

## The curse of Enola Gay

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Article

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"SHORTLY AFTER THE BOMB exploded in mid-air, sickness appeared, with prostration, high fever, vomiting and diarrhoea. Those who were directly hit died almost instantly, some charred beyond recognition. People were strewn all over the place, crying for help but in vain. Many more died before any meaningful help can be given." These were the words of Abdul Razak Abdul Hamid, the only Malaysian to experience and survive the Atomic Bomb attack in Hiroshima.

It was on 6 August 1945 at precisely 8.15 am, when it happened, minutes after the B-29 bomber *Enola Gay* flew over Hiroshima. The history of mankind was once again scarred by the horror of war. If the time-honoured code against the use of toxic chemicals was breached during the First World War, the second World War witnessed the violation of another time-honoured tradition. It marked the beginning of the nuclear era.

For the first time, clouds of radioactive filth engulfed an entire city, razing it to the ground. Likened to a black rain, the effects of the first-ever atomic bomb, innocently nicknamed *The Little Boy*, indiscriminately killed at least 100,000 people and maimed and shocked thousands of other unsuspecting people of Hiroshima. Indeed the whole world reacted in disbelief.

The bomb was carried by a heavy cruiser *Indianapolis* to Tinian Island in the Marianas in the South Pacific on July 27 before being loaded on to the B-29. *The Little Boy* is three metres (9 feet) long and weighs four tonnes. It has a dreadful genocidal power equivalent to 20,000 tonnes of TNT. It was released at an altitude of about 8,500 metres (24,500 feet).

In less than a minute after it was released, flashes of light appeared in mid-air about 600 metres (1,800 feet) above the ground. Then, a large fireball was formed which rapidly transformed into a loud deafening blast. A terrifying tower of flames struck the ground and almost instantly shot up to form a giant mushroom-like cloud measuring 9,000 metres (27,000 feet) high. The dark clouds of dust drifted toward the north-west followed by the "black rain". Beneath this lied Hiroshima, a city surrounded by mountains on three sides, making the impact of the attack even more deadly.

Despite this, a second atomic bomb, this time nicknamed *The Fat Boy*, was dropped three days later in the nearby city of Nagasaki on August 9, 1945, killing another 64,000 people. In fact, the bomb was initially to have been dropped as early as August 3, 1945 or as soon as the weather permitted.

And apart from Hiroshima and Nagasaki, the other cities to be targeted were either Niigata or Kokura. The story has it that Japan was also researching to develop an atomic bomb. But the Americans were much more advanced in the field as part of the Manhattan Project jointly undertaken with the Allied forces. They had their first successful test explosion in the desert area of New Mexico under the codename *Trinity* at exactly 15 seconds before 5.30 am on July 16, barely three weeks before using it on the Japanese cities.

Thus, the Americans knew the full impact of the bomb, when the Commander of the US Army Strategic Command in Guam was instructed to use the bomb. But they still went ahead. In the words of Kenneth Bainbridge, a nuclear physicist who headed the Trinity experiment, "No one who saw it could forget it, a foul and awesome display".

The explosion was indeed revolutionary not only in its destructive power (including radiation), but also strategic and tactical implications. For example, the timing of the explosion was considered important, designed to coincide with the meeting of "The Big Three" at Potsdam between July 17 and August 2. As a result it is not surprising that the atomic bomb actually triggered off a nuclear arms race worldwide.

Slightly four years after the first explosion, Soviet Russia carried out its first nuclear test on September 23, 1949. Three years later in November 1952, the US exploded the first hydrogen bomb at Eniwetok Atoll in the Pacific. This was followed by the Soviets the next year in 1953, and then Britain in 1956. The French exploded her first atomic bomb in February 1960 in the Sahara desert, whereas China did the same in 1964 in Sinkiang. In 1977, the US Defence Department announced the development of neutron bomb. In fact, there are now "smart" bombs that are specially intended just to destroy human lives without damaging property.

All this happened in the beginning 20th century, when radioactive substances were practically unknown. Today, especially after Hiroshima and Nagasaki, it is well recognised that radioactive compounds can threaten the whole human race, if not every form of life on this planet. As such it is important for all of us to know about such substances and what it stands for.

Radioactive compounds work by emitting an ionising radiation. In other words, they are able to split (fission) molecules into smaller ions. During the explosion of an atomic or thermonuclear bomb, in addition to the blast, heat, and light, the types of radiation are emitted from radioactive materials are characteristic of alpha, beta,

gamma and x-rays. Each ray can penetrate the skin or any living cells, causing damage, and all this occurs for a fixed duration. It is this that determines the extent of danger that it causes.

At the moment of detonation, gamma and x-rays are liberated in large quantities and are very penetrating. In particular, it is almost impossible to protect against the gamma rays. Exposure to large quantities of such rays can be fatal.

Someone exposed to small doses of radiation can lose all the hairs in the body as evident in patients who undergo cancer radiotherapy. In the case of the atomic bomb exposure, those involved continued to be vulnerable to certain risks for a number of years. This is demonstrated in a study conducted almost 20 years after the bombing incident. In 1967, the US Academy of Sciences showed, between 1950 and 1960, those subjects who had been within less than 1.8 kilometres of the epicentre of the explosion, and had survived the initial irradiation, had an incidence of leukemia 13 times greater than a control group not exposed to radiation.

Eye problems, especially cataracts, increased and the incidence was reported to be directly related to the distance of the subject from the explosion. Similarly for thyroid cancers, such rates applied. Those who were unfortunate enough to have received a massive dose of radiation died quickly in a state of shock from the failure of the nervous system. Others who survived were susceptible to bone marrow decay (normally, due to gamma rays) leading to different forms of blood disorders. The emitted rays, if allowed to enter the body through ingestion, inhalation or otherwise through a break in the skin, will produce other harmful effects internally, including cancers.

There were also localised effects due to a limited local exposure or at times, as a result of complications arising from the massive exposure. High-energy beta rays may cause ionisation of the skin tissue which will turn cause skin irritation. This can appear in various forms of skin deformities (lesions) - ranging from the reddening of the skin to cell death (due to radioactive burns) which later turns to sores. The finger nails become dry and brittle. Still others developed skin cancer. Abdul Razak saw cases of the entire skin peeling off from the hands, and left dangling at the tips of the fingers. According to him, there can be no words that could describe the impact of the atomic bombs.

But sad to say, the human memory is short. As the devastated cities of Hiroshima and Nagasaki are gradually being rebuilt, its their calamitous past is often forgotten.

Hence, today, the deadly nuclear clouds hangs evermore dangerously over our heads. As one Nicholas Doughty wrote, "Born in a flash of white light and enough heat to turn desert sand into glass, the nuclear age that started 50 years ago offered humankind a bargain worthy of the Devil himself".

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