The Chernobyl Nuclear Disaster and How it Contributed to the Collapse of the U.S.S.R.

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In the basement of an abandoned building in Ukraine lies one of the most dangerous objects ever created by a nuclear accident. During the Chernobyl Nuclear Disaster that occurred on April 26th, 1986, the radioactive core of reactor no. 4 melted through layers of metal and concrete, and came to rest in the basement of the plant. Dubbed the "elephant's foot," this object can kill a man after just five minutes in its presence.[1] This deadly mass was just one of the consequences of the Chernobyl Nuclear Disaster. Although the incident itself occurred over the course of one night, mainly during the early hours of April 26th, the accident at the Chernobyl Nuclear Power Plant in Pripyat, Ukraine has had lasting political, environmental, and medical effects. Countless lives were changed and ruined by the disaster, both within Ukraine and without. The accident at Chernobyl created an irreversible breach in the Iron Curtain both by way of media attention and entrance of western aid. This breach resulted in a significant increase in both western attention and that of soviet citizens, and ultimately contributed to the collapse of the U.S.S.R. in 1991. This essay will explore the origins of this disaster, the effects it had on the country, and the extent to which the disaster contributed to the collapse of the Soviet Union.[2]

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[1] Kyle Hill, "Chernobyl's Hot Mess, 'the Elephant's Foot," Is Still Lethal," Nautilus (Nautilus Think, December 4, 2013), https://nautil.us/blog/chernobyls-hot-mess-the-elephants-foot-is-still-lethal.

[2] For a general history of the USSR, see Peter Kenez, *A History of the Soviet Union from the Beginning to Its Legacy* (New York, NY: Cambridge University Press, 2017). To explore its collapse, consider Vladimir Tismaneanu, "The Revolutions of 1989: Causes, Meanings, Consequences." *Contemporary European History* 18, no. 3 (2009): 271–88. To examine the origins of the Cold War, a good place to start is Arthur Schlesinger, "Origins of the Cold War," *Foreign Affairs* 46, no. 1 (1967): 22–52. To learn more about the Chernobyl Nuclear disaster, a good resource is Serhii Plokhy, *Chernobyl: The History of a Nuclear Catastrophe* (United States: Basic Books, 2018). To explore the disaster in narrative style, see Adam Higginbotham, *Midnight in Chernobyl: The Untold Story of the World's Greatest Nuclear Disaster* (New York, NY: Simon & Schuster, 2020). For more information on how the disaster impacted future nuclear power endeavors, consider Wil Mara, *The Chernobyl Disaster: Legacy and Impact on the Future of Nuclear Energy,* (Ukraine: Marshall Cavendish Benchmark, 2010). To read more about the environmental movement that arose as a result of the disaster, a good resource is J. R. McNeill, Astrid Mignon Kirchhof, and Tetiana Perga, "The Fallout of Chernobyl: The Emergence of an Environmental Movement in the Ukrainian Soviet Socialist Republic," in *Nature and the Iron Curtain: Environmental Policy and Social Movements in Communist and Capitalist Countries, 1945–1990* (Pittsburgh, PA: University of Pittsburgh Press, 2019), pp. 55-72. An excellent example of primary accounts by Chernobyl survivors, is compiled in Svetlana Alexievich, *Voices from Chernobyl*, Translated by Keith Gessen, (New York, NY: Dalkey Archive Press, 2005). For an example of western reaction to the disaster, a newspaper report such as Thomson Prentice, "Huge Nuclear Leak at Soviet Plant." *The Times*. April 29, 1986 is a useful resource.

