⁵ World Nuclear News noted that levels of radioactivity in some of the leaked water (up to 300 million becquerels/litre) were sufficient for it to be classified as intermediate-level radioactive waste in most countries.¹⁶

TEPCO said that 14 workers dealing with radioactive water problems were working without dosimeters¹⁷ – adding to the long and shameful history of employees and contractors working without dosimeters, or with dosimeters covered up, since the March 2011 triple-disaster.¹⁸

TEPCO discovered that at least three of seven underground storage pools were seeping thousands of litres of radioactive water into the soil. Shunichi Tanaka, chair of the Nuclear Regulation Authority, said: "The Fukushima Daiichi plant remains in an unstable condition, and there is concern that we cannot prevent another accident." TEPCO lined the underground pools with only two layers of plastic each 1.5 millimetres thick, and a third, clay-based layer just 6.5 millimetres thick. And because the pools require many sheets hemmed together, leaks could be springing at the seams. "No wonder the water is leaking," said Hideo Komine, a professor in civil engineering at Ibaraki University, adding that the outer protective lining should have been hundreds of times

¹¹ Asahi Shimbun, 23 March 2013, 'Fukushima cleanup contractors told workers to lie about pay in 'surprise' inspections', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303230057>

¹² Associated Press, 11 March 2013, 'Japan's Clean-Up from 2011 Tsunami, Nuclear Accident Lagging', <http://ajw.asahi.com/article/0311disaster/recovery/AJ201303110057>

¹³ 1 March 2013, 'Record cesium level found in Fukushima fish', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303010040>

¹⁴ 6 March 2013, 'Cesium levels still exceed standards in wild mushrooms, seafood, game', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201303060066>

¹⁵ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-april-5th/blog/44658/

¹⁶ www.world-nuclear-news.org/RS_Pits_pose_problems_at_Fukushima_1504131.html

¹⁷ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201304200045>

¹⁸ <http://ajw.asahi.com/tag/Crooked%20Cleanup>

thicker. TEPCO president Naomi Hirose travelled to Fukushima to apologise for the leaks. He said TEPCO would stop using the underground pits, and would pump the water out into more above-ground tanks. "We're aware that this is a crisis that we must attend to with urgency," Hirose said. Muneo Morokuzu, a nuclear safety expert at the Tokyo University Graduate School of Public Policy, said: "It's become obvious that TEPCO is not at all capable of leading the clean-up. It just doesn't have the expertise, and because Fukushima Daiichi is never going to generate electricity again, every yen it spends on the decommissioning is thrown away. That creates an incentive to cut corners, which is very dangerous."¹⁹ A monitoring group comprised of officials from 13 municipalities near Fukushima said: "It requires sophisticated supervision to store contaminated water. The work is sloppy."²⁰

TEPCO said power to critical cooling systems at reactor #3's spent fuel pool was lost for the second time in less than a month on April 5, after workers installing a net designed to keep rodents away from a switchbox accidentally touched cables, causing a short in the system.²¹

TEPCO halted cooling of a spent fuel pool on April 22 to remove two dead rats, the third time cooling equipment went offline in five weeks. TEPCO said it halted cooling of the reactor #2 pool, which stores spent fuel rods, for a few hours to remove the rats and install a net to stop further such intrusions.²²

An exposé by the *Mainichi Daily News* detailed how decontamination workers were living in Spartan conditions and receiving very low pay, as multiple layers of contractors and subcontractors shave off percentages of their wages. A contracting firm representative said: "You can't really turn a profit unless you hit the workers' wages or shave them down somehow. In the end, the whole system is designed to make money for the big construction companies at the top."²³

TEPCO finally acknowledges that the company's failings were responsible for the Fukushima disaster. "Our safety culture, skills, and ability were all insufficient. We must humbly accept our failure to prevent the accident, which we should have avoided by using our wisdom and human resources to be better prepared," said TEPCO President Naomi Hirose.²⁴



¹⁹ Hiroko Tabuchi, 10 April 2013, 'Mishaps Underscore Weaknesses of Japanese Nuclear Plant', www.nytimes.com/2013/04/11/world/asia/fukushima-nuclear-plant-is-still-unstable-japanese-official-says.html

²⁰

<http://web.archive.org/web/20130606123222/http://mainichi.jp/english/english/newsselect/news/20130425p2a00m0na013000c.html>

²¹ 6 April 2013, 'Anti-rat work caused latest cooling system problem at Fukushima nuclear plant',

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201304060040>

²² <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201304220119>

²³ <http://www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-april-5th/blog/44658/>

²⁴ 1 April 2013, 'TEPCO admits it deserves blame for Fukushima nuclear meltdown',

<http://japandailyexpress.com/tepcO-admits-it-deserves-blame-for-fukushima-nuclear-meltdown-0126154/>

May 2013

In November 2012, the UN Human Rights Council sent Special Rapporteur Anand Grover to Japan to assess the situation in the aftermath of the Fukushima disaster. Grover's report, released in May 2013, was highly critical of both TEPCO and the Japanese government. For example the report criticised TEPCO for its "attempts to reduce compensation levels and delay settlement" through a complicated and difficult compensation process, and TEPCO's failure to protect workers from radiation exposure. The report also criticised the government for failing to protect children, the elderly, and those with disabilities from the disaster, as well as inadequate use of the country's System for Prediction of Environment Emergency Dose Information, which led to some residents being evacuated to areas directly in the path of the radiation plume in the days following the March 2011 disaster.²⁵

An exposé by the *Asahi Shimbun* newspaper revealed that the Japanese 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.²⁶

Local authorities shut down two parking lots in Fukushima City for decontamination after the discovery of radioactive hotspots (up to 430,000 becquerels/kg) by the non-profit Citizen's Radioactivity Measuring Station. The surveys were carried out from April 29 to May 2 at the behest of local residents.²⁷

The United Nations Scientific Committee on the Effect of Atomic Radiation (UNSCEAR) trivialises the long-term cancer death toll from the Fukushima nuclear disaster, stating: "It is unlikely to be able to attribute any health effects in the future among the general public and the vast majority of workers."²⁸ UNSCEAR's propaganda is challenged by radiation experts such as Dr Ian Fairlie.²⁹ There may be internal dissent within UNSCEAR.³⁰ In October 2013, 65 Japanese non-government organisations issued a statement calling on UNSCEAR to revise its report and its findings, expressing "serious concern that the results of these investigations contain some problems in terms of objectivity, independence, and accuracy, and that the underestimation of the effects of radiation exposure could have negative effects on the human rights and protection of citizens."³¹ Early estimates of the long-term cancer death toll from Fukushima radiation exposure range from 130 to 3,000.³²

²⁵ UN Special Rapporteur's report: <http://tinyurl.com/pxwqub4>

²⁶ Asahi Shimbun, 25 May 2013, 'Strict radiation reference levels shunned to stem Fukushima exodus', <https://ajw.asahi.com/article/0311disaster/fukushima/AJ201305250053>

²⁷ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201305080058>

²⁸ UNSCEAR, 31 May 2013, www.unis.unvienna.org/unis/en/pressrels/2013/unisinf475.html

²⁹ Ian Fairlie, 25 Feb 2013, 'UNSCEAR Attempt to Limit Collective Dose Assessments from Fukushima's Fallout', www.ianfairlie.org/news/unscear-attempt-to-limit-collective-dose-assessments-from-fukushimas-fallout

³⁰ <http://nuclear-news.net/2013/08/10/unscear-members-protest-against-minimising-health-effects-of-fukushima-radiation/>

³¹ 24 Oct 2013, 'Statement: Japanese civil society requests that the reports of the United Nations Scientific Committee on Fukushima be revised', <http://hrn.or.jp/eng/activity/area/worldwide/japanese-civil-society-requests-that-the-reports-of-the-united-nations-scientific-committee-on-fukus/>

³² 15 March 2013, 'Fukushima cancer death toll', Nuclear Monitor #758 www.wiseinternational.org/node/3963



June 2013

Despite public promises by Prime Minister Shinzo Abe to complete decontamination work in Fukushima Prefecture by March 2014, which would reduce radiation exposure levels there to one millisievert per year or less, Japan's government informed municipal officials that they will likely not meet their stated deadline. The decontamination schedule was already far behind schedule – clean-up efforts had not even begun in five of 11 municipalities that had been declared evacuation zones. The government also informed municipalities that it would not allow decontamination work to be redone in areas where radiation levels have not declined even after decontamination efforts had been completed.³³

TEPCO was again under fire for failure to pay adequate compensation to Fukushima prefectural and local governments that were forced to shoulder costs of damage, decontamination, evacuation, and other losses. As of April 30, those expenses totalled 46.7 billion yen (US\$461m, €335m), but TEPCO had only paid 5.2 billion yen. Local leaders threatened to sue, complaining that the utility has been unresponsive to their repeated requests for payment. "No matter what we say, we get no reply," said Takanori Seto, the mayor of Fukushima City. "We'll file a lawsuit."³⁴

Japan's Nuclear Damage Claim Dispute Resolution Centre ruled that TEPCO must pay a group of 180 residents from litate 500,000 yen (US\$4,900, €3,600) for emotional distress from high levels of radiation exposure. Pregnant women and children under 18 at the time of the accident were awarded one million yen each. People from that area were not told to evacuate until a month after the nuclear crisis first began.³⁵

In another case, TEPCO agreed to compensate to the family of a farmer from Sukagawa, who committed suicide after learning that he would be forced to stop selling cabbage from his organic farm. He had worked on the farm for 30 years. TEPCO agreed to pay over 10 million yen (US\$99,000, €72,000) after the Nuclear Damage Claim Dispute Resolution Centre intervened. Company officials continued to refuse to apologise to the man's family.³⁶

³³ Asahi Shimbun, 16 June 2013, 'Government secretly backtracks on Fukushima decontamination goal', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201306160022>

Greenpeace Nuclear Reaction Weblog – June 14th to June 17th, 2013
www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/

³⁴ <http://www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-june-18th/blog/45670/>

³⁵ Asahi Shimbun, 3 June 2013, 'Consolation money to place additional financial burden on TEPCO', <https://ajw.asahi.com/article/0311disaster/fukushima/AJ201306030093>

³⁶ The Mainichi, 3 June 2013, 'Fukushima family, TEPCO reach redress deal over farmer's suicide', <http://financegreenwatch.org/?p=9505>

