

THE WORLD'S TOP 10 NUCLEAR DISASTERS

Number 10: Myak

Located in northeastern Russia, Mayak is an industrial complex that experienced an accident in 1957 known as the Kyshtym Disaster. During this disaster, an explosion caused 100 tons of radioactive waste to be released into the environment, exposing more than 400,000 people to radiation. The International Nuclear Event Scale measured it as a 6, meaning it was the third worst nuclear disaster of all time. The only two that were worse were Fukushima & Chernobyl.

As it was operated by the Soviet Union, the activities at Myak were top secret & the public was not immediately informed about its happenings. A week after the explosion, 10,000 people from the surrounding area were evacuated, though they still did not know what was going on. While it is not entirely clear how many health issues can be attributed to this incident, some believe that as many as around 8,000 people died over a 30-year span. Others estimates count anywhere between 50 to 200 fatalities. But even before the accident actually took place, dangerous material was released into a nearby river that also subjected the area to high radioactive exposure.

Other accidents at the complex have put humans & the environment at risk as well. From 1953 till 2000, dozens of minor accidents as well as two major ones occurred at Myak. At one point, a dried up polluted lake called Lake Karachay began releasing radioactive particles into surrounding bodies of water during a heavy rainstorm in 1967. Heavy winds spread dust & radioactive material from the lake over to the town of Ozyorsk.

Number 9: The Santa Susana Field Laboratory

Located in the Simi Valley of Southern California, the Santa Susana Field Laboratory was used from 1949 until 2006. The complex had many uses over the years. It was used to research government-sponsored liquid metals, to develop liquid propellant rocket engines for NASA, & to house nuclear reactors. Over the years, four of the ten nuclear reactors experienced accidents.

In July, 1959, one of the worst nuclear reactor accidents in U.S. history occurred at the site. After the site saw a nuclear meltdown, it released what is believed to be an enormous amount of radioactivity. The exact amount was never specified. Some estimates say that it was as much as 458 times the amount released during the Three Mile Island disaster of

1979. Earlier that year, the same AE6 Nuclear Reactor was leaking fission gas, which was likely to be the cause of the meltdown that occurred months later.

In 2006, scientists & researchers concluded that contamination from the accidents as well as sodium burn pits—which were used to clean sodium contaminated objects—might have been responsible for as many as 300 to 1,800 cancer deaths.

Number 8: Three Mile Island

Mentioned earlier, this accident garnered much national attention & occurred in 1979 at the Three Mile Island Nuclear Generating Station in Dauphin County, Pennsylvania. On March 28th, 1979, a mechanical failure at the site resulted in nuclear reactor coolant being leaked from one of the reactors. When all was said & done, a large amount of radioactive gases & iodine was released into the environment. The exact amount has not been explicitly made known.

The extent of the damage was so bad that initially, all pregnant women & young children within a five-mile radius of Three Mile Island were evacuated. It eventually extended to a 20-mile & ultimately a 30-mile radius. About 140,000 of the 635,000 people in the area chose to evacuate, & many of these folks returned within weeks of the accident.

An investigation found that the accident occurred due to human miscalculations & a valve malfunction. The cleanup effort lasted four years, from 1979 till 1993. Aside from the health & environmental toll the accident took, it also badly damaged the development of nuclear energy. Plans to build 51 nuclear reactors were canceled & it wasn't until 2012 that another nuclear power plant was authorized for construction.

Number 7: McGuire Air Force Base

Located in Burlington County, New Jersey, the McGuire Air Force Base still operates despite problems with radioactive waste in the past. In July of 2007, the United States Environmental Protection Agency—or EPA—required the base to clean up contaminants related to a missile accident that occurred on June 7th, 1960.

During this particular incident, a helium tank exploded, which in turn started a fire in a nuclear missile. After firefighters were able to put the fire out, it was initially determined that no radioactive contamination was present beyond the boundaries of the base. That

prognosis, however, would eventually change. In June of 1987, traces of a substance used in radioactive nuclear warheads were discovered almost a mile from the base. Experts determined by 2005 that at least 7 acres of the surrounding area had been contaminated & by 2007, the EPA fully recognized the extent of the problem. They then ordered the Air Force to clean up the hazardous waste.

