

## Disasters? Natural or man-made

Japan, the land of rising Sun, is no stranger to disaster both natural and man-made. Ravaged by multiple earthquakes over centuries and brutally bombed in World War II, the island nation has led to rebuild itself several times over. However, the tragedy that reached its shores on March 11, 2011 continues to unfold on an unprecedented scale. A massive earthquake that triggered a ferocious tsunami has wiped off entire town, more than 18 000 are dead or missing, and hundreds of thousands are homeless. And, the nuclear nightmare that the Japanese hoped world never revisit them is back—the tsunami has led to explosions in Japan's nuclear facilities despite attempts are being made to cool the reactors and control radioactive leakage with little success. As the nation struggles to cope with the catastrophic humanitarian and nuclear crisis, it hopes for a new dawn to deliver it from this darkness.

The 9.0 quake on Richter scale that hit Japan on March 11 was powerful enough to shift the earth on its axis and make it spin a little faster shortening the day by 1.8 millionths of a second. It shoved the island nation one parking space to the East. But what felt like the end was just the beginning.

The sturdy buildings that survived the quake were raved by the wave that followed. The three-storey wall of water dissolved coastal towns, dry docked boats on the roofs of building, and shuffled houses like playing cards. There were so many after shocks that people stopped diving under tables. Those who made it safely to higher grounds waited in the dark, in the cold, in lines that stretched for hours for water and food. In a society seen as the most stoic on earth, the closest thing to chaos was a man cutting in line.

But still, it was not over, only the earth and sea had spoken. The next danger came from sky. Officials warned people to stay inside and seal whatever was left of their homes because the new threat was silent, invisible, and airborne. A country perched on four fault lines and with no oil reserve embraces nuclear power with the auction born of long memory and scars. But, no one calculated what would happen if the fail—safes failed. When the quake hit the reactors at the Fukushima Daiichi complex, what exactly they were supposed to do. They



were supposed to shut down. But, the wave came breached the sea-wall, drowned the backup generators needed to cool the reactors, and took out the spare batteries. It was left to skeleton crew of 50 to Jury—Rig Fire hoses to keep the temperature down.

One by one, the outer buildings exploded. This is also what they were designed to do to release pressure and protect the core.

The best nuclear scientist on the planet raced to avert a total meltdown even as radioactive levels as far south as Tokyo spiked to 23 times as high as normal. With the menace growing by the hour, the most fateful calculation came down to the most fickle, which way is the wind blowing.

Similar is the case of radiation caused by radioactive materials and X-rays. Though the X-ray and computed tomography (CT) scan are the best tools for diagnosing the diseases, one is unaware of the hidden danger of radiation emitted. Certainly, there can be no denial that X-rays have proved to be a boon for the mankind as well as a better source of exploring the hidden secrets helpful in treating incurable diseases, but the damage it can cause through overexposure are incalculable. Radioactive materials that decay spontaneously produce ionizing radiation which is responsible for various diseases. Radiations can damage the process of normal cell division, leading to various diseases. It can also damage DNA and cause mutations. Prolonged exposure to microwaves radiation, which is non-ionizing, may cause cataracts. The thyroid gland is one of the most radiation-sensitive parts of the body, especially in babies and children. Unnecessary investigations are directionless and can cause major disadvantages; and the radiological ones are the worst in this respect. A rapid growth in use of CT scans and different X-ray equipments for diagnostic purpose can lead to increase in the total radiation exposure. It is estimated that about one-third of all CT scans that are done right now are medically unnecessary.

Health professionals must make judicious use of this radioactive energy for the betterment of patients; they should only dwell on it if indispensable and inevitable, otherwise it is bound to play havoc with the patients.

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We sleep easy in the soft arms of clichés, hope for the best, prepare for the worst, risk varies invariably with knowledge. It is a waste of time to think about the unthinkable. But Japan shook those soothing assumptions. No amount of planning, no skills or specs or spreadsheets, can stop a force that moves the planet.



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