TEPCO said it had discovered high levels of radioactive strontium-90 (about 1,000 becquerels of strontium per litre) and tritium (500,000 becquerels per litre) in a well located 27 metres from the Pacific Ocean but waited for nearly a month before revealing the news to the public. Radioactive tritium found in samples of ocean water near intakes at Fukushima Daiichi were the highest ever recorded there – up to 1,100 becquerels/litre.³⁷

The Advanced Liquid Processing System, designed to remove radioactive contaminants from water at Fukushima, was found to be leaking³⁸, as was a desalination system used to remove salt from radioactive cooling water.³⁹

At its annual general meeting, TEPCO's shareholders voted down a Greenpeace resolution to hold GE, Hitachi and Toshiba – the suppliers of the Fukushima Daiichi nuclear reactors – financially accountable for the accident.⁴⁰

TEPCO's legal troubles continued to mount as yet another group filed suit against it. Family members of hospital patients and elderly nursing home residents who died in the process of evacuation, or because staff were unavailable to care for them, are suing the utility for approximately US\$300,000 (€220,000) each. More than 200 people were stuck in hospitals and nursing facilities following the nuclear accident, and 50 of those died. In late May, the Namie municipal government announced that it would sue TEPCO on behalf of over 11,000 residents for psychological suffering. TEPCO is already paying victims 1,000 yen per month, but Namie officials called for the amount to be increased to 3,500 yen. The Japanese government was considering suing TEPCO to recover money spent on decontamination operations.⁴¹

July 2013

In addition to problems with water tanks, there are ongoing problems with contaminated water in, around and beneath the reactor buildings. On July 10, the Nuclear Regulation Authority announced it "highly suspected" that the plant was leaking contaminated water into the ocean. TEPCO didn't acknowledge what was happening until July 22 – a month after initial suspicions were raised.⁴² The Nuclear Regulation Authority's Shunichi Tanaka said he believed contamination of the sea had been continuing since the March 2011 catastrophe.⁴³

³⁷ 19 June 2013, 'High levels of strontium, tritium found in well water at Fukushima plant', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201306190064>

25 June 2013, 'Higher seaborne tritium levels outside Fukushima plant suggest leaks not plugged', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201306250085>

³⁸ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201306210074>

³⁹ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201306220045>

⁴⁰ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/tepc-fails-on-its-responsibilitiesfrom-the-/blog/45755/

⁴¹ 28 June 2013, 'Legal claims and compensation payments', www.wiseinternational.org/node/4017

Greenpeace, Fukushima Nuclear Crisis Update for June 7th to June 10th, 2013, www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-june-7th-/blog/45543/

⁴² www.salon.com/2013/08/23/how_everything_went_so_wrong_at_fukushima/singleton/
www.bloomberg.com/news/2013-07-26/tepc-p-president-apologizes-for-fukushima-leak-disclosure-delay.html

⁴³ <http://planetark.org/enviro-news/item/69188>

AFP, 10 July 2013, 'Japan atomic watchdog suspects Fukushima ocean leak', www.foxnews.com/world/2013/07/10/japan-atomic-watchdog-suspects-fukushima-ocean-leak/

In response to the mounting problems with contaminated water, Dale Klein, a member of TEPCO's Nuclear Reform Monitoring Committee and former head of the US Nuclear Regulatory Commission, told TEPCO: "It ... appears that you are not keeping the people of Japan informed. These actions indicate that you don't know what you are doing ... you do not have a plan and that you are not doing all you can to protect the environment and the people."⁴⁴ Barbara Judge, a member of the Nuclear Reform Monitoring Committee and former chair of the UK Atomic Energy Authority, said she was "disappointed and distressed" over the company's lack of disclosure.⁴⁵

Atsushi Kasai, a former researcher at the Japan Atomic Energy Research Institute, said: "They let people know about the good things and hide the bad things. This culture of cover up hasn't changed since the disaster."⁴⁶ Australian journalist Mark Willacy described the recurring pattern: "At first TEPCO denies there's a problem at the crippled Fukushima plant. Then it becomes obvious to everyone that there is a problem, so the company then acknowledges the problem and makes it public. And finally one of its hapless officials is sent out to apologise to the cameras."⁴⁷

The Advanced Liquid Processing System was out of operation again, after corrosion by contaminated water caused leaks in the system's tanks.⁴⁸

The International Atomic Energy Agency called the Fukushima plant a "blueprint" for terrorists. Matthew Bunn, a former White House adviser, said: "Fukushima sent a message to terrorists that if you manage to cause a nuclear power plant to melt down, that really causes major panic and disruption in society. All you need to do that is to cut off power for an extended period of time."⁴⁹ Japanese nuclear utilities opportunistically use security concerns to restrict media access to nuclear plants. "In many cases," the *Asahi Shimbun* newspaper reports, "the restrictions to information disclosure go beyond what nuclear regulators have said should be kept under wraps."⁵⁰

Japan's Ministry of Health, Labour, and Welfare announced that the radiation exposure records of 452 Fukushima workers were inaccurate, and they were exposed to greater amounts of radiation than TEPCO reported.⁵¹

August 2013

A water storage tank leaked around 300 tons of radioactive water, some of which likely reached the ocean via a drainage ditch. The leak was rated Level 3 on the International Nuclear Events Scale by Japan's Nuclear Regulation Authority – making it the most serious incident since the March 2011 disaster. Level 3 can be assigned when there is "severe contamination in an area not expected by design, with a low probability of significant public exposure."⁵²

⁴⁴ <http://phys.org/news/2013-07-nuke-experts-blast-fukushima-toxic.html>

⁴⁵ <http://phys.org/news/2013-07-nuke-experts-blast-fukushima-toxic.html>

⁴⁶ <http://planetark.org/enviro-news/item/69357>

⁴⁷ www.abc.net.au/pm/content/2013/s3809310.htm

⁴⁸ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201307260051>

⁴⁹ Japan Times, 3 July 2013, 'Fukushima a blueprint for terrorists, IAEA warns',

www.japantimes.co.jp/news/2013/07/03/national/fukushima-a-blueprint-for-terrorists-iaeawarns/

www.greenpeace.org/international/Global/international/briefings/nuclear/2014/Fukushima-3rd/TimelineLong.pdf

⁵⁰ 5 Feb 2014, 'Nuke plant operators hush-hush on anti-terrorism measures',

http://ajw.asahi.com/article/behind_news/politics/AJ201402050055

⁵¹ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201307060066>

⁵² <http://mainichi.jp/english/english/newsselect/news/20130825p2g00m0dm006000c.ht>

Nuclear Regulation Authority commissioner Toyoshi Fuketa said TEPCO "has not left any record of inspections of the tanks. I have to call this sloppy."⁵³ At an August 21 media conference, TEPCO executive Zengo Aizawa apologised for the latest tank leak and said: "The problem of contaminated water is the largest crisis facing management and we will place priority on dealing with the issue."⁵⁴

The 300-ton leak lifted the lid on scarcely-believable patterns of mismanagement by TEPCO:

- The tanks were built in part by illegally hired workers. Workers were told to lie about being hired by third-party brokers. "Even if we didn't agree with how things were being done, we had to keep quiet and work fast," said Yoshitatsu Uechi, a former Fukushima worker who lodged a complaint with labour authorities.⁵⁵
- Between July 2012 and June 2013, the Nuclear Regulation Authority made recommendations or issued instructions around 10 times to increase patrols and to install more observation cameras and water gauges, among other measures. The recommendations were largely ignored.⁵⁶
- TEPCO initially assigned only two workers to inspect 1,000 water tanks, during twice-daily patrols of two hours each.
- Radiation levels were not measured unless a worker suspected something was wrong.⁵⁷
- The tanks were constructed by bolting together sheets of metal, rather than welding them. Welded tanks are more secure but TEPCO chose the bolted type because they are cheaper and faster to construct.⁵⁸
- A subcontractor who worked on constructing the tanks said: "We gave priority to making the tanks, rather than quality control." The life-span of the tanks is only around five years, the subcontractor added, and more contaminated water may leak as they deteriorate.⁵⁹ Another worker, Yoshitatsu Uechi, described corner-cutting measures to save time and money including the use of adhesive tape to cover openings on storage tanks; the use of second-hand components; and, on one occasion, he was told to use just four bolts to assemble a component requiring eight in its assembly. "I couldn't believe that such slipshod work was being done, even if it was part of stopgap measures."⁶⁰

Economy, Trade and Industry Minister Toshimitsu Motegi said TEPCO "has been playing a game of Whac-a-Mole with problems at the site."⁶¹

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308250040>

⁵³ www.foxnews.com/world/2013/08/23/fukushima-water-handling-sloppy-nuclear-watchdog/

⁵⁴ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308220060>

⁵⁵ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-december-/blog/47626/

Antoni Slodkowski, 5 Dec 2013, 'Insight - Fukushima water tanks: leaky and built with illegal labor', www.reuters.com/article/2013/12/05/us-japan-nuclear-fukushima-labour-insigh-idUSBRE9B415P20131205

⁵⁶ <http://mainichi.jp/english/english/newsselect/news/20130829p2a00m0na006000c.html>

⁵⁷ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-august-30/blog/46461/

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309020069>

⁵⁸ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-august-30/blog/46461/

⁵⁹ <http://mainichi.jp/english/english/newsselect/news/20130902p2g00m0dm002000c.ht>

www.japantimes.co.jp/news/2013/09/02/national/leaks-feared-when-fukushima-no-1-water-tanks-constructed/

⁶⁰ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401040008>

⁶¹ www.trust.org/item/20130903031445-3lz9k/

On August 26, the Japanese government directed TEPCO to enhance management of the tanks and the surrounding area; reinforce patrols; accelerate replacement from bolted joint tanks to welded joint tanks; accelerate the highly-contaminated water treatment and decrease the radiation dose of the surrounding area by collecting the contaminated soil; and identify the risks of storing highly-contaminated water and take actions against the risks.⁶²



Water storage tanks at Fukushima.