Number 6: Sellafield

Located on the coast of the Irish Sea near Cumbria, England, Sellafield is a nuclear decommissioning & reprocessing site. From 1950 until 2001, there were 21 accidents that resulted in radioactive material being released. As a result, the area is highly contaminated & nearby residents have been suffering the consequences. Between 1950 & 1983, seven rare cancers were found in the Seascale Community. Additionally, it's estimated that nearly 250 cases of thyroid cancer were the result of the infamous Windscale fire in 1957. The fire—which burned for three days—spread radioactive particles across the UK & even throughout parts of mainland Europe. It scattered around a dangerous radioactive isotope called iodine-131. This isotope is dangerous because it can be absorbed by the human body & stored in the thyroid, which is why there were so many instances of thyroid cancer after the 1957 fire. At least 32 deaths have been attributed to it, although some experts believe the figure to be even higher.

The nuclear reactors at this site are currently being decommissioned.

Number 5: The Polygon in Kazakhstan

The Semipalatinsk Test Site in Kazakhstan is also known as “The Polygon.” It used to be used as a testing site for the Soviet Union’s nuclear weapons. Over a 40-year period between 1949 & 1989, the USSR carried out over 450 nuclear tests here, exposing the environment & nearby residents to radioactivity. By most estimates, anywhere from 200,000 to 1.5 million people living near the Polygon have been affected by the radiation in one way or another.

In the years following the initial tests, cancer rates in the area increased dramatically & children were being born with birth defects at an alarming rate. In fact, one in every 20 children in the area was born with some sort of birth defect. Mental debilitations & suicides also seemed to increase after the testing. The people living in the area were forced to stay & deal with the problem since the Soviet Union restricted travel. It's also

very likely that the Soviet Union knew about exposing its residents to radiation & secretly observed the effects it had on the unsuspecting people.

While testing no longer takes place, the effects are still being felt. Cancer rates remain higher in areas near the Polygon than in most other parts of the world. To this day, an oncology center in eastern Kazakhstan still treats children & grandchildren of the original test subjects.

Number 4: The Siberian Chemical Combine

Built in 1953, the Siberian Chemical Combine was crucial in the development of the Soviet Union's nuclear weapons program. It produced plutonium, highly enriched uranium, & was used to create nuclear warheads. A series of accidents at the facility, however, exposed many nearby residents to harmful radioactive materials. In particular, after the Tosk-7 explosion in 1993, researchers discovered that cancer rates & other diseases increased in surrounding areas. Tens of thousands of people were exposed to radiation after the explosion while the water, air, & soil remained contaminated. For months after the explosion, snow samples showed unusually high levels of radioactive isotopes. It's believed that several major accidents occurring over a 20-year span has resulted in 10 grams of plutonium being released into the environment every year.

Number 3: Chernobyl

The Chernobyl Disaster is one of the most well-known nuclear disasters that has ever occurred. On April 26th, 1986, an explosion at the Chernobyl Power Plant in Ukraine released radioactive particles into the atmosphere.

Soon after the accident, radioactive particles began spreading over parts of Western Europe. 31 people died from the explosion while billions of dollars of damage were done. While its exact cause is still unclear, statements reveal that it may have been due to either an operator error or design deficiencies. At the time, the Soviet Union insisted it was an operator error & that procedures & safety precautions were sufficient. Documents declassified years later suggested that design flaws were likely the culprit. Regardless of the cause, the effects of the fire & the explosion were rather extensive.

To really put things into perspective, the amount of radioactive particles released from Chernobyl was four times greater than that of the atomic bomb dropped on Hiroshima...the same one that ended World War II. Workers all the way in Sweden

noticed radioactive particles in their clothes just two days after the accident. More than 200 hundred people in surrounding areas were immediately hospitalized, with 31 of them ending up dead. An entire forest of pine trees was also killed & thus, earned the name “The Red Forest.” Additionally, animals living near Chernobyl also suffered from the radioactive material. The grasshopper, butterfly, & spider populations decreased while many different species such as piglets suffered severe deformities.