The Chernobyl Nuclear Power Plant was constructed near Pripyat, Ukraine between the years of 1970 and 1977. Two additional reactors were completed by the year 1983; one of these was reactor number four, which lives in infamy to this day. The plant housed reactors of the RMBK-1000 design, a unique combination of a graphite moderator and a water coolant system, that led to a number of design flaws. These flaws would prove to be a major factor in the 1986 accident.[3] On April 25th, the workers of the Chernobyl Power Plant were preparing to conduct a turbine test on the plant's reactor no. 4. Engineer Vitalii Borets had been tasked with creating a timetable to ensure that the test ran smoothly. Earlier, Borets had witnessed a near catastrophe involving a similar reactor at the Soviet Union's Leningrad nuclear plant; however, the details of the accident including the cause were never released to him, leaving him unaware of the major weakness in reactor design that led to the downfall of reactor no. 4. Against his recommendation, the reactor was not properly shut down when the test began. The need for the plant to continue producing electrical power due to demand from nearby towns combined with the fact that the reactor was running at more than double the power level that was required for the test, it had to be postponed. By the time the test could begin, April 25th had bled into April 26th, and a new shift of workers had taken over at the plant, one that was unfamiliar with shutdown procedures and untrained to carry out the test. During final preparations, the power level of the reactor dropped to near zero, far too low to begin the test, however, the men in the control room decided to proceed anyway.[4]

This would prove to be a fatal error. While the rapidly falling power level was stabilized for a short time, it suddenly began to rise uncontrollably as quickly as it fell. Emergency

[3] "Chernobyl Accident 1986." World Nuclear Association. World Nuclear Association, May 2021. https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/chernobyl-accident.aspx.
[4] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 127-155.

shutdown procedures were initiated, and as the control rods meant to shut down the reactor began to descend, they increased both the intensity of the reaction and the temperature of the core. This caused the reactor's fuel rods to crack, preventing the control rods from descending any further and negating any chance they would have had to stop the reaction. Around 1:23 a.m. the reactor spun completely out of control. A buildup of steam led to a massive explosion that blew the upper shield of the reactor through the roof of the unit. This caused a second, more powerful explosion that destroyed much of the containment unit, releasing massive amounts of radiation and reactor fuel into the air. This sparked a fire that continued to spread the radiation over Ukraine.[5]

Firefighters were called in to extinguish the blaze at the plant. Blissfully unaware of the exposure to fatal levels of radiation, they climbed to the roof and attempted to put out the fire by physically beating it with their hoses and kicking aside radioactive debris. By 2:25 a.m. the fire had been largely contained and the men returned from the roof. Crews sent to replace them continued to fight the fire until it was finally extinguished around 7:00 a.m. The hero firefighters were not out of the woods yet; they all reported feeling sick. Unbeknownst to them, many had received lethal doses of radiation fighting the blaze, and this sickness was the beginning of a long drawn out end.[6] In her book *Voices from Chernobyl,* historian Svetlana Alexievich interviewed those involved in the disaster. One of these particularly moving accounts is given by the wife of one of these firefighters, a woman named Lyudmilla Ignatenko. In her story, Lyudmilla details the time from when her husband was sent to fight the fire to after his death, including the fact that she had to lie about having children to see her husband Vasily, and that this close contact with the man led to the death of her unborn child. However, perhaps the most

[5] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 155-165.
[6] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 166-182.

chilling part of her testimony occurs when she describes the state of her husband shortly before he died. Ignatenko does not hold back, saying "He was producing stool 25 to 30 times a day. With blood and mucous. His skin started cracking on his arms and legs. He became covered with boils. When he turned his head, there'd be a clump of hair left on the pillow."[7]

Although there was genuine confusion about the nature of the disaster in the hours immediately following, it soon became clear the disaster was one of an atomic nature. It would eventually be discovered that the radiation released into the air was equivalent to one thousand of the bomb dropped on Hiroshima.[8] Another source of initial confusion was the level of radiation exposure plant workers experienced immediately following the disaster. An example of this was chief engineer Anatolii Diatlov, who was showered with radioactive water while responding to this disaster. Experts estimate that he was exposed to thirteen times the emergency levels of radiation during the incident. The day after the incident at Chernobyl, one hundred and thirty two people including Vasily Ignatenko were admitted to the hospital showing signs of acute radiation poisoning.[9] While a concrete sarcophagus was eventually constructed to contain the damaged reactor and attempt to mitigate further radiation contamination of the environment,[10] the damage was already done to these workers, and would be done to many more, both the liquidators that aided in the cleanup, and those who constructed the sarcophagus.