The Nuclear Regulation Authority's Shunichi Tanaka said TEPCO's efforts to monitor oceanic radiation levels had been insufficient.⁶³ A trial fish catch near the Fukushima plant was deferred in the wake of recent spills and leaks. Hiroshi Kishi, chair of the Japan Fisheries Co-operative, said: "This has dealt an immeasurable blow to the future of Japan's fishing industry, and we are extremely concerned."⁶⁴

By May, TEPCO realised that contaminants apparently leaking from a maze of conduits near the reactors were responsible for a spike in radiation levels in groundwater elsewhere in the plant. TEPCO began to build an underground 'wall' created by injected hardening chemicals into the soil but the barrier created a dam and water pooled behind it eventually began to flow over. In August, government officials said they believed 300 tons of the contaminated water was entering the ocean daily.⁶⁵ Yushi Yoneyama, an official with the Minister of Economy, Trade and Industry (METI), said: "We think that the volume of water (leaking into the Pacific) is about 300 tonnes a day." Tatsuya Shinkawa, a director in METI's Nuclear Accident Response Office, said the government believed water had been leaking for two years, but Yoneyama told Reuters it was unclear how long the water had been leaking at the current rate. Shinkawa described the water as "highly" contaminated.⁶⁶

Shinji Kinjo, head of a Nuclear Regulatory Authority taskforce, described the situation as an "emergency" and said the contaminated water discharges exceeded legal limits of radioactivity.⁶⁷

⁶² Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

⁶³ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308290075>

⁶⁴ www.theguardian.com/world/2013/aug/09/fukushima-fallout-threatens-fishermens-livelihoods
www.theguardian.com/environment/2012/aug/09/fukushima-fishermen-crippled-industry
<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201308280085>

⁶⁵ www.nytimes.com/2013/08/08/world/asia/fukushima-nuclear-plant-radiation-leaks.html

⁶⁶ <http://www.reuters.com/article/2013/08/08/japan-fukushima-pm-idUSL4N0G80HK20130808>

⁶⁷ Antoni Slodkowski, 5 Aug 2013, 'Exclusive: Japan nuclear body says radioactive water at Fukushima an 'emergency'', www.reuters.com/article/2013/08/05/us-japan-fukushima-panel-idUSBRE97408V20130805

Mayors from Futaba, Okuma, Tomioka, and Naraha joined Fukushima Governor Yuhei Sato in formally demanding the decommissioning of all 10 nuclear reactors in Fukushima Prefecture, not just those that were damaged in the 2011 nuclear disaster.⁶⁸

Ten out of 16 people who boarded an on-site bus at the Fukushima plant had bodily radioactive contamination, and a further two people on another on-site bus were confirmed to have bodily contamination. TEPCO said it thought the problem was due to dust drifting from debris removal operations in the reactor #3 building.⁶⁹

TEPCO donated tens of millions of yen to a pro-nuclear local government in August despite promising to abolish such payouts to accelerate compensation for victims of the Fukushima disaster. TEPCO and Tohoku Electric Power Co. paid a combined 200 million yen (US\$2m, €1.4m) to Rokkasho, Aomori Prefecture.⁷⁰

September 2013

In early September, TEPCO said workers had discovered high levels of radioactivity on three water tanks and one pipe. One reading was equivalent to 1,800 millisieverts per hour at a distance of 5 cm (compared to typical background radiation levels of 2–3 millisieverts per year) and another reading was 2,200 millisieverts per hour. At least five of the tanks holding contaminated water were believed to have leaked.⁷¹

The Japanese government announced on September 3 the various measures it would pursue to deal with ongoing water management problems, such as: establish an inter-minister level council; establish an inter-governmental liaison office near TEPCO's Fukushima site; establish an inter-governmental council for coordination near the Fukushima site; provide US\$470 million (€340m) in financial support (to install a frozen soil wall and to provide multi-nuclide removal equipment); and enhance monitoring and risk management efforts.⁷²

As of the end of August 2013, Japan had collected a total of 37,470 fish samples—14,070 of which were from Fukushima Prefecture. The tests concluded that 92.6% of the samples from Fukushima were below the limit of 100 becquerels/kg. From outside the prefecture, 98% of the tests were below the standard.⁷³

⁶⁸ www3.nhk.or.jp/nhkworld/english/news/20130829_36.html

⁶⁹ CNIC, 'Current State of Post-Accident Operations at Fukushima Daiichi Nuclear Power Station (July to December 2013)', Nuke Info Tokyo No. 158, Jan/Feb 2014, www.cnic.jp/english/newsletter/nit158/nit158aricles/04_F1_2013JulytoDec.html

⁷⁰ Satoshi Otani, 4 Oct 2013, 'As Fukushima compensation stalls, TEPCO continues to pay pro-nuclear village', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310040060>

⁷¹ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-august-30/blog/46461/

www.abc.net.au/news/2013-09-01/an-new-radiation-hotspots-found-at-fukushima/4927684

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309010021>

www.reuters.com/article/2013/09/04/us-japan-fukushima-tanks-idUSBRE98301020130904

⁷² www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20130904_01a.pdf

Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

⁷³ Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

At least 33 anti-nuclear citizens groups around Japan were targeted in a campaign of cyber-attacks beginning mid-September. They were on the receiving end of a blizzard of 'denial of service' email attacks. Experts said there was little doubt that a computer program developed exclusively for the purpose was used. The groups targeted include the Women's Active Museum on War and Peace and the Metropolitan Coalition Against Nukes.⁷⁴

Japan's Prime Minister Shinzo Abe assured the International Olympic Committee on September 7 that the Fukushima situation – in particular the leakage of contaminated water from holding tanks and the constant flow of contaminated groundwater – was "under control". But a national survey by the *Asahi Shimbun* newspaper found that only 11% of Japanese agreed with Abe's assertions.⁷⁵

Kiyoshi Kurokawa, a medical doctor who chaired the Nuclear Accident Independent Investigation Commission in 2012, said: "Japan is clearly living in denial ... Water keeps building up inside the plant, and debris keeps piling up outside of it."⁷⁶ A senior TEPCO official acknowledged the water leaks were not under control.⁷⁷ Shunichi Tanaka, chair of the Nuclear Regulation Authority, said that TEPCO "has not been properly disclosing the situation about the contamination and the levels of contamination."⁷⁸

The town assembly of Namie, Fukushima Prefecture, unanimously passed a resolution on September 20 stating that there is a "serious problem" with Abe's remarks as they "contradict reality." The resolution states: "The situation has never been 'under control,' nor is the contaminated water 'completely blocked.'"⁷⁹

Toshimitsu Konno, a fisherman in Soma, Fukushima Prefecture, responded to the Prime Minister's comments to the IOC meeting: "He must be kidding. We have been tormented by radioactive water precisely because the nuclear plant has not been brought under control."⁸⁰

US experts urged Japanese authorities to take immediate steps to prevent groundwater contamination in 2011, but their advice was ignored. TEPCO successfully lobbied against a proposed barrier wall, telling the government it would cost too much. TEPCO said such a costly proposal would stir speculation that it was heading towards bankruptcy.⁸¹

⁷⁴ Tatsuya Sudo, 10 Nov 2013, 'Anti-nuclear citizens groups targeted in massive cyber-attack', http://ajw.asahi.com/article/behind_news/social_affairs/AJ201311100027

⁷⁵ 7 Oct 013, http://ajw.asahi.com/article/behind_news/politics/AJ201310070064

⁷⁶ Martin Fackler, 15 Sept 2013, 'Fukushima disaster deepens with new errors' www.chinadaily.com.cn/sunday/2013-09/15/content_16970506.htm

⁷⁷ TEPCO official denies Abe's claim that nuclear crisis is 'under control', 13 Sept 2013, <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309130063>

⁷⁸ Reuters, 'Fukushima operator slammed', 6 Sept 2013, <http://thepeninsulaqatar.com/asia/251922-fukushima-operator-slammed-.html>

⁷⁹ Peter Lee, 27-29 Sept 2013, 'Did Japan Lie Its Way Into the Olympics?', www.counterpunch.org/2013/09/27/did-japan-lie-its-way-into-the-olympics/
'Namie town assembly protests PM Abe's 'under control' comment', 21 Sept 2013, <http://mainichi.jp/english/english/newsselect/news/20130921p2a00m0na008000c.html>

⁸⁰ 'Doubt cast on Abe's assurance to IOC about Fukushima leaks', 10 Sept 2013, *Asahi Shimbun*, <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309100071>

⁸¹ Justin McCurry, 19 Sept 2013, 'Future of Japan depends on stopping Fukushima leaks, PM tells workers', www.theguardian.com/world/2013/sep/19/future-japan-fukushima-leaks-pm

Mark Willacy, 19 Sep 2013, 'Fukushima operator TEPCO ignored advice two years ago to control ground contamination', www.abc.net.au/news/2013-09-19/fukushima-operator-tepcO-ignored-advice-two-years-ago-to-contro/4968614

As the string of scandals surrounding contaminated water unfolded, South Korea greatly expanded bans on fish imports on September 6. A ban on fish imports from Fukushima Prefecture was extended to a further seven prefectures.⁸² South Korean fisheries vice-minister Son Jae-hak said that Japanese authorities had failed to provide timely and detailed information about the water leaks and that the ban would stay in place indefinitely.⁸³

The Nuclear Regulation Authority (NRA) came under criticism on September 30 from a group of intellectuals studying the Fukushima crisis and participating in a review of the NRA's first year of operation. Lawyer Shuya Nomura criticised the NRA for its handling of the radioactive water leaks, while others pressed for reforms of the NRA's Secretariat, which is staffed mostly by personnel from the previous, discredited regulator. NRA chair Shunichi Tanaka said he feels the Authority has been given a mandate bigger than its capacity, but that members will try to improve.⁸⁴

In September, a freedom of information request lodged by Greenpeace turned up documents from 1960 revealing that nuclear companies pressured the Japan Atomic Energy Commission to make sure they were exempted from all responsibility for a nuclear accident, except in the case of a deliberate act. Greenpeace states: "GE, Hitachi and Toshiba, the big companies that all built reactors at Fukushima based on a flawed GE reactor design, have not paid a cent to help TEPCO and have done little to nothing to help the victims of the disaster. So, Japan's taxpayers have to step in to pay the billions upon billions of yen needed to deal with the industry's gross negligence."⁸⁵

The Advanced Liquid Processing System was shut down yet again, after being in operation again for under 24 hours.⁸⁶

A survey by the *Mainichi Shimbun* newspaper said that deaths relating to displacement from the March 2011 triple-disaster – around 1,600 – had surpassed the number killed in the region in the original disaster. About 16,000 people were killed across Japan as a direct result of the earthquake and tsunami in 2011, 10% of them in the Fukushima Prefecture. Causes of death in the aftermath have included exhaustion from relocating, and illness resulting from hospital closures. The survey also said a number of suicides had been attributed to the ordeal.⁸⁷

