

Radiation Levels in the Fukushima Reactor Are Soaring Unexpectedly

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Radiation is at its highest since the 2011 meltdown.

The radiation levels inside Japan's damaged [Fukushima Daiichi](#) nuclear reactor No. 2 have soared in recent weeks, reaching a maximum of 530 sieverts per hour, a number experts have called "[unimaginable](#)".

Radiation is now by far the highest it has been since the reactor was struck by a tsunami in March 2011 – and scientists are struggling to explain what's going on.

The previous maximum radiation level recorded in the reactor was 73 sieverts per hour, a reading taken not long after the meltdown almost six years ago. The levels are now more than seven times that amount.

Exactly what's causing the levels to creep upwards again is currently stumping the Tokyo Electric Power Company (Tepco). But the good news is that they say the radiation is safely contained within the reactor, so there's no risk to the greater population.

The latest readings were taken near the entrance of the No. 2 reactor, immediately below the pressure vessel that contains the reactor core.

To get an idea of the radiation levels inside, the team used a remote-operated camera to take photos of the area – the deepest point in the reactor to date – and then analysed the electronic noise in the images to measure radiation levels.

The technique has an error margin of plus or minus 30 percent, which means that it's not highly accurate. But even at the lowest end of the measurements, the levels would still be 370 sieverts per hour – and could be as high as 690 sieverts per hour.

These unexpectedly high levels are complicating Tepco's plan to decommission the nuclear reactor. The most recent aim was to have workers find the fuel cells and start dismantling the plant by 2021 – a job that's predicted to take up to half a century.

But the levels within reactor No. 2, at least, are in no way safe for humans.

The Japanese National Institute of Radiological Sciences [told Japan Times that](#) medical professionals have no experience dealing with radiation levels this high – for perspective, a single dose of just [1 sievert](#) of radiation could lead to infertility, hair loss, and sickness.

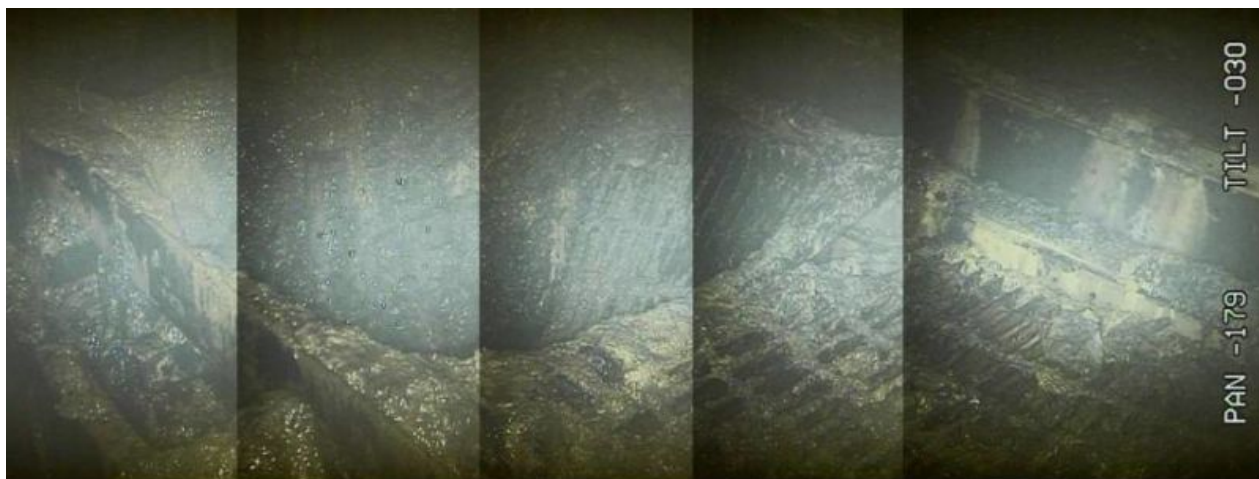
Four sieverts of radiation exposure in a short period of time would [kill 50 percent of people](#) within a month. Ten sieverts would kill a person [within three weeks](#).

Even the remote-operated camera sent in to capture these images is only designed to withstand 1,000 sieverts of radiation, which means it won't last more than two hours in the No. 2 reactor.

It's not yet clear exactly what's causing the high levels either. It's possible that previous readings were incorrect or not detailed enough, and levels have always been this high. Or maybe something inside the reactor has changed.

The fact that these readings were so high in this particular location suggests that maybe melted reactor fuel escaped the pressure vessel, and is located somewhere nearby.

Adding to that hypothesis is the fact that the images reveal a gaping [1-metre \(3.2-foot\) hole](#) in the metal grate underneath the pressure vessel – which could indicate that nuclear fuel had melted out of it.



Tepco

On Monday, Tepco also saw “[black chunks](#)” deposited on the grating directly under the pressure vessel – which could be evidence of melted fuel rods.

If confirmed, this would be a huge deal, because in the six years since the three Fukushima reactors went into meltdown, no one has ever been able to find any trace of the nuclear fuel rods.

Swimming robots were [sent into](#) the reactors last year to search for the fuel rods and hopefully remove them, but their [wiring was destroyed](#) by the high levels of radiation.

Naturally, Tepco is reluctant to jump to any conclusions on what the black mass in the images could be until they have more information.

“It may have been caused by nuclear fuel that would have melted and made a hole in the vessel, but it is only a hypothesis at this stage,” [a Tepco spokesperson told AFP](#).

We believe the captured images offer very useful information, but we still need to investigate given that it is very difficult to assume the actual condition

inside.

Given the new readings, Tepco is now putting their plans to further explore reactor No. 2 using remote operated camera on hold, seeing as the device will most likely be destroyed by the intense conditions.

But they will send a robot into reactor No. 1 [in March](#) to try to get a better idea about the internal condition of the structure, while they decide what to do next with reactor No. 2.

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