

Church Rock/Kinłitsosinil, USA, Uranium mining site

In July 1979, a dam breach at the United Nuclear Corporation's uranium mill in Church Rock, New Mexico released massive amounts of radioactive waste water into the Puerco River. The Church Rock radiation spill was larger in magnitude than the nuclear reactor meltdown at Three Mile Island earlier that year, and is considered the largest release of radioactivity in the history of the U.S. civil nuclear program. The indigenous Navajo people have been exposed to increased levels of radiation for decades.



The gate of an abandoned uranium mine in Church Rock. After uranium was discovered here in the early 1950s, the town became the hub of the uranium mining industry in the region. Today, there are 20 abandoned uranium mines and mills in the Church Rock area. For every ton of concentrated uranium, several thousand tons of radioactive tailings are produced. Photo: © Manuel Quinones



Teddy Nez watches the decontamination efforts on land of the Navajo Nation in New Mexico. The hill in the background consists of the tailings of two abandoned uranium mines near his home. Before the EPA began decontamination, the mines had been left to themselves for 25 years. Photo: © Rose Jenkins



The tailings dam spill on July 16, 1979 was the largest release of radioactive contaminants in the history of the United States. More than 1,000 tons of radioactive waste and 360 million liters of contaminated effluent entered the Puerco River. Photo: © Rose Jenkins

History

The small town of Church Rock, New Mexico is part of the semi-autonomous Navajo Nation. After uranium was discovered here in the early 1950s, the town became the hub of the uranium mining industry in the region. Today, there are 20 abandoned uranium mines and mills in the Church Rock area, most of which produced uranium ore for the expanding U.S. nuclear weapons program. In 1968, the United Nuclear Corporation (UNC) opened the largest underground uranium mine in the United States in Church Rock. UNC's Church Rock Mill, which employed about 200 Navajo workers and produced more than 1,000 tons of uranium oxide (U3O8) per year.¹ For every ton of this concentrated uranium, several thousand tons of radioactive tailings were dumped in the surrounding countryside, which was largely used for livestock grazing and recreation, or in large tailings ponds, to protect them from winds.

After numerous smaller leaks had already occurred in the past, a major breach of a tailings dam on July 16, 1979 released more than 1,000 tons of radioactive waste and 360 million liters of contaminated effluent into the nearby Puerco River. The Church Rock uranium mill spill would gain dubious fame as the largest release of radioactive contaminants in U.S. history, even surpassing the nuclear meltdown at Three Mile Island several months earlier.²

Despite dramatic spikes of radioactivity readings in water, air and soil samples, requests by the Navajo Tribal Council to have the site declared a disaster area were denied. The mill was closed in 1982 and was placed on the U.S. Environmental Protection Agency's (EPA) national priorities list.³

Health and environmental effects

Tailings from Church Rock contained radium, thorium and other uranium decay products capable of causing cancer after ingestion or inhalation.² The rural, low-income Native American population living in the region have been chronically exposed to these radioactive isotopes for more than three decades.

Contamination of water supplies and soil, as well as farm animals and vegetable crops, exposed the local population to doses of excess radiation and while there was no evidence of acute harm to the 1,700 individuals most affected by the spill, public health experts have expressed concerns regarding the long term health effects of chronic radiation exposure.¹ The EPA detected widespread radium contamination in 14 areas around Church Rock and has acknowledged an elevated health risk from radium-contaminated dust par-

References

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- 2 Brugge et al. "The Sequoyah corporation fuels release and the Church Rock spill: unpublished nuclear releases in American Indian communities." Am J Public Health. 2007;97(9):1595-1600. www.ncbi.nlm.nih.gov/pmc/articles/PMC1963288/
- 3 "Addressing Uranium Contamination on the Navajo Nation" Website of the U.S. Environmental Protection Agency (EPA). www.epa.gov/region9/superfund/navajo-nation/ne-church-rock-mine.html
- 4 "Report of the Church Rock uranium monitoring project 2003-2007" Southwest Research and Information Center, May 2007. www.sric.org/uranium/CRUMPRReportSummary.pdf
- 5 "Federal Actions to Address Impacts of Uranium Contamination in the Navajo Nation – Five-Year Plan Summary Report." Environmental Protection Agency (EPA), January 2013, S. 85. www.epa.gov/region9/superfund/navajo-nation/pdf/NavajoUraniumReport2013.pdf



ticles, radon gas, polluted rainwater, radioactive runoff and contaminated livestock.³ Diseases associated with exposure to these radioactive substances include bone marrow depression, cataracts, kidney disease, malformations and cancer. Children and people with genetic predispositions or immunodeficiency have a higher risk, as their bodies are more vulnerable than average to ionizing radiation.

In 1990, the Radiation Exposure Compensation Act (RECA) mandated "compassion payments" of \$100,000 to uranium miners diagnosed with cancer or respiratory ailments. Receiving this compensation was made difficult, however, by a certification process that presented barriers to Navajo claimants. In 2003, the Navajo Nation founded the Church Rock Uranium Monitoring Project (CRUMP) in order to assess environmental and health impacts of abandoned uranium mines on the local population.⁵

Outlook

Between 2003 and 2007, the Church Rock Uranium Monitoring Project found increased uranium concentrations and levels of gamma-radiation in soil samples near residential areas. Water from the Puerco River, which was used for watering and livestock, was also found to be contaminated. The long-term effects of this radioactive exposure have not been studied.⁴ In 2012, plans were announced to conduct an epidemiological study on pregnant Navajo women to assess health effects of uranium exposition on them and their children.⁵ The Navajo Nation has repeatedly called for a federally funded clean-up of abandoned mines that produced uranium for U.S. nuclear weapons and has also voted to ban the resumption of uranium mining. The Navajo of Church Rock are also Hibakusha. Their health was compromised for cheap nuclear fuel and fissile material for nuclear warheads.