Survivors expressed disappointment and anger at the September 9 announcement by the Tokyo District Public Prosecutors Office that it will not seek to indict government or TEPCO officials connected with the Fukushima disaster. Hiroyuki Kawai, lead lawyer for a group of about 15,000 disaster victims and others, said: "How can they say they conducted a thorough investigation when they did not carry out any raids on relevant offices? From the very beginning, it was not an

⁸² John Hofilena, 30 Sept 2013, 'South Korean minister calls Japan 'immoral' for covering up Fukushima leaks', <http://japandailynews.com/south-korean-minister-calls-japan-immoral-for-covering-up-fukushima-leaks-3036835/>

⁸³ Justin McCurry, 7 Sept 2013, 'South Korea bans fish imports from Japan's Fukushima region', The Guardian, www.theguardian.com/world/2013/sep/06/south-korea-fish-japan-fukushima

⁸⁴ NHK World, 1 Oct 2013, 'Nuclear regulator criticized for 'red tape' job', www3.nhk.or.jp/nhkworld/english/news/20131001_12.html

⁸⁵ Justin McKeating, 10 Sept 2013, 'Proof that the nuclear industry has been dodging its responsibilities for over 50 years', www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/proof-that-the-nuclear-industry-has-been-dodg/blog/46544/

⁸⁶ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309290110>

⁸⁷ <http://mainichi.jp/english/english/newsselect/news/20130909p2a00m0na009000c.html>

www.nbcnews.com/news/world/fukushima-evacuation-has-killed-more-earthquake-tsunami-survey-says-v20420833

investigation seeking indictments, but rather, one conducted so no indictments would be handed down." The group alleged negligence resulting in death and injury and other charges against 42 officials.⁸⁸

A total of 171 people from Fukushima Prefecture who had to flee their homes because of the Fukushima disaster commenced legal action against TEPCO and the Japanese government. The plaintiffs, from 60 families now living in western Japan, filed two suits, one with the Osaka District Court and the other with the Kyoto District Court. Similar damages suits have been filed with 11 district courts by 3,811 plaintiffs, according to lawyers of the western Japan groups. Plaintiffs argue that TEPCO neglected its duty to prepare the plant for earthquakes and tsunami, while the central government failed to take stringent regulatory steps to prevent the triple meltdown.⁸⁹

Decontamination efforts are on schedule in only four out of 11 municipalities. "I have run out of patience," farmer Muneo Kanno told the *Asahi Shimbun* newspaper. "We villagers are brimming with distrust of the central government and are concerned about whether we can eventually return. We are left deprived of our lives, and our return has been kept on hold."⁹⁰

October 2013

A 16-member International Atomic Energy Agency (IAEA) mission lavished praise on Fukushima clean-up operations but called on Japanese authorities to work harder to convince Japanese citizens to accept higher radiation doses.⁹¹ The IAEA was peddling similar lies in July 2011, when IAEA Director-General Yukiya Amano said clean-up work was "moving very smoothly".⁹²

On October 1, when transferring contaminated rainwater, a leak of about 5,000 litres occurred.⁹³

On October 2, about 17,000 litres of contaminated rainwater leaked into an area behind a dike. About 430 litres – with tritium contamination of 580,000 becquerels/litre – leaked into a drainage system and possibly from the drainage system into the ocean. A TEPCO official said: "We are sorry for causing anxiety."⁹⁴

⁸⁸ 10 Sep 2013, 'Fukushima victims angered at decision not to prosecute officials', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309100060>

⁸⁹ 17 Sep 2013, 'More Japanese nuclear refugees sue Tepco, government', www.japantimes.co.jp/news/2013/09/17/national/more-japanese-nuclear-refugees-sue-tepco-government/

⁹⁰ 11 Sept 2013, 'Ministry angers residents by pushing back Fukushima cleanup', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201309110052>

⁹¹ 21 Oct 2013, 'IAEA Expert Remediation Mission to Japan Issues Preliminary Report', www.iaea.org/newscenter/pressreleases/2013/prn201319.html

⁹² Reuters, 25 July 2011, 'Fukushima cleanup going well, according to UN atomic watchdog', www.enn.com/top_stories/article/42983

⁹³ CNIC, 'Current State of Post-Accident Operations at Fukushima Daiichi Nuclear Power Station (July to December 2013)', Nuke Info Tokyo No. 158, Jan/Feb 2014, www.cnic.jp/english/newsletter/nit158/nit158aricles/04_F1_2013JulytoDec.html

⁹⁴ Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

3 4 Oct 2013, 'Combination of TEPCO errors led to latest radioactive water leak', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310040068>

Oct 2013, 'Storage of rainwater leads to spill', www.world-nuclear-news.org/RS_Storage_of_rainwater_leads_to_spill_0310131.html

CNIC, 'Current State of Post-Accident Operations at Fukushima Daiichi Nuclear Power Station (July to December 2013)', Nuke Info Tokyo No. 158, Jan/Feb 2014, www.cnic.jp/english/newsletter/nit158/nit158aricles/04_F1_2013JulytoDec.html

Shingo Ito, AFP, 4 Oct 2013, 'Japan nuclear regulator berates Fukushima operator', <http://tinyurl.com/afp-fuku>

On October 4, TEPCO announced yet another problem with the Advanced Liquid Processing System (ALPS) resulting in its temporary shut-down. The stoppage came just four days after TEPCO got the system up and running after a breakdown.⁹⁵ The ALPS system began a trial run starting in March 2013, but leaks were discovered in the system's tanks in June, leading to the first stoppage. The trial run resumed on September 27 but operations were halted once again just 22 hours later, when the equipment developed problems in discharging mud because a worker failed to remove a rubber pad from the tank, leading to a blockage.⁹⁶

On October 4, Nuclear Regulation Authority secretary general Katsuhiko Ikeda berated TEPCO over "the inappropriate management of contaminated water", saying the "problems have been caused by a lack of basic checks." He added: "I can't help but say that standards of on-site management are extremely low at Fukushima Daiichi. ... The failure to make rudimentary checks reflects a clear deterioration in the ability to manage the site." Ikeda said the problems at Fukushima raised serious questions about TEPCO's ability to operate its other nuclear plants, like the huge Kashiwazaki-Kariwa plant that TEPCO wants to restart.⁹⁷



Niigata Prefecture Governor Hirohiko Izumida – who effectively holds a veto over TEPCO's plan to restart reactors at the Kashiwazaki Kariwa plant – said TEPCO must give a fuller account of the Fukushima disaster and address its "institutionalized lying" before it can expect to restart reactors. Izumida cited TEPCO's belated admission in July – following months of denials – that the Fukushima plant was leaking radioactive substances into the ocean as evidence that TEPCO has not changed. "If they don't do what needs to be done, if they keep skimping on costs and manipulating information, they can never be trusted," he said. He added: "There are three things required of a company that runs nuclear power plants: don't lie, keep your promises and fulfil your social responsibility."⁹⁸

The Nuclear Regulation Authority said on October 7 that a Fukushima worker conducting system inspections mistakenly pushed a button turning off power to some of the systems in the four reactor buildings at the Fukushima plant, but a backup system kicked in.⁹⁹

A citizens' watch group reports numerous radioactive hot spots at future venues for the 2020 Summer Olympic Games, all located in and near Tokyo.¹⁰⁰

3 Oct 2013, 'Japan's Fukushima nuclear plant springs new radioactive leak', www.theaustralian.com.au/news/world/japans-fukushima-nuclear-plant-springs-new-radioactive-leak/story-e6frg6so-1226732086441

⁹⁵ Shingo Ito, AFP, 4 Oct 2013, 'Japan nuclear regulator berates Fukushima operator', <http://tinyurl.com/afp-fuku>

⁹⁶ 4 Oct 2013, 'TEPCO's water decontamination system out of action again', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310040062>

⁹⁷ Shingo Ito, AFP, 4 Oct 2013, 'Japan nuclear regulator berates Fukushima operator', <http://tinyurl.com/afp-fuku>

Martin Fackler, 4 Oct 2013, 'Company Is Scolded for Mistakes at Fukushima', www.nytimes.com/2013/10/05/world/asia/fukushima-nuclear-plant-in-japan.html

⁹⁸ Antoni Slodkowski and Kentaro Hamada, 29 Oct 2013, 'Tepco can't yet be trusted to restart world's biggest nuclear plant: governor', <http://planetark.org/enviro-news/item/70199>
www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-november-/blog/47506/

⁹⁹ 7 Oct 2013, 'Fukushima worker accidentally switches off cooling pumps, backup kicks in', www.nbcnews.com/news/world/fukushima-worker-accidentally-switches-cooling-pumps-backup-kicks-v20849414

¹⁰⁰ 8 Oct 2013, 'High radiation levels found at possible Olympic sites; Tokyo dismisses data',

On October 9, TEPCO announced that about 7,000 litres of water leaked from a pipe joint in the desalination system and flowed into a ditch. TEPCO said the leak was caused by human error – workers mistakenly removed the wrong pipe from of the desalination system.¹⁰¹ Out of 11 workers who were working around the desalination system, six had radioactive materials on their bodies.¹⁰²

On October 10, TEPCO announced that it had detected cesium-137 in seawater one kilometre from the Fukushima Daiichi plant, and that it had discovered a significant increase in cesium-134 and cesium-137 in the water-intake area at unit 2 – measured levels were well in excess of regulatory limits for waste water and were at a two-year high. TEPCO said cesium readings on October 9 jumped 13 times the previous day's reading, and that the spike was caused by construction work near the No.2 reactor building.¹⁰³

On October 13, an estimated 40,000 people rallied against nuclear power in Tokyo. The protest was organised by three anti-nuclear groups – the Metropolitan Coalition against Nukes, 'Sayonara Genpatsu 1,000 mannin Action' ('Good-bye to nuclear power through action by 10 million people') and 'Genpatsu wo Nakusu Zenkoku Renrakukai' ('National conference on abolishing nuclear power plants') – to express their opposition to the government's push for reactor restarts. After the rally, protesters marched nearby to the Ministry of Economy, Trade and Industry office as well as the head office of TEPCO.¹⁰⁴



<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310080051>

¹⁰¹ www.tepco.co.jp/en/press/corp-com/release/2013/1231288_5130.html

¹⁰² www.tepco.co.jp/en/press/corp-com/release/2013/1231300_5130.html

¹⁰³ Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

10 Oct 2013, 'Radiation levels in harbour off Fukushima hit two-year high', www.abc.net.au/news/2013-10-10/an-radiation-levels-in-harbour-off-fukushima-hit-two-year-high/5015082

