

# Lessons on nuclear reactor accidents

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BEFORE the Bangladeshi government puts reactor technology to generate power on a fast track, it would be prudent to consider the history of reactor accidents as a background for judging how likely it may be that similar accidents might occur at the Rooppur Nuclear Power Plant.

Nuclear accidents are rated by the International Atomic Energy Agency according to the International Nuclear Events Scale, ranging from 1 ("anomaly") to 7 ("major accident").

From 1954 to now, there have been nearly 100 reactor accidents -- some minor and others major -- but with only local consequences. There are some that can be placed among the worst disasters we have ever experienced. It is these accidents, with ratings 5 through 7 that will be discussed in this article.

Level 7 (Major accident): The Chernobyl, Ukraine, accident of 1986 is the world's worst nuclear accident. It was caused by inadequately trained personnel conducting unsafe tests on reactors with a history of safety and design flaws. There was an explosion followed by fire that led to a partial meltdown of a reactor's core. The aftereffects of the accident were great: 30 on the spot deaths; hazardous radioactive material spread over much of Europe; 350,000 people living in the vicinity of the plant evacuated; and about 3.2 million people affected by radiation from 1986 to 2000.

Level 6 (Serious accident): The only Level 6 accident occurred in 1957 at the Kyshtym plant at Mayak, Russia. The accident happened when a tank containing radioactive waste exploded because of a sudden rise in temperature. Approximately 10,000 people were evacuated from the area around the plant. The disaster also exposed about 500,000 people to dangerous levels of radiation and hundreds of square miles of land were rendered barren.

The ecosystem of a large portion of Europe, particularly Belarus, Ukraine, and the Russian Federation, was severely affected by the release and deposition of large amounts of radionuclides in the atmosphere, soil, and water bodies.

The only other Level 7 accident in history is the Fukushima disaster of 2011. It was caused by an earthquake followed by a tsunami, resulting in a complete meltdown of three reactors. The failure of the emergency systems caused an explosion, releasing radiation that contaminated a large area around the plant. Because of the Japanese government's efficient handling of the situation there were no deaths, but about 160,000 people living in the surroundings had to be evacuated.

Food grown in the area was contaminated and banned from sale. Last month, elevated levels of toxic radioisotopes, such as strontium-90 and iodine-131, have been detected in the groundwater near the plant. Large amounts of highly radioactive spent fuel rods are still stored in the pools next to the reactors.

Level 5 (Accident with wider consequences):



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There have been three Level 5 accidents. They are: 1957 Windscale, Cumbria, UK: Following a fire in a reactor core, there was release of radioactive material to the environment. There were no immediate fatalities, but dozens of people died later from radiation-induced cancer.

1979 Three Mile Island, Pennsylvania, USA: A partial core meltdown due to loss of coolant was caused by the malfunction of some safety features and operator confusion. There were no fatalities but small amounts of radioactive material were released into the environment.

1987 Goiânia, Brazil: Due to a lack of adequate accounting and inspection procedures for radioactive sources, more than 240 people were exposed to radiation and 4 died when a junkyard dealer opened an old stolen reactor and removed a highly radioactive cake of cesium chloride.

These accidents, caused by design flaws, human error, lack of oversight, meltdowns, fires, and earthquakes, happened despite the many tiers of safety features that were in place at the plants. After the Fukushima accident, a research study carried out at the Max Planck Institute for Chemistry in Mainz, Germany,

concluded that the global risk of a catastrophic reactor accident now is much higher than previously thought.

If Chernobyl was the fuel, then Fukushima was the catalyst that ignited anti-nuclear sentiment all over the world. Fukushima had a profound effect on the safety criteria and procedures followed for the existing plants. It also led many countries to re-evaluate their nuclear programmes. There were immediate shutdowns, gradual phase-outs, and suspension of approvals for new reactors.

These and other accidents should be a wake-up call to judge whether the precautions that will be in place at the Rooppur plant are sufficient or whether the programme should be pursued more slowly and in a way to make greater degrees of precaution possible. The government must realise that to protect the citizens from the aftereffects of a nuclear accident, it will have to take precautionary measures of a type and on a scale that has no historical precedent in Bangladesh.

Once a reactor is turned on, processes are set in motion that cannot be reversed for a very long time. Hence, the government should do some serious soul-searching before mortgaging the future of 160 million people to a country with a lousy safety record.

Finally, it is obvious that nuclear accidents do happen and they are capable of doing more than immediate damage. We cannot disguise their potentially lethal effects. They destroy not only the present, but also the future. That is why the fears and angst aroused by nuclear accidents are so much deeper.

