

Chernobyl Heart (2003) ^[1]

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In 2003, HBO Original Programming released the documentary *Chernobyl Heart*. Maryann De Leo directed and produced the film, which is about the Chernobyl nuclear power plant accident and how the [radiation](#) ^[3] from that accident has affected people living in the area. Side effects have included mental disabilities, physical disabilities, and genetic mutations. The documentary follows Adi Roche, the founder of Chernobyl Children International, a non-profit humanitarian [organization](#) ^[4] headquartered in Cork, Ireland, as she interviews people who live in the areas that Chernobyl contaminated with [radiation](#) ^[3]. Roche travels to mental asylums, hospitals, and orphanages to interview people who take care of the children affected by the [radiation](#) ^[3]. *Chernobyl Heart* provided viewers with information about the side effects of [radiation](#) ^[3] exposure and the long-term effects that this has on people, especially children exposed to [radiation](#) ^[3] during their developmental years.

On 26 April 1986, a nuclear accident occurred at the Chernobyl nuclear power plant in the Ukrainian Soviet Socialist Republic. A nuclear power plant is a facility that utilizes nuclear fission reactions to produce electricity. Nuclear fission produces nuclear energy through the splitting of uranium atoms. According to the Nuclear Energy Institute or NEI, a policy [organization](#) ^[4] headquartered in Washington, D.C. responsible for the nuclear technologies industry, the Chernobyl nuclear accident was caused by a flawed reactor and human error. When the power plant exploded, radioactive material at the plant covered much of the surrounding area, and exposed people who lived there to high levels of [radiation](#) ^[3].

Throughout *Chernobyl Heart*, Roche interviews people sixteen years after the accident at Chernobyl occurred. Roche began interviewing people in the exclusion zone around Chernobyl. The exclusion zone is considered to be the most radioactive environment on earth and is located 81 miles north of Kiev, part of Ukraine as of 2018. After Roche's visit to the exclusion zone, she travels to Belarus, a country bordering the Ukraine, where many children affected by the Chernobyl accident live. Roche travels to several places, such as mental asylums, hospitals, and orphanages, to interview caretakers of the children affected by the [radiation](#) ^[3] and to interview the children themselves. Radiation exposure can kill cells and tissues, and because children are growing and constantly producing cells and tissues, they are especially vulnerable to mutations from [radiation](#) ^[3] exposure. Furthermore, if children's [genes](#) ^[5] are damaged by [radiation](#) ^[3], their bodies may not form properly, which may lead to physical or mental disabilities. Some of the places Roche visits include the Vesnova Mental Asylum in Vesnova, Belarus, the Abandoned Babies Home in Gomel, Belarus, and the Gomel City Maternal Hospital in Gomel, Belarus.

The opening of *Chernobyl Heart* shows a presentation slide explaining that on 26 April 1986 one of the world's worst nuclear accidents occurred. That day, the Chernobyl nuclear power plant, located in the northern part of Ukraine, exploded. Over 190 tons of radioactive uranium and graphite was sent into the air. Due to the large amount of [radiation](#) ^[3] released into the air, thousands of individuals were at risk for side effects caused by high [radiation](#) ^[3] exposure.

Side effects can include genetic mutations, cancer, [radiation](#) [3] sickness, and death. After the explosion, government officials conscripted over 600,000 liquidators, individuals who worked to clean up the remnants of the nuclear power plant. As the film shows liquidators shoveling pieces of material, a slide explains that the liquidators were exposed to massive doses of [radiation](#) [3] and over 13,000 liquidators have died since the explosion. Another slide explains that the people affected by the Chernobyl explosion were exposed to [radiation](#) [3] that was ninety times greater than the [radiation](#) [3] from the explosion of the atomic bomb at Hiroshima in Japan during World War II. The film shows people putting their suitcases into vehicles in order to evacuate the area around Chernobyl due to the high levels of [radiation](#) [3]. According to the documentary, over 400,000 people evacuated from the affected areas and more than 2,000 villages were demolished after the explosion to prevent people from living there.