10 Oct 2013, 'Radiation levels near damaged Fukushima reactor hit two-year high',

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310100095>

¹⁰⁴ 13 Oct 2013, 'Thousands mass for antinuclear rally in Tokyo',

www.japantimes.co.jp/news/2013/10/13/national/thousands-mass-for-antinuclear-rally-in-tokyo/

14 Oct 2013, 'Tens of thousands of protesters attend anti-nuclear events in Tokyo',

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201310140073>

On October 14, the *Mainichi Shimbun* newspaper reported that about 40% of Japanese nuclear plant equipment exported over the past decade failed to go through national government safety inspections. Inspections of equipment to be exported are only carried out if manufacturers receive loans from the government-affiliated Japan Bank for International Cooperation or take out insurance policies from Nippon Export and Investment Insurance. The *Mainichi Shimbun* states that this "is in sharp contrast to the requirement that all devices for domestic nuclear power stations be subject to strict government safety inspections." Among the items exported without inspection are key components such as nuclear reactor pressure vessels, their lids and control rod driving systems. Keio University professor Masaru Kaneko said: "Prime Minister Shinzo Abe claimed in a speech overseas that Japan can provide the world's safest atomic power technology, but how can Japan guarantee the safety of nuclear plant equipment Japanese firms export without a proper system to examine it?"¹⁰⁵

On October 17, water overflowed out of a temporary tank which stored contaminated groundwater.¹⁰⁶

After heavy rain on October 20, contaminated water overflowed containment areas built around the 1,000 tanks. TEPCO said it had planned to pump out accumulating rainwater into empty tanks, but the pumps could not keep up and containment areas surrounding 12 of 23 groups of tanks overflowed, with one containing strontium-90 at 710 becquerels/litre. TEPCO said it would prepare some 30 extra pumps and lay an additional 10 kilometres of pipes to prevent overflowing from happening again.¹⁰⁷

On October 23, a water sample collected about 600 metres from the outer sea, showed that the total beta-radioactivity was at its highest concentration level yet: 140,000 becquerels/litre, compared with 59,000 becquerels/litre at the same place on October 22. TEPCO suggested the reading was due to heavy rains over the previous week.¹⁰⁸

Japanese authorities may have underestimated by 20% the radiation doses workers got in the initial phase of the Fukushima nuclear power plant disaster. The U.N. Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) raised doubts about the dose estimates of the government and TEPCO. UNSCEAR analysed information on radiation doses for 25,000 people who worked at Fukushima Daiichi on or before October 2012, and determined that the tests used on workers did not take into account some types of radiation. In particular, workers were tested for thyroid doses from radioactive iodine after a significant delay, through procedures that failed to account for iodine-132 and iodine-133, which have short half-lives of 2 hours and 20 hours, respectively.¹⁰⁹

¹⁰⁵ 14 Oct 2013, '40% of Japan nuclear tech exported over past decade failed to go through safety check', <http://mainichi.jp/english/english/newsselect/news/20131014p2a00m0na015000c.html>

¹⁰⁶ Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

¹⁰⁷ Antoni Slodkowski, 21 Oct 2013, 'Radioactive water overflows barriers at Fukushima plant during heavy rain', www.japantoday.com/category/national/view/contaminated-water-storage-area-at-fukushima-plant-overflows-following-heavy-rain

¹⁰⁸ Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>
Oct 24, 2013, 'Radiation doubles to new high in No. 1 plant water ditch', www.japantimes.co.jp/news/2013/10/24/national/radiation-doubles-to-new-high-in-no-1-plant-water-ditch/

¹⁰⁹ 12 Oct 2013, 'U.N. panel says Japan nuclear workers may have got higher radiation - report', <http://in.reuters.com/article/2013/10/12/japan-fukushima-radiation-idINDEE99B03W20131012>

Media reports in October detailed the difficult and sometimes dangerous situation faced by decontamination and decommissioning workers within and beyond the Fukushima Daiichi plant.¹¹⁰ Problems include:

- The vast number of workers required – an estimated 50,000 workers have been involved in decontamination work since March 2011 and by October it had become increasingly difficult to fill job openings for decontamination work. Subcontractors have turned to cheap labour from itinerant workers known as 'nuclear gypsies'.
- The situation has been exploited by *yakuza* – organised crime syndicates – which have run labour rackets for generations. Nearly 50 gangs, with 1,050 members, operate in Fukushima Prefecture.
- Failure to properly monitor the activities of many hundreds of companies subcontracted to carry out decontamination work.
- Nearly 70% of the clean-up companies surveyed in the first half of 2013 had broken labour regulations, according to a labour ministry report in July. The ministry's Fukushima office received 567 complaints related to working conditions in the decontamination zone in the 12 months year to March 2013; the ministry issued 10 warnings, but no firm was penalised.
- Many decontamination workers earn poor money and live in poor conditions. Former decontamination worker Watanabe Kai said: "Every penny the company spends in Fukushima is a loss. So the mentality is to save as much as possible, not to ensure good conditions and safety for workers."

The *Asahi Shimbun* newspaper's 'Crooked Cleanup' investigation details the involvement of criminal gangs in decontamination work; lax background checks; contractors tipped off about 'surprise' inspections of decontamination work; shoddy work practices such as radioactive debris being dumped in rivers; contractors lying about their decontamination work; Environment Ministry officials failing to act on a flood of complaints about shoddy work; work being concentrated around radiation monitors with little or no work carried out at less proximate locations; and much, much more.¹¹¹

The headings of the 'Crooked Cleanup' articles give some sense of the breadth of the problems:

- Radioactive waste dumped into rivers during decontamination work in Fukushima
- Some decontamination workers sorry for following orders
- Reporters document extent of shoddy decontamination practices
- Government mishandled complaints about shoddy cleanup work
- Government to investigate Fukushima decontamination
- Ministry questions decontamination contractors; workers express hopelessness
- More data needed to make decontamination work effective
- Decontamination workers say cutting corners came naturally
- Ministry to investigate after companies admit only 3 violations in Fukushima
- Photos, videos show contractors lied in decontamination reports

¹¹⁰ Antoni Slodkowski and Mari Saito, 25 Oct 2013, 'Special Report - Help wanted in Fukushima: Low pay, high risks and gangsters',

<http://uk.reuters.com/article/2013/10/25/uk-fukushima-workers-specialreport-idUKBRE99004220131025>

Justin McCurry and David McNeill, "Japan's Cut-Price Nuclear Cleanup: TEPCO woes continue amid human error, plummeting morale and worker exodus," *The Asia-Pacific Journal*, Vol. 11, Issue 43, No. 2, 28 October 2013, www.japanfocus.org/-Justin-McCurry/4017

Mari Yamaguchi, 8 Nov 2013, 'Workers Speak Out About Flawed Fukushima Water Tanks', www.chem.info/news/2013/11/workers-speak-out-about-flawed-fukushima-water-tanks

¹¹¹ <http://ajw.asahi.com/tag/Crooked%20Cleanup>

- Government confirms 5 cases of shoddy decontamination work
- Workers break silence to allege boss ordered corner-cutting
- Fukushima cleanup contractors told workers to lie about pay in 'surprise' inspections
- Yakuza taking slice of lucrative decontamination work
- Government secretly backtracks on Fukushima decontamination goal

By the end of October, only 28.5% of houses, 33.2% of roads and 12.3% of forests around the Fukushima plant had been cleaned, according to the Fukushima Department of Environment. The Japanese government has extended the time-frame for the clean-up of the exclusion zone around the plant, initially due to be completed by March 2014, until 2017. Officials cited several difficulties as reasons for pushing back the timetable, including finding space to store contaminated waste. Endo Kouzou, Supervisor for Decontamination Operations at the Fukushima Department of Environment, said: "It is very hard to earn support from locals in terms of where to put the contaminated materials. This is the biggest problem. Another thing is that, despite various decontamination operations, radiation cannot be eliminated once for all."¹¹²

Claims by TEPCO and the government that radioactive water leaking into the sea from the Fukushima plant is confined to an area of 0.3 square kilometres are disputed by a US scientist. "These statements like a 0.3 square-kilometre zone are silly," Woods Hole Oceanographic Institution senior scientist Ken Buesseler said. "It's not true to the science. ... There's a lack of trust that they keep reinforcing by saying things like 'beyond this 0.3 kilometres zone there's no release.'"¹¹³

November 2013

Former Prime Minister Junichiro Koizumi tells the *Asahi Shimbun* newspaper in a November interview that: "Denjiren (the Federation of Electric Power Companies of Japan) has been telling a pack of lies. When experts say nuclear power generation is safe and doesn't cost much and this is the only way to go if we want to stop relying on coal, well, we believe them. But they've been lying to us for years. And the point is, we've never really known anything about nuclear power generation. We had little interest in it before 3/11, and we certainly had no idea how difficult it is to control nuclear energy."¹¹⁴

On November 10, water with a record high level of 710,000 becquerels/litre of beta-ray sources, such as radioactive strontium, was detected in an observation well 10 metres north of the tank that leaked 300 tons of highly contaminated water in August. TEPCO detected 400,000 becquerels/litre at the same well on October 17.¹¹⁵

¹¹² 4 Dec 2013, '1,000 days after Fukushima: residents of crisis zone frustrated by slow clean-up', www.euronews.com/2013/12/04/1000-days-after-fukushima-residents-of-crisis-zone-frustrated-by-slow-clean-up/
 21 Oct 2013, 'Japan extends the Fukushima clean-up deadline to 2017', www.bbc.co.uk/news/world-asia-24606357

¹¹³ Jonathan Tirone, 7 Oct 2013, 'Tepco's Claim Radiation Leaks Confined to Coast Called 'Silly'', www.bloomberg.com/news/2013-10-07/tepco-s-claim-radiation-leaks-confined-to-coast-called-silly-.html

¹¹⁴ Maki Okubo, 12 Jan 2014, "We've been lied to," said ex-Prime Minister Koizumi', <http://ajw.asahi.com/article/views/column/AJ201401120009>

¹¹⁵ 12 Nov 2013, 'Record radioactivity level found at Fukushima plant well', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201311120055>