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# Muslim Brotherhood and the Tamarod

M. ARIF IQBAL KHAN

PRESIDENT Morsi is struggling to unite his country on a broad based new political structure. He pulled out the reforms card when he needed to make a radical shift from the legacies of his predecessors. But his "play it safe" strategy is backfiring. Opposition rebels (known as the Tamarod) turned out on Sunday to appeal to the army generals to jump into action. Army chief Gen. Abdel-Fattah el-Sissi has urged the rival camps to reach a solution to prevent violence.

There are three political blocks, Islamists, nationalists and socialists. Islamists, having won the elections, had the perfect opportunity to show the Islamic party's pluralistic credential for the first time since the end of colonialism. Sadly, the country witnessed a nose dive in sectarian tolerance in what is known as the heart of the modern Arab world. Nationalists and socialists have found the ideal time to attack the popular Muslim Brotherhood, on the anniversary of coming to power.

Recent violence against sectarian groups aggravated the already delicate social balance. Attacks on Shiites last week was the darkest hour for the president and the Muslim Brotherhood. Morsi failed to demonstrate the universal face of his faith when he sat in public next to 'takfiris' (hate preachers) who hurled abuses at religious minorities with Shiites receiving special mention.

Army generals are watching every move of the government. If things get out of control it may be the scenario Mubarak loyalists have been waiting for to take a shot at grabbing power. This will be good news for Israel and its allies who dread to see a democratically elected Islamist group in Cairo strengthen itself domestically and internationally. It has always been in Israel's best interest to see strongmen preside over Egypt and Syria, countries which fought Israel three times since its occupation of Palestine. When Arabs look bad, Zionists look good, and this gives Israel the credibility to drop bombs on residential neighbourhoods, schools and refugee camps.

To face the challenge from the Tamarod Muslim Brotherhood has mobilised supporters on the streets. Both groups look determined to win the street battle for the heart of the common man. The Brotherhood can no longer blame an army dictator for the country's problems, as they could during Mubarak era. The problems piled up in the last year belong to the Brotherhood. Fighting street battles with socialists and nationalists will hardly improve the economic situation. It will make matters

worse for a country which has seen a 300% rise in crimes last year alone.

Supporters of the president gathered in Cairo's Nasr City district, vowing an "open rally" to protect his "legitimacy." Egypt's leading religious authority warned of "civil war" and appealed for calm amid scattered violence on Friday, days before mass demonstrations that the opposition hopes can force the president to quit. "Vigilance is required to ensure we do not slide into civil war," said clerics of Cairo's thousand-year-old al-Azhar institute, one of the most influential centers of scholarship in the Muslim world.

The Brotherhood's political wing warned of "dire consequences that will pull the country into a violent spiral of anarchy." It held liberal leaders, including former UN diplomat Mohamed ElBaradei, personally responsible for

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inciting violence by hired "thugs" once employed by the ousted dictator.

The army, which headed mass protests in early 2011 to push aside Mubarak, has warned it will intervene again if there is violence and to defend the "will of the people." Both sides believe that means the military may support their positions.

An American teacher was killed in the Alexandria clashes. In response, the United States warned Americans about travel to Egypt, and moved to reduce official presence at its embassy in Cairo. The United States, which funds Egypt's army as it did under Mubarak, has urged compromise and respect for election results. Egypt's 84 million people, control of the Suez Canal and treaty with Israel all contribute to its global strategic importance.

The Tamarod has surprised political analysts by talking of an anti-American conspiracy theory after blaming the US establishment for partnering with the Brotherhood to "bring down Egypt." Tamarod's legitimacy as a serious and respectable political foe has diminished with such comments, especially after an American death. Besides, it is cheap mileage to lean on anti-Americanism conspiracies when it suits the group's need for raising popular support.

UN chief Ban Ki-moon urged Egyptians to respect "universal principles of peaceful dialogue" and to strengthen their democracy by promoting an "inclusive environment."

The European Union's foreign policy chief, Catherine Ashton, has urged all sides to keep protests peaceful build trust and show a "spirit of dialogue and tolerance."

Morsi himself refused to consider standing down during his two-and-a-half-hour speech on Wednesday. He apologised for some of his mistakes, and offered to let opponents help amend parts of Egypt's divisive new constitution. But in the main he focused on shoring up his own support and blamed attempts to unseat him on "enemies of Egypt" bent on undermining democracy.

Analysts emphasise that the army has little desire to involve itself after its mixed attempt at interim government following the fall of Mubarak. "The military will only intervene as a last measure -- to prevent the collapse of the state itself. They know that they will be trying to catch a falling knife if they try to take over," writes an analyst from Cairo.