After the film provides information about the explosion of the Chernobyl nuclear power plant, the film introduces Roche. Roche is the founder of Ireland's Chernobyl Children's Project, an [organization](#) [4] that aims to alleviate the suffering that the Chernobyl accident has caused children. In the film, Roche travels along the Ukrainian border into an area known as the exclusion zone. The exclusion zone is a 30-kilometer area that surrounds the Chernobyl reactor. According to Roche, the Ukrainian government does not allow people to live in the exclusion zone. As Roche and the film crew arrive at the Ukrainian border patrol, they put on protective clothing and masks to avoid harmful [radiation](#) [3] dust particles. Roche uses a [radiation](#) [3] detector to monitor the levels of [radiation](#) [3]. She notes that she is emotional about the Chernobyl explosion because it affected nine million lives, half of whom were children under five years old. Next, Roche explains that the [radiation](#) [3] recorded is 1,000 times more than compared to normal background [radiation](#) [3], the [radiation](#) [3] produced naturally by the earth and experienced by people every day.

The documentary continues to discuss the effects [radiation](#) [3] had on people located in Chernobyl and the surrounding area. Although people evacuated Chernobyl and the surrounding area, many who were there during the explosion experienced high levels of [radiation](#) [3]. As a result, many of them have developed cancer and other diseases. The film continues with Roche heading to Minsk, Belarus, and a thyroid cancer treatment center that treats many people from the Chernobyl area. As Roche arrives at the treatment center, she notes that the thyroid center located in Minsk is the biggest in Belarus, and it receives the largest number of thyroid cancer cases. After Roche enters the treatment center, she meets Alexander Zhilko, a physician. Zhilko explains that the children and adolescents he has as patients are in the age group that was highly affected by the Chernobyl explosion. Zhilko notes that children do not know their diagnoses, only the parents of the children do. He explains that the only way to know if the children are in good health is by performing multiple tests on the children such as biopsies. A biopsy involves the removal of tissue from the body to examine and discover the presence, cause, or the extent of a disease. The film explains that in Gomel, a city located fifty miles from Chernobyl with a population of 700,000 people, the rate of thyroid cancer diagnosis is 10,000 times higher than it was prior to the accident of Chernobyl.

Next, Roche travels to the outskirts of Minsk to the Novinki Mental Asylum, the largest asylum in Belarus, to meet children that suffer from mental and physical disabilities due to [radiation](#) [3] exposure. During Roche's visit to the asylum, she explains that the asylum is overcrowded, and the film shows children in cots. Roche explains that her task for the next few days will be to determine where the children came from and their diagnoses. While she shows affection towards a young child, she notes that the asylum is considered mixed, meaning some children

have physical disabilities while other children have mental disabilities. Children in the asylum live in the cots until they are seventeen or eighteen years old, at which point they are transferred to the adult mental asylum. According to Roche, the adult mental asylum is a partial prison and is considered dangerous. While in the Novinki Mental Asylum, the documentary shows several children with [spina bifida](#) [6] or an incomplete closure of the spinal column, cerebral palsy or a disability that affects posture, coordination, and movement, and malnourishment. As Roche leaves the asylum, she notes that even though she cannot definitely say whether a child has been affected by the Chernobyl disaster, she has seen the increases in defects, illnesses, and genetic mutations after the explosion. Roche adds that places like the mental asylum did not exist prior to Chernobyl. Since the Chernobyl accident, [birth defects](#) [7] have increased by 250 percent in the Ukraine.

After visiting the Novinki Mental Asylum, Roche visits a contaminated village located 150 miles from Chernobyl, outside of the exclusion zone. During her visit to the village, Roche meets several locals who still live in the contaminated villages, which have high levels of [radiation](#) [3] as shown in the film. Through a translator, the locals explain that they were born in the village and that is where they will die. Roche explains that though the health problems associated with [radiation](#) [3] may not be present in the older generation, the younger generation will have health problems associated with the exposure to [radiation](#) [3], such as mental and physical disabilities. The locals explain that although they are worried about the exposure to [radiation](#) [3], they do not have other options. After that meeting, Roche meets other locals while she walks around the village. Roche enters the home of some locals, and shouting comes from inside the home. The translator explains that the adults in the household are intoxicated by alcohol. Roche sees a toddler inside the home and she notes it is illegal for young children to be in the radioactive environment and the girl should be sent to an orphanage.

Next, Roche travels to a contaminated village 125 miles from Chernobyl where two scientists from the Belarus Radiological Institute test school children for the levels of cesium, a radioactive element, in their bodies. After examining one boy, a scientist notes that his [radiation](#) [3] levels have increased since his last exam. A translator asks the boy if he had any medical problems, and the boy responds he has an enlarged thyroid. Ingesting cesium can cause cancer and affect the gastrointestinal tract, liver, kidneys, lungs, and heart.