Surveys published in the *Asahi* and *Mainichi* newspapers on November 12 found 60% and 54% of respondents respectively agreed that Japan should aim to go nuclear-free.¹¹⁶



TEPCO said on November 28 that a shortage of water storage tanks has forced it to postpone removal of radioactive groundwater at Fukushima Daiichi. The postponement would allow radioactive groundwater to continue to flow beyond soil hardened with chemicals between reactors #2 and #3 and into the sea.¹¹⁷

The lower house of Japan's Parliament approved a state secrecy bill on November 27 that imposes stiff penalties on bureaucrats who leak secrets and journalists who seek them. The bill was approved after hours of delay due to protests by opposition lawmakers. The bill allows heads of ministries and agencies to classify 23 vaguely worded types of information related to defense, diplomacy, counterintelligence and counterterrorism. Critics say it might sway authorities to withhold more information about nuclear power plants. Under the bill, leakers in the government face prison terms of up to 10 years, up from one year now. Journalists who obtain information "inappropriately" or "wrongfully" can get up to five years in prison.¹¹⁸

Reporters Without Borders said: "How can the government respond to growing demands for transparency from a public outraged by the consequences of the Fukushima nuclear accident if it enacts a law that gives it a free hand to classify any information considered too sensitive as a state secret?"¹¹⁹ In early 2013, Japan fell from 22nd to 53rd place in the Reporters Without Borders' ranking of media freedom. This was attributed to a single factor – the lack of access to information related to the Fukushima nuclear disaster. Many reporters have met with restricted access, lack of

¹¹⁶ Isabel Reynolds and Takashi Hirokawa, 12 Nov 2013, 'Abe Mentor Koizumi Reignites Post-Fukushima Nuclear Debate', www.bloomberg.com/news/2013-11-12/japan-ex-premier-koizumi-to-speak-against-abe-s-nuclear-policy.html

¹¹⁷ 28 Nov 2013, 'Tepco puts off removal of radioactive groundwater at Fukushima No. 1 plant', www.japantimes.co.jp/news/2013/11/28/national/tepco-puts-off-removal-of-radioactive-groundwater-at-fukushima-no-1-plant/

¹¹⁸ David McNeill, 26 Nov 2013, 'Japan cracks down on leaks after scandal of Fukushima nuclear power plant', www.independent.co.uk/news/world/asia/japan-cracks-down-on-leaks-after-scandal-of-fukushima-nuclear-power-plant-8965296.html

¹¹⁹ Justin McCurry, 6 Dec 2013, 'Japan whistleblowers face crackdown under proposed state secrets law', www.theguardian.com/world/2013/dec/05/whistleblowers-japan-crackdown-state-secrets

transparency and even lawsuits while TEPCO has consistently barred access to documents and to people.¹²⁰

The pro-nuclear policies of Liberal Democratic Party (LDP) Prime Minister Shinzo Abe have been criticised by four former Prime Ministers¹²¹:

- Junichiro Koizumi (LDP) said in an October 1 speech to business executives: "There is nothing more costly than nuclear power. Japan should achieve zero nuclear plants and aim for a more sustainable society."
- In 2012, former Democratic Party of Japan (DPJ) Prime Minister Yukio Hatoyama joined an anti-nuclear protest outside the residence of then Prime Minister Yoshihiko Noda.
- Naoto Kan, the DPJ prime minister when the earthquake and tsunami hit in 2011, told an audience in New York on October 8 that he had been a supporter of nuclear power, but after the Fukushima accident, "I changed my thinking 180-degrees, completely."
- Morihiro Hosokawa, said in an interview published on November 12 that Abe's nuclear energy policy was a "crime" and that he was willing to campaign against it. "I foolishly once believed the myth that nuclear energy is clean and safe. That myth has completely broken down. We need to turn around by 180 degrees the current energy-guzzling society dependent on nuclear power," Hosokawa said.

For the first time, a leak from the containment vessel of one of the damaged reactors is confirmed – highly contaminated water is leaking from the containment vessel of reactor #1.¹²²

TEPCO announces it will permanently close the undamaged reactors #5 and #6 at the Fukushima Daiichi plant and convert them into research facilities to help plan for the removal of fuel from reactors #1, #2, #3 which suffered core meltdowns.¹²³

On November 26, an anti-nuclear citizens' group aiming to collect signatures from 10 million people handed the second round of collected signatures to the Parliament and the Cabinet Office. As of November 20, the group named "Sayonara Nuclear Power Plants" had collected a total of 8,378,701 signatures. During and after the submission of the signatures, group members held a meeting in the Diet building and a rally in Hibiya Park, and then set out on an anti-nuclear march in downtown Tokyo.¹²⁴

December 2013

Woods Hole Oceanographic Institution senior scientist Ken Buesseler said: "With the sheer number of things that are going wrong, they [TEPCO] should be more openly bringing in help. ...

¹²⁰ Reporters Without Borders 2013 World Press Freedom Index, <http://en.rsf.org/press-freedom-index-2013,1054.html>

¹²¹ 'Political and public anti-nuclear sentiment in Japan', Nuclear Monitor #772, 15 Nov 2013, www.wiseinternational.org/node/4039

¹²² 14 Nov 2013, 'Photo confirms water leaks from Fukushima reactor containment vessel', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201311140046>

¹²³ 20 Nov 2013, 'Reactors 5, 6 to be test units for scrapping plant', www.japantimes.co.jp/news/2013/11/20/national/reactors-5-6-to-be-test-units-for-scrapping-plant/

¹²⁴ CNIC, Nuke Info Tokyo No. 158, Jan./Feb. 2014, www.cnic.jp/english/newsletter/nit158/nit158aricles/03_Sayonara.html

Every time they have a problem, they come up with a solution that takes a long time to bring in, and then doesn't even solve the problem."¹²⁵

On December 1, one of the three Advanced Liquid Processing System units was shut down after found to be leaking hydrochloric acid. The unit had been in trial operation and was scheduled to go into full operation on December 1.¹²⁶

Many of those evacuated from towns close to Fukushima are still living in temporary accommodation. Occupancy rates of the temporary housing built in Iwate, Miyagi and Fukushima prefectures in the aftermath of the disaster are at 85%. "We haven't been making progress in building public housing for disaster victims and acquiring land for projects to relocate entire communities," an Iwate housing official said. "Family members live apart and it's no good. Since we can't go back to our hometown, this is like a living hell. Nothing will change even if we complain," said Yoichi Matsumoto, a resident in temporary accommodation in Iwaki. It is not expected that the situation will improve soon. "There is a strong likelihood that it may take five years or more after the quake to see all occupants move out," said an Iwate official.¹²⁷

TEPCO said on December 2 it had found radioactive contamination 36,000 times permissible levels in water taken from an observation well. The readings were taken from the well east of reactor #2 and 40 metres from the sea. The contamination measured 1.1 million becquerels/litre.¹²⁸

On December 6, TEPCO said it detected the highest estimated radiation level for an outdoor location at Fukushima. Readings equivalent to 15 sieverts and 25 sieverts per hour was taken on steel piping near an exhaust stack for the No. 1 and No. 2 reactors. A TEPCO official said radioactive materials derived from melted fuel likely entered the piping during venting soon after the accident occurred in March 2011 and have remained there.¹²⁹

TEPCO said radioactive water leaked at four places in barriers surrounding storage tanks between December 21 and 22. TEPCO gave figures of 800 litres and 1,000 litres.¹³⁰

On December 24, TEPCO reported that up to 225,000 litres of contaminated water leaked into soil from two storage tanks.¹³¹

¹²⁵ Ian Sample, 4 Dec 2013, 'Fukushima two years on: a dirty job with no end in sight', www.theguardian.com/environment/2013/dec/03/fukushima-daiichi-tsunami-nuclear-cleanup-japan

¹²⁶ 2 Dec 2013, 'ALPS system shut down over leak', www.japantimes.co.jp/news/2013/12/02/national/alps-system-shut-down-over-leak/

¹²⁷ 4 Dec 2013, 'Many evacuees still in temp housing', www.japantimes.co.jp/news/2013/12/04/national/many-evacuees-still-in-temp-housing/

¹²⁸ www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/fukushima-nuclear-crisis-update-for-december-/blog/47626/

¹²⁹ http://www3.nhk.or.jp/nhkworld/english/news/20131207_01.html
7 Dec 2013, 'Record outdoor radiation level detected at Fukushima plant',

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201312070041>
¹³⁰ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201312230058>

¹³¹ www.japantimes.co.jp/news/2013/12/24/national/more-water-leaks-detected-at-fukushima-no-1/
Asahi Shimbun, 25 Dec 2013,

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201312250044>

CNIC, 'Current State of Post-Accident Operations at Fukushima Daiichi Nuclear Power Station (July to December 2013)', Nuke Info Tokyo No. 158, Jan/Feb 2014,
www.cnic.jp/english/newsletter/nit158/nit158aricles/04_F1_2013JulytoDec.html

Unprotected contaminated waste left by clean-up operations is found in the open in Fukushima Prefecture. Radiation readings taken from the debris were as high as ten times the national limits, with bags of radioactive soil being stored in children's playgrounds at apartment complexes.¹³²

January 2014

Naomi Hirose, president of TEPCO, acknowledged that TEPCO was incapable of adequately dealing with problems in 2013, and was continually responding late to issues as they arose. Hirose said that the utility will do its best "not to have any problems" in 2014.¹³³

More lies from the International Atomic Energy Agency (IAEA). The IAEA urges the Japanese government to "increase efforts to communicate that in remediation situations, any level of individual radiation dose in the range of 1 to 20 mSv per year is acceptable and in line with the international standards and with the recommendations from the relevant international organisations."¹³⁴ The accepted limit for public exposure is 1 mSv annually from anthropogenic sources, not 1–20 mSv. The IAEA says it is ready to support Japan in the "challenging task" of peddling public health lies. Australian public health expert Assoc. Prof. Tilman Ruff gives some indication of the risks associated with the IAEA's propaganda: "To provide a perspective on these risks, for a child born in Fukushima in 2011 who was exposed to a total of 100 mSv of additional radiation in its first five years of life, a level tolerated by current Japanese policy, the additional lifetime risk of cancer would be on the order of one in thirty, probably with a similar additional risk of premature cardiovascular death."¹³⁵