Contaminated cows also passed their contamination to humans through milk & meat. Millions of people living in these areas were severely affected by the accident. Over 300,000 people had to be resettled as a result, while increases in thyroid cancer among people in Belarus, Ukraine, & Russia have been attributed to the disaster. Overall, some estimates claim that as many as 2.4 million people suffer from some form of Chernobyl-related health condition. That is in addition to all the extensive damage done to the natural environment.

Number 2: Church Rock Uranium Mill

July 16th, 1979: the state of New Mexico experiences one of its worst manmade accidents of all time. When the disposal pond at the Church Rock Uranium Mill flowed over the dam, more than 1,000 tons of radioactive material & 93 million gallons of acidic, radioactive tailings poured into the Puerco River. The radioactive waste & material along with the acidic tailings traveled nearly 100 miles down river. It affected many residents of the area, all of whom depended upon the river for their livestock, irrigation, & other daily uses. They were initially unaware of the accident & continued to use the contaminated water in various capacities.

The extent of the damage was such that even the groundwater was contaminated. Some estimates state that it released more radioactive waste than the Three Mile Island accident. The disaster occurred because the dam—which contained radioactive waste—was not structured correctly. Cracks eventually formed in the dam that allowed the waste to seep into the river.

The accident caused the amount of radioactive waste in the water to increase 7,000 times the safe amount allowed in drinking water. The public was not immediately aware of it & as such, many children waded into the water. They consequently developed serious burns & had to be immediately rushed to the hospital. Some people even developed serious infections that required amputation. Entire herds of sheep & cattle drank the water then died soon after.

At least 1,700 people lost access to water after the incident. Most of the residents in the area were members of the Navajo tribe. When Navajo leaders appealed to Governor Bruce King for disaster assistance, they were denied; thus limiting the resources available to deal with the problem. Experts told the Navajo nation that these health effects would be minimal as long as they did not depend on their livestock for food. Many of the residents in the contaminated area, however, did rely on their livestock.

According to a report, the Navajo nation members were diagnosed with cancer at a rate much higher than other demographics; an effect that many experts attribute to this Church Rock Uranium Mill disaster.

United Nuclear—the company that owned the uranium mill—initially led the cleanup effort with small crews, who recovered more than 3,000 barrels of waste material. After the mill closed in 1982, the EPA expanded these cleanup efforts & it wasn't until 2008 that the U.S. Congress approved another five-year cleanup effort.

Number 1: Fukushima

March 11th, 2011: a tsunami & earthquake trigger a nuclear disaster at the Fukushima Nuclear Power Plant in Japan. The earthquake that occurred caused an ensuing tsunami, which led to power outages & equipment failure at the nuclear plant. As a result, three nuclear meltdowns occurred, which released radioactive material on March 12th.

The earthquake & tsunami did enough damage on their own, killing up to 18,500 people. Some estimates state that as many as 10,000 people could've died from the nuclear accident due to cancer. Additionally, more than 300,000 people were forced to evacuate, with an estimated 1,600 dying due to hospital closures & temporary housing.

After the accident, radioactive material was released into the atmosphere for months. More than 80% of the radioactive material flowed into the ocean, severely damaging much of the marine life. The International Nuclear Event Scale uses a complex algorithm in which they determine the level of damage done by any given nuclear accident. This scale rated the Fukushima disaster as a 7, meaning it caused serious health & environmental problems along with widespread contamination.

While long term effects of the disaster have yet to be determined, many comparisons to Chernobyl have been drawn. As we stated earlier, there is a discernible connection between nuclear accidents & increases in thyroid cancer. Many experts worry that this is

also the case among Fukushima's victims. But unfortunately it may take years until the full extent on humans & the environment is fully realized.