After the danger presented by the accident at Chernobyl was known, Soviet authorities began a campaign of denial. The disaster was considered a "state secret," and those who divulged information regarding it were questioned and punished.[11] Citizens of Pripyat initially

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[7] Svetlana Alexievich, *Voices from Chernobyl.* 24-42
[8] Adriana Petryna, "Sarcophagus: Chernobyl in Historical Light." *Cultural Anthropology* 10, no. 2 (1995): 196.
[9] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 191-218.
[10] Petryna, "Sarcophagus: Chernobyl in Historical Light," 197.
[11] Mara, *The Chernobyl Disaster,* 67.

remained blissfully unaware of the danger of the disaster. The day after the disaster saw residents drinking vodka together and making jokes about the disaster while their children played in the streets.[12] Eventually these citizens were evacuated along with those in a larger exclusion zone around the plant; however, the general Soviet population remained largely unaware of the accident. Although the government was initially successful in their campaign, radioactive particles soon traveled out of the U.S.S.R. by air. By April 28th, the Forsmark Nuclear Power Plant in Sweden was detecting above average levels of radiation. While they waited almost twelve hours from the time radioactivity was detected at Forsmark to make a statement, Soviet authorities could no longer engage in complete denial. Reluctantly, they announced the disaster to their citizens with a simple radio message: '"An accident has taken place at the Chernobyl atomic electricity station. One of the atomic reactors has been damaged. Measures are being taken to eliminate the consequences of the accident. Assistance is being given to the victims. A government commission has been struck to investigate what happened."'[13] However, nothing was mentioned regarding the radiation that had been released into the air, or the evacuation of the surrounding area.

It was during this campaign of denial that some of the first dents in the Iron Curtain caused by the disaster would be seen. A flight carrying the U.S. ambassador to the U.S.S.R. landed in Moscow the day after the announcement, while a corresponding flight was taken to the United States. These flights were a result of the loosening of the Soviet grip on travel to and from the country. Direct flights between the countries had been banned since 1981, and were just resuming. They were also indicative of the coming days of foreign travel to the country for various purposes related to the accident. While the Soviet delegation traveling to Washington

[12] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 220.
[13] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 317.

D.C. was not sent to discuss the disaster, it was all the Americans who received them could talk about. Unfortunately, the deputy minister of civil aviation, who was leading the delegation knew less about the accident than those who were asking him to report on it.[14] President Ronald Reagan discussed the disaster during an address he delivered on Sunday May 4th, saying that while he held sympathy for the victims of the accident, he believed the open flow of information that existed within "free nations" contrasted harshly with the "secrecy and stubborn refusal" of the Soviet Union to share information about this disaster. He then called on the communist nation to inform the world of the risks associated with the disaster. Reagan asserted that this was not merely an internal affair, and the Soviets owed the world an explanation of events. Reagan's address reached a wide audience, and American interest remained piqued.[15] The public attention caused the Soviet Union to be forced to reveal much more information than they originally intended.

Western newspapers widely covered the disaster. The day after the radio announcement to Soviet citizens, the headlines began to fly off the presses. In London, an April 29th issue of *The Times* reported: HUGE LEAK AT SOVIET NUCLEAR PLANT. The story discussed both the Swedish detection of the radiation and the Soviet attempt to cover it up; however, early newspaper coverage made it clear that reporters were largely dependent on speculation, with much of the information regarding the disaster gathered from the initial Soviet reports to the Swedish embassy in Moscow and the Soviet radio broadcast. The *Times* report asserted that the broadcast served as a propaganda tool to distract international media from the lack of safety measures enforced within the Soviet Union; it was clear that many in the West believed this

[14] Plokhy, *Chernobyl: The History of a Nuclear Catastrophe*, 316-324.
[15] Adam Higginbotham, *Midnight in Chernobyl,* 474-475.

accident was due to this lack of safety measures.[16] Other newspapers reported the disaster in a similar way. A *Washington Post* article released on the same day headlined PARTIAL CORE MELTDOWN SUSPECTED detailed how a nuclear meltdown occurs, but remained only speculative of whether or not such an event had occurred at Chernobyl. At this point in time, America remained unclear if the Soviet-reported casualties were due to radiation or a possible steam explosion.[17] It would eventually be evident that these casualties could be attributed to both causes, but at this point in time, it was too soon to tell.