Nearly three years after the Fukushima crisis began, reports to the Japan Teachers Union's national convention show that children from the region continue to suffer emotional distress and are displaying "abnormal behaviour". Children evacuated elsewhere have been the victims of bullying. They have been told "Go home to the nuclear zone" and called "dappokusha" – a term usually given to defectors from North Korea. "People have dark feelings about the nuclear plant, and in that kind of atmosphere they tend to direct their anger at those who used to live near the plant. The children are being influenced by that," said one teacher. Another teacher said that children were adversely affected by living in temporary housing and going to class in space borrowed from other schools, such as gyms: "The stress has made it hard for some kids to relate to how other people feel. There are more and more children who can't seem to build human relationships. I'd say about half the kids in my class have issues that need to be dealt with as they grow up."¹³⁶

¹³² 16 Dec 2013, 'Shoddy management of radioactive soil uncovered at five locations in Fukushima Pref.', <http://mainichi.jp/english/english/newsselect/news/20131216p2a00m0na016000c.html>

¹³³ 6 Jan 2014, 'TEPCO president promises utility will do its best in 2014 to "not have any problems"', <http://enformable.com/2014/01/tepcO-president-promises-utility-will-best-2014-problems/>

¹³⁴ IAEA, 23 Jan 2014, 'Final Report: The Follow-up IAEA International Mission on Remediation of Large Contaminated Areas Off-Site the Fukushima Daiichi Nuclear Power Plant, Tokyo and Fukushima Prefecture, Japan, 14–21 October 2013', www.iaea.org/newscenter/focus/fukushima/final_report230114.pdf

¹³⁵ Tilman Ruff, Oct-Dec 2013, 'A Public Health Perspective on the Fukushima Nuclear Disaster', Asian Perspective, https://www.mapw.org.au/files/downloads/AP37-4_Tilman%20Ruff%20%281%29.pdf

¹³⁶ 27 Jan 2014, 'Children in disaster areas still suffering mental stress: teachers', <http://mainichi.jp/english/english/newsselect/news/20140127p2a00m0na011000c.html>



TEPCO acknowledged for the first time the probability that water was leaking from the reactor #3 containment vessel into the basement of the reactor building. A sample of the water showed extremely high contamination. The leakage is a significant finding – it could indicate that the #3 containment vessel has significant damage and cooling water is leaking from it.¹³⁷

TEPCO issued a new plan for victim compensation, recovery of Fukushima prefecture, and reorganisation of the company itself. It calls for an establishment of a new company exclusively dedicated to decommissioning of Fukushima.¹³⁸

The Japanese province of Fukushima has pledged to switch to 100% renewable energy by 2040. Energy will be generated through community energy initiatives and will provide a clean and self-sustaining source of heat and electricity throughout the area. A coalition of green energy groups welcomed the decision at a Community Power Conference held in Fukushima.¹³⁹

An investigation by the *Mainichi Shimbun* newspaper reveals that TEPCO has been demanding that evacuated employees suspend their claims for compensation, and demanding that some evacuated employees refund compensation already paid. "If this life we're leading now isn't a refugee existence, then what is it?" said one employee.¹⁴⁰

The much-troubled Advanced Liquid Processing System (ALPS) stopped working yet again after a crane failure. TEPCO could not say when the system would be operational again.¹⁴¹ The ALPS has a long history of failures¹⁴² (see entries for June, July, September, October and December 2013).

¹³⁷ www.tepco.co.jp/en/press/corp-com/release/2014/1233734_5892.html

Tatsujiro Suzuki, <http://thebulletin.org/suzukis-fukushima-updates>

20 Jan 2013, 'Fukushima leak likely water used to cool nuclear fuel',

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401200049>

¹³⁸ www.tepco.co.jp/en/press/corp-com/release/2014/1233729_5892.html

¹³⁹ Sophie Yeo, 31 Jan 2014, 'Fukushima to use 100% renewable energy by 2040',

www.rtcc.org/2014/01/31/fukushima-to-use-100-renewable-energy-by-2040/

<http://go100re.net/events/4/3rd-community-power-conference/>

¹⁴⁰ <http://mainichi.jp/english/english/newsselect/news/20140121p2a00m0na010000c.html>

¹⁴¹ http://www3.nhk.or.jp/nhkworld/english/news/20140108_36.html

http://www.disclose.tv/action/viewvideo/162236/Decontamination_system_stops_working/

A sit-in protest outside the head office of Kyushu Electric Power Co in Fukuoka marked its 1,000th day on January 14. The protest began in April 2011. "Humans cannot live side by side with nuclear energy. Never again should lives be threatened and livelihoods deprived," said protest organiser Yukinobu Aoyagi.¹⁴³

The Fisheries Research Agency said a black sea bream, caught 37 kms from the Fukushima plant, had 12,400 becquerels/kg of radioactive cesium, 124 times the safety standards for foodstuffs.¹⁴⁴ The record cesium reading was recorded in 2013 when a fish caught near the plant registered 740,000 becquerels/kg of cesium.¹⁴⁵

Journalists from the *Asahi Shimbun* newspaper were given access to the damaged reactor #4 building on January 29. They described it as a "a gutted shell and conditions there remain extremely hazardous", where "rusted machinery parts and shattered measurement equipment lay buried in the debris."¹⁴⁶

More than 1,400 people have lodged a joint lawsuit against Toshiba, GE and Hitachi, the companies that supplied the three reactors that melted down at the Fukushima Daiichi plant. The lawsuit seeks to challenge the law that protects reactor manufacturers in the event of nuclear accidents, and will argue that the companies failed to make vital safety improvements at the plant before the crisis. The plaintiffs are not seeking punitive damages, merely a symbolic 100 yen each. They say the case is to help raise awareness of the issue. "It is a lawsuit designed to drag the makers of the reactors out of hiding," said attorney Hiroyuki Kawai.¹⁴⁷

Radiation measurements taken from an observation well at the Fukushima Daiichi nuclear power plant are increasing. Groundwater in the well measured 2.4 million becquerels/litre for strontium-90 and other beta-emitting particles.¹⁴⁸

February 2014

According to information compiled by police and local governments, 1,656 people have died in the Fukushima prefecture as a result of stress and other illnesses caused by the 2011 disaster. This compares with 1,607 who were drowned by the tsunami or killed by the preceding earthquake.¹⁴⁹ "The biggest problem is the fact that people have been living in temporary conditions for so long," said Hiroyuki Harada, a Fukushima official dealing with victim assistance, "People have gone

¹⁴² www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/permanent-crisis-at-fukushima/blog/47649/

¹⁴³ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401140051>

¹⁴⁴ Asahi Shimbun, 11 Jan 2014,

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401110029>

¹⁴⁵ 13 Jan 2014, 'Fish testing at 124 times over radiation limit caught off Fukushima',

<http://rt.com/news/fukushima-fish-cesium-radiation-548/>

¹⁴⁶ 31 Jan 2014, 'Debris hinders decommissioning work at Fukushima nuclear plant',

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401310216>

¹⁴⁷ www.japantimes.co.jp/news/2014/01/31/national/firms-that-made-no-1-plant-sued/

<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401310200>

¹⁴⁸ 15 Jan 2014, 'Radiation rising in Fukushima well',

www.japantimes.co.jp/news/2014/01/15/national/radiation-rising-in-fukushimawell/

¹⁴⁹ 22 Feb 2014, 'More Fukushima victims die of stress than were killed in the disaster',

www.thetimes.co.uk/tto/news/world/asia/article4012190.ece

through dramatic changes of their environment. As a result, people who would not have died are dying."¹⁵⁰

Former Prime Minister Morihiro Hosokawa ran as a candidate for the position of Tokyo governor but lost the February 9 poll after the LDP-backed candidate Yoichi Masuzoe blunted Hosokawa's anti-nuclear stance by pledging to reduce reliance on nuclear power and to expand renewable energy sources. "We have to break away from the system that depends on nuclear energy in the long run, considering the dismal state (caused by the Fukushima crisis)," Masuzoe said. Former Prime Minister Junichiro Koizumi, who supported Hosokawa's campaign, said: "The result is regrettable but I will continue my struggle to reach a state of zero nuclear energy in the future."¹⁵¹

Rifts are developing within Japan's nuclear village. The *New York Times* reported on February 11: "As a sign of the depth of the internal conflict, fissures have begun to appear even in Japan's once solidly pro-nuclear business world. While the powerful Keidanren lobbying group representing Japan's business establishment still remains a vocal supporter of restarting nuclear plants, many younger companies have turned against it. Rifts have also appeared within Mr. Abe's governing party, where a group of about 50 mostly younger lawmakers have staged a revolt against Mr. Abe's unabashedly pro-nuclear stance."¹⁵²

A group of around 50 LDP lawmakers has drawn up a proposal for the government to phase out nuclear power in Japan. "The plan should make clear that new commercial reactors should not be built ... and that reactors that have operated for 40 years should be scrapped," said the group.¹⁵³

TEPCO is re-analysing 164 water samples collected from April to September 2013 because previous readings "significantly undercounted" radiation levels. TEPCO said the problem was caused by errors in its testing of beta radiation, which includes strontium-90. "These errors occurred during a time when the number of the samplings rapidly increased as the result of a series of events since last April, including groundwater reservoir leakage and a major leak from a storage tank," said a TEPCO statement. The Nuclear Regulation Authority said it relied on TEPCO's measurements.¹⁵⁴

TEPCO suspended the removal of spent nuclear fuel rods from the spent fuel pool at reactor #4 on February 25 after a cooling system failed due to a power cable damaged during excavation work at another building at the plant. Spent fuel removal resumed after four hours, once a backup system was activated.¹⁵⁵

TEPCO did not tell the public or the Nuclear Regulation Authority (NRA) until recently that extremely high levels of radiation were found in groundwater collected in an observation well last

¹⁵⁰ 20 Feb 2014, 'Post-tsunami deaths outnumber disaster toll in Fukushima', www.channelnewsasia.com/news/asiapacific/post-tsunami-deaths/1006448.html

¹⁵¹ Deutsche Welle, 10 Feb 2014, www.dw.de/tokyo-election-not-a-clear-vote-for-nuclear-energy/a-17422110

www.japantimes.co.jp/news/2014/02/02/national/tokyo-election-goes-nuclear/

¹⁵² Martin Fackler, 11 Feb 2014, 'Nuclear Issue in Limbo as Indecision Grips Japan', www.nytimes.com/2014/02/12/world/asia/nuclear-issue-in-limbo-as-indecision-grips-japan.html?_r=1