After examining the school children, Roche visits several places, including the Vesnova Mental Asylum, the Abandoned Babies Home number one, and the Gomel City Maternal Hospital. At the Vesnova Mental Asylum, Roche interviews an employee that has worked at the asylum for nineteen years through a translator. The employee notes that the children prior to Chernobyl were not as mentally deficient and there has been an increase in physical and mental disabilities since the Chernobyl disaster. Several children at the mental asylum were born with an abnormality, then abandoned by the parents.

Next, Roche travels to Gomel. According to the film, Gomel has cesium levels that are forty times higher than the recognized danger limit. Cesium is a radioactive compound. In Gomel, Roche arrives at the Abandoned Babies Home number one where she meets Irina Kolmanovich, a pediatrician. During an interview with Roche, Kolmanovich explains that there has been an increase of children suffering from [hydrocephalus](#) [8]. Hydrocephalus refers to an accumulation of too much cerebrospinal fluid in the brain and can cause impaired bladder control, balance problems, and progressive mental impairment. Roche notes that there is not enough money to provide the necessary medical procedures to treat the children.

After the meeting with Kolmanovich, Roche visits the Gomel City Maternity Hospital. Two women can be seen giving birth in the same room, while both women are surrounded by medical professionals. Roche meets Nikolai M. Burakovsky, a chief physician. Burakovsky explains to Roche that only 15 to 20 percent of infants at the hospital are born healthy. He notes the effect [radiation](#) [3] has had on the number of illnesses the infants experienced and the increase of illnesses after the Chernobyl disaster. Though not mentioned in the film, [radiation](#) [3] can have large impacts on children's developing immune systems because [radiation](#) [3] causes damage to tissues and cells. According to Burakovsky, the infants get sick after birth due to their weakened immune systems. Compared to Europe, the infant mortality rate in Belarus is 300 percent higher.

Following Roche's multiple visits, she travels to the Children's Hospital in Gomel and the First Children's Hospital of Minsk to learn more about the effects [radiation](#) [3] has on children. Roche visits the Children's Hospital located in Gomel where she is introduced to Ina, a teenager who suffers from a heart defect she has had since birth. The translator explains to Roche that Ina is on a waiting list for cardiac surgery. According to the film, 7,000 children are on a waiting list to receive cardiac surgery and they will die without the operation.

After the meeting with Ina, the film cuts to two weeks later at the First Children's Hospital of Minsk in the cardiac surgery unit. A slide states that a surgical team of fourteen volunteers from the US have come to Minsk to perform heart operations on the cases deemed most critical. Next, the film introduces the parents of a thirteen-year-old girl named Tanya. As Tanya is being prepared for cardiac surgery, Roche interviews the parents through a translator. The father discusses that he lives in the mildly contaminated region along with his wife and daughter. As the contaminated region is only considered mild, the Chernobyl aid money, money donated to provide necessities for those affected by the nuclear power plant explosion, was taken away. Towards the end of the interview with Roche, the father adds that many children in the neighborhood have heart disease.

Following the interview with Tanya's father, Tanya is being taken to the operating room by medical professionals. In the operating room, the film introduces William M. Novick, a surgeon and the director of the International Children's Heart Foundation. Novick explains that doctors saw Tanya at another institution but deemed her inoperable. During the cardiac surgery, Novick states that Tanya has two holes in her heart. According to Novick, the condition of multiple holes in the heart is known in Belarus as Chernobyl heart.

As the film concludes, several slides are shown that provide further information about the nuclear accident in Chernobyl. During his stay, Novick and his surgical team operated on a total of thirteen children. According to the film, fewer than 300 children a year receive the necessary heart operation and most children on the cardiac surgery waiting list die within two

to five years. The United Nations estimates that over six million people still lived in the contaminated regions as of 2003. After the Chernobyl explosion occurred in 1986, a radioactive cloud formed over northern Ukraine, crossing into Belarus and Russia. In addition, excess [radiation](#) ^[3] levels were recorded in Sweden, Ireland, Wales, Greece, and Alaska. According to the documentary, 99 percent of Belarus is contaminated with [radiation](#) ^[3].

Chernobyl Heart showed the side effects caused by [radiation](#) ^[3] and the impacts it has on children. The documentary won the Best Documentary Short Subject Award at the 76th Academy Awards.

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Subject

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Topic

Outreach ^[24]

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