The accident at Chernobyl did not chip away at the Iron Curtain through media attention alone. Significant amounts of both international and domestic attention were directed both towards the political and environmental concerns created by the disaster. On Monday, May 5th a delegation representing the International Atomic Energy Agency landed in the capital of the Soviet Union under government invitation. The agency was to receive a "full and honest accounting" of the events that had occurred at Chernobyl during the accident and in the days following. The proceedings of this accounting meeting were grim. By this time an exclusion zone of thirty kilometers surrounding the plant was in the process of being evacuated, and nearly two thousand people, almost a quarter of them children, had been hospitalized. This horrific revelation was accompanied by ideas on how to stabilize the plant itself and prevent a second larger explosion, or something equally as disastrous. Despite the solemn nature of the conference, the members reassured Soviet leader Mikhail Gorbachev that there was not yet reason to seek help from the West in the cleanup effort.[18] Around the time this meeting occurred,

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[16] Prentice, "Huge Nuclear Leak at Soviet Plant," April 29, 1986.
[17] Boyce Rensberger, "Partial Core Meltdown Suspected: Signs Point to Partial Meltdown." The Washington Post, Apr 29, 1986. https://www.proquest.com/historical-newspapers/partial-core-meltdown-suspected/docview/138746910/se-2?accountid=11667.
[18] Adam Higginbotham, *Midnight in Chernobyl,* 476-481.

news of the true scale of the accident was beginning to spread across Ukraine, both by word of mouth and by radio signals received from the BBC, Radio Sweden, and Voice of America. These broadcasts gave a sense of sensationalism and exaggerated numbers of dead; however, this was likely in part due to the fact that no one truly knew how many people were dead by this point. Rumors swirled and grew as the government continued to assert that areas outside the exclusion zone were safe. Finally it became too much for the Soviet government to tolerate. A May 6th address by the Ukrainian Health Minister admitted that the city of Kiev faced danger from radiation and warned citizens to take precautions against it.[19] This was one of the first moves to inform citizens of the true danger. It was another step forward for the Soviet Union when compared to the initial radio address, a much bigger step forward would come just over a week later when the government addressed the world.

This international address came on May 14th, 1986 when Mikhail Gorbachev gave the first official television address regarding the disaster. He admitted the accident was one of great danger, a fact the Soviets had largely tried to conceal until this point. By the time of Gorbachev's address, the accident had already received significant media coverage in the West. In addition to using this speech to inform people about the disaster, he criticized the western media for the way they had portrayed the disaster. Gorbachev did not mince words during this criticism, calling it an 'unbridled anti-Soviet campaign' and claiming that the words were 'malicious lies.' However, after this criticism, Gorbachev's address took a surprising turn. He assured that a disaster of this nature does not warrant further military buildup against the Soviet Union, and instead suggested that the disaster act as a sort of wakeup call for the country to consider the future of nuclear power. He called for a meeting of world powers to discuss the possibility of a ban on nuclear

[19] Adam Higginbotham, *Midnight in Chernobyl,* 492-494.

tests, which were themselves guiding the fear surrounding both the opinion of the Soviet Union and the Cold War itself. Gorbachev concluded this speech with the statement that such a meeting would widen the possibility of future cooperation by all nations.[20] It was clear from this address that Soviet policies were changing; in the eyes of the capitalist West, they were changing for the better.

It has become clearer in the years following the collapse of the U.S.S.R. that the disaster was one of the main factors, along with the policies of *perestroika* and *glasnost* in making mass mobilization and protest possible in the Soviet Union. In her book *Nature and the Iron Curtain: Environmental Policy and Social Movements in Communist and Capitalist Countries, 1945–1990*, author Astrid Mignon Kirchhof details this phenomenon. She discusses how the disaster provided the conditions to all for the Soviet Union's first public protests, saying:

> Changing socioeconomic conditions (economic stagnation and decline, increasing poverty, the failure of state financing) inspired people to action. However, perhaps more important was the moral impetus to action. People's very lives and their children's lives were at risk. Concerns about the consequences of the disaster globalized popular thinking. It generated an interest in the Soviet Union's environment and a desire to do something 'here and now' instead of waiting for a long-promised future. Values of self-identification, self-realization, and self-determination which for many years had been surprised by Soviet ideology and the totalitarian state, reappeared, and sped the mobilization of many Ukrainians.[21]

The Ukrainian environmental movement gained strength in the years following the Chernobyl disaster. By the year 1989, there were nearly two thousand informal groups engaged in some

[20] Lewis Siegelbaum, "Meltdown in Chernobyl," Seventeen Moments in Soviet History, September 2, 2015, http://soviethistory.msu.edu/1985-2/meltdown-in-chernobyl/.
[21] McNeill, Kirchhof, and Perga, "The Fallout of Chernobyl: The Emergence of an Environmental Movement in the Ukrainian Soviet Socialist Republic," 61.

type of environmental activity across the country. Many of these groups continued their courses of protest and advocation for more widespread environmental measures, a feat that would not have been possible had the Chernobyl disaster of 1986 not spurred many of them to action in a country that had long since made the decision to neglect the health of the environment for progress.[22] Ukrainian citizens were not the only ones to express their anger over the disaster. Those in other countries affected by the radiation released into the air were far from complacent. In his book *The Chernobyl Disaster: Legacy and Impact on the Future of Nuclear Energy*, author Wil Mara quotes an angry Polish citizen: '"We can understand an accident. It could happen to anyone. But that the Soviets said nothing and let our children suffer exposure to this cloud for days is unforgivable."'[23]

Facing pressure from both the international gaze and President Gorbachev himself, Soviet authorities were forced to hold a formal trial of those being held responsible for the disaster in July 1987.[24] Meant to be held in Pripyat as Soviet law dictated, this trial was instead held in an alternative location as close to the exclusion zone as possible. This was partially due to the fact that over a year of decontamination efforts had done little to make the exclusion zone habitable again, partly because it allowed the government to limit the amount and type of people that could be present for the trial. However, due to the amount of national attention that still remained trained on the tragedy, it was necessary to invite an international presence to witness parts of the trial. Groups from the BBC and Japanese TV were brought into hear only the opening statements and closing of the trial's proceedings. Although they were not invited to witness the trial in its

[22] McNeill, et al., "The Fallout of Chernobyl: The Emergence of an Environmental Movement in the Ukrainian Soviet Socialist Republic," 61-63.
[23] Mara, *The Chernobyl Disaster,* 56.
[24] Mara, *The Chernobyl Disaster,* 79.

entirety, the fact that the invitation was extended at all constituted another important step towards freer sharing of information.[25]

Although the accident at Chernobyl did not directly cause to the collapse of the U.S.S.R., its contribution cannot be denied; it played a significant role in changing the amount of information that was released and distributed from behind the Iron Curtain. The Soviet government was forced to come to terms with the fact that their policies of industrial development lacked safety standards and emergency procedures, and were not the harbingers of great prosperity so frequently lauded. Many of its citizens were forced to come to terms with this as well, which brewed dissent, which led to protest and change. The Chernobyl disaster occurred at a time that was already ushering in change. The anger and confusion caused by the accident combined with an overall sense of anger and confusion with the government and its policies in the turbulent latter half of the 1980s combined with Gorbachev's policies of *perestroika* and *glasnost* aimed at placating disgruntled citizens would eventually come to a head at the very end of the decade with the fall of the Berlin Wall, and the collapse of the government just two years later. Had the accident not occurred, the plant might still be running today, and it may have produced nuclear power for a country called the Soviet Union past the