A director of research at the Brookings Doha Center argued that Morsi and his political opponents might yet agree to a compromise before such an intervention was necessary. "I think you'll see very large protests, clashes here and there, and a certain amount of deaths around the country. But the fundamental balance of power will remain. Morsi will stay, and we'll have an effective stalemate. Perhaps the reality of that stalemate, when it dawns on people that Morsi hasn't left power, will force both sides to finally get serious about sitting down and making concessions," explains the analyst.

But despite his bad administration, the toppling of Morsi -- who still has three years of his term left -- will be a loss to the democratic process in Egypt, achieved by the revolution of Arab Spring, and will generate a new period of chaos.

Muslim Brotherhood is the largest political party not only in Egypt but also in the greater Arab world. It is a party respected on the Arab street for its mileages in charitable trusts, schools, hospitals and religious learning centres. It is also the only party which enjoys popular votes in free and fair elections. Muslim Brotherhood is currently the only political weapon in the Arab world which can politically and democratically offer resistance to the expansionist regime close by.

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## LEST WE FORGET Zahur Ahmed Chowdhury: A true people's leader

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ZAHUR Ahmed Chowdhury, a dedicated politician, one of the founding members of Bangladesh Awami League, and a leading organiser of Liberation War of Bangladesh died on July 1, 1974. He was a pioneer labour leader, language movement hero, and elected people's representative in different positions from 1953 to 1973. A member in the first cabinet of Tajuddin Ahmed in independent Bangladesh and also of Bangabandhu Sheikh Mujibur Rahman's, Zahur Ahmed Chowdhury was so engulfed in politics from his early life that he knew no other life.



Zahur Ahmed Chowdhury

He was a rare example of dedication, sincerity, honesty, diligence and all out sacrifice of personal happiness, peace and prosperity for politics and people's cause. He could not look after his family properly for he had to spend most of his time in organising the party. He looked after the educational expenses of the needy student activists of his party and provided money for purchasing books, and giving tuition fees.

People loved him so much that they not only voted him to win each time he contested for any post but also ran his election expenditure from their own coffers. In 1954, Zahur Ahmed Chowdhury, as a candidate of United Front under the leadership of Sher-e-Bangla A.K. Fazlul Huq, Maulana Abdul Hamid Khan Bhasani and Hussein Shaheed Suhrawardy, defeated Muslim League candidate Rafiuddin Siddiqui, one of richest and most respected persons of the time.

This result was seen with so much importance in the politics of Bengal at that time that the prestigious English newspaper published from Kolkata, *The Statesman*, wrote an editorial on it commenting that "this is tantamount to defeat of an elephant to a fly."

Zahur Ahmed Chowdhury fought in the Liberation War of Bangladesh as a regional commander. During the War he was chairman of the zonal war council and zonal administrative council of south-east zone of Bangladesh.

He was among the first top political persons to start the civil administration in independent Bangladesh before Tajuddin Ahmed and his cabinet colleagues returned to Dhaka on December 22, 1971.

He jumped into the task of reconstructing and rehabilitating war-ravaged Bangladesh with full vigour and dedication as labour and social welfare minister. His dream was to uplift the condition of the downtrodden and underprivileged section of society. Due to hard labour he died prematurely. He was buried with full state and military honour.

Born in 1915 in Kattoli of Chittagong city Zahur Ahmed Chowdhury involved himself in the dock workers' movement in Khidirpur of Kolkata in 1937; formed Chittagong Dock Workers' Union in 1943; broke Sec 144 under the leadership of Sheikh Mujib in 1945; participated in Sylhet plebiscite in 1947; organised Dhaka University 4th class employees' movement; was involved in All Pakistan Awami Muslim League formation in 1949; participated in language movement in 1952, 6-point movement in 1966, anti-Ayub mass upsurge in 1969, and general election in the then Pakistan in 1970. During anti-Ayub movement he was arrested and sent to Sylhet jail where he was severely persecuted.

Today, the 35<sup>th</sup> death anniversary of a bonafide people's leader is being commemorated by his admirers, followers and well wishers in Chittagong and elsewhere in the country in befitting manner.

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CROSSWORD puzzle grid with clues for Across and Down sections.

CRYPTOQUIP puzzle with a grid and a clue: 'Yesterday's Cryptoquip: THOSE TWO BABIES HAVE PERMANENTLY SUTURED CLOTH SAMPLES. THEY MUST'VE BEEN SWATCHED AT BIRTH.'

BEETLE BAILY and HENRY comic strips featuring characters like Miss Buxley and Mort Walker.

QUOTABLE Quotes section featuring a quote by Socrates: 'Remember that there is nothing stable in human affairs; therefore avoid undue elation in prosperity, or undue depression in adversity.'