¹⁵³ <http://english.kyodonews.jp/news/2014/01/267541.html>

¹⁵⁴ Jacob Adelman and Masumi Suga, 25 Feb 2014, 'Tepco Says Fukushima Radiation 'Significantly' Undercounted', www.businessweek.com/news/2014-02-25/tepco-says-fukushima-radiation-significantly-undercounted

¹⁵⁵ Bloomberg, 25 Feb 2014, www.bloomberg.com/news/2014-02-25/fukushima-nuclear-fuel-removal-suspended-after-cooling-failure.html

July, even though the utility was aware of the data that month. The groundwater sample contained five million becquerels/litre of strontium-90. TEPCO told the NRA that it had only recently compiled the data, but later acknowledged that it had withheld the record readings.¹⁵⁶ The *Asahi Shimbun* newspaper reported that TEPCO withheld 140 measurements of strontium found in groundwater and in the harbour between June and November 2013.¹⁵⁷

NRA chairman Shunichi Tanaka said that TEPCO still lacks a basic understanding of measuring and handling radiation.¹⁵⁸

On February 13, TEPCO said water samples from a new observation well contained the highest levels of radioactive cesium detected so far in groundwater at the site – 54,000 becquerels/litre of cesium-137 and 22,000 becquerels/litre of cesium-134.¹⁵⁹

On February 19, a storage tank overflowed, leading to a spill of about 100,000 litres of partially-treated radioactive water. The water had already passed through the cesium and salt removal facilities, but other beta-emitting nuclides had yet to be removed. TEPCO said the spill resulted from "the improper flow of water through a pipe from the processing facility to the tank" and that two of the three valves along the pipe were improperly left open, while the third valve was closed but failed to function. Some of the water overflowed into the dike surrounding the tank, but the rest flowed along a rainwater drainpipe to the ground beyond the dike. The beta radioactivity of the water in the drainpipe was 230 million becquerels/litre while that in the dike was 3 million becquerels/litre. It took workers just over six hours to stop the water overflowing from the tank, by which time some 100,000 litres of water is estimated to have leaked from the tank, causing a puddle measuring some 30x3 metres to form adjacent to the tank but outside of the dike. TEPCO director and executive vice president Zengo Aizawa said: "We are deeply embarrassed that this sort of unacceptable event would occur after the many steps we have taken to improve the management of stored water."¹⁶⁰

More than nine hours before the leak was detected, an alarm warning of high water levels sounded but workers did not investigate, believing a malfunctioning water level gauge mistakenly set off the alarm. As of February 18, the volume of radioactive water stored in the 1,000 holding tanks at the plant had reached about 520,000 tons.¹⁶¹

A joint survey by the Fukushima Prefecture government and the Tohoku Regional Agricultural Administration Office of the Ministry of Agriculture, Forestry and Fisheries found that the levels exceed 8,000 becquerels/kg of soil in 576 reservoirs. In 14 of those cases, the level exceeds 100,000 becquerels/kg and the highest reading was 390,000 becquerels/kg. The survey covered

¹⁵⁶ 11 Feb 2014, 'Tepco hid record-level radiation data last July', www.japantimes.co.jp/news/2014/02/11/national/tepco-withheld-record-level-radiation-data-last-summer/

¹⁵⁷ <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201401090060>

¹⁵⁸ Mari Saito, 12 Feb 2014, 'Japan's nuclear regulator raps Fukushima operator over radiation readings', <http://in.reuters.com/article/2014/02/12/japan-nuclear-fukushima-radiation-idINDEEA1B08720140212>

¹⁵⁹ NHK, 13 Feb 2014, http://www3.nhk.or.jp/nhkworld/english/news/20140213_22.html

¹⁶⁰ 21 Feb 2014, 'Fukushima water storage tank overflows', www.world-nuclear-news.org/RS-Fukushima-water-storage-tank-overflows-2102144.html

NRA, 20 Feb 2014, www.nsr.go.jp/english/newsrelease/data/20140220.pdf

¹⁶¹ Akira Hatano and Shunsuke Kimura, 21 Feb 2014, 'TEPCO says worker error may have caused large radioactive water leak', <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201402210062>

1,939 reservoirs, or slightly more than half of the 3,730 in Fukushima Prefecture for agricultural use, and took place from February 2012 to December 2013. Officials said 108 of the 576 contaminated reservoirs are in zones where residents were evacuated due to the March 2011 nuclear disaster, while the remaining 468 reservoirs are located outside the evacuation order zones and still supply water to farmland. In some of the reservoirs where cesium measurements were high, officials noted that water levels were lower in summer and, as a result, the mud was exposed to the elements. In those instances, the exposed mud posed a health hazard to residents.¹⁶²

A briefing paper by journalist Dr David McNeill (co-author of the book 'Strong in the Rain: Surviving Japan's Earthquake, Tsunami and Fukushima Disaster') details the plight of Fukushima evacuees. McNeill writes: "Government estimates say that 270,000 people from the Tohoku (northeast) region remain scattered throughout Japan since the tsunami/earthquake/nuclear disaster began. Of these, 146,520 were forced to abandon their homes in or near the government's mandatory 20km evacuation zone. Tens of thousands more have fled voluntarily. About a third of the refugees are in their sixties or older. About 100,000 of the refugees live in temporary accommodation. For many, this means hastily built, two-roomed homes closely packed into available land in towns and cities around Fukushima Prefecture. Many of the homes are starting to decay. Thousands more share houses with relatives. ... The most contaminated areas, with annual radiation doses of at least 50 millisieverts (home to about 25,000 people) are still designated "difficult-to-return-to areas", a government-coined euphemism for permanent homelessness."¹⁶³

250,000 tons of contaminated soil have been bagged and stacked in 30 locations throughout Fukushima prefecture. Thousands of bags are in the middle of communities, waiting to be relocated. The blue 'weatherproof' bags are designed to hold the contents safely for five years, but some of the soil was bagged in 2011 so the clock is ticking on bag integrity.¹⁶⁴

A mental health care centre reported a sharp increase in the number of people complaining about mental problems in the first half of fiscal 2013 among victims of the March 2011 triple-disaster. Stress that has built up in their minds may have reached a significant threshold in the third year after the disaster, experts warned. "We assume that various kinds of mental fatigue have accumulated without warning among disaster-affected people after [the Fukushima nuclear disaster]," said Seiichi Uchiyama, deputy director of the Fukushima Centre for Disaster Mental Health.¹⁶⁵

Japan has received around 200 international suggestions on concepts to remove the remains of the Fukushima Daiichi reactor cores. The International Research Institute for Nuclear Decommissioning, which launched a request for information last year, will analyse and sort the submissions by the end of March 2014. TEPCO and the Japan Atomic Energy Agency estimate that all 77 tonnes of the fuel from reactor #1 melted and passed from the reactor vessel to the drywell

¹⁶² Shinichi Fujiwara, 25 Feb 2014, 'Health risk or not? Cesium levels high in hundreds of Fukushima reservoirs', http://ajw.asahi.com/article/behind_news/social_affairs/AJ201402250071

¹⁶³ David McNeill, February 2014, 'Three Years On: Lives in Limbo', www.greenpeace.org/international/Global/international/briefings/nuclear/2014/Fukushima-3rd/Three%20Years%20On.pdf

¹⁶⁴ Laurie Garrett, 20 Feb 2014, 'Problems Persist at Fukushima', www.foreignpolicy.com/articles/2014/02/20/250000_tons_of_radioactive_soil_in_fukushima_japan

¹⁶⁵ 23 Feb 2014, 'Stress up among 2011 disaster victims in Japan', <http://news.asiaone.com/news/asia/stress-among-2011-disaster-victims-japan>

area immediately below. At units 2 and 3, an estimated 30-40% of their 107-tonne cores remain in the vessels, the rest in the drywell.¹⁶⁶

Bypassing government guidelines, TEPCO said it will end compensation payments in February 2015 to people whose incomes have fallen because of the Fukushima disaster. But the Dispute Reconciliation Committee for Nuclear Damage Compensation, a governmental body that sets guidelines for compensation to nuclear disaster victims, has not decided when to terminate reparations. The guidelines state that "it will be reasonable to end compensation when residents become able to do business on a level equivalent to that before the disaster."¹⁶⁷

On February 25, the Ministry of Economy, Trade and Industry released a draft energy plan proposing a mix of energy sources including ongoing reliance on nuclear power, which is described as an "important power source that supports the stability of the energy supply and demand structure".¹⁶⁸ However Prime Minister Shinzo Abe told Parliament: "We will work to promote an energy conservation society and introduce renewable energy ... On that basis, reliance on nuclear power will be cut as much as possible."¹⁶⁹ Likewise, industry minister Toshimitsu Motegi said the draft energy plan still committed the country to "reducing its reliance on nuclear power as much as possible".¹⁷⁰ The draft plan avoids quantifying the ultimate role of nuclear energy with the "appropriate energy mix" to be determined at an unspecified later date.

Hundreds rallied in Tokyo on March 1 to protest Japanese prosecutors' decision to drop charges over the Fukushima nuclear crisis, with no one yet punished nearly three years after the disaster.¹⁷¹



¹⁶⁶ 7 Feb 2014, 'Ideas for debris removal at Fukushima',

www.world-nuclear-news.org/WR-Ideas-for-debris-removal-at-Fukushima-0702141.html

¹⁶⁷ 25 Feb 2014, 'TEPCO to bypass guidelines, end compensation for Fukushima evacuee incomes',
<http://ajw.asahi.com/article/0311disaster/fukushima/AJ201402250046>

¹⁶⁸ 25 Feb 2014, 'Nuclear 'an important power source' for Japan',
www.world-nuclear-news.org/NP-Nuclear-an-important-power-source-for-Japan-2502141.html

¹⁶⁹ Peter Ker, 3 March 2014, 'Brighter prospects for uranium miner Paladin Energy',
www.theage.com.au/business/brighter-prospects-for-uranium-miner-paladin-energy-20140302-33tv7.html

¹⁷⁰ Jonathan Soble, 25 Feb 2014, 'Japan in U-turn over nuclear policy',
www.ft.com/intl/cms/s/0/3ee7c4f2-9dd6-11e3-83c5-00144feab7de.html

¹⁷¹ 1 March 2014, 'Hundreds protest dropped charges over Fukushima crisis',
<http://au.news.yahoo.com/thewest/world/a/21764128/hundreds-protest-dropped-charges-over-fukushima-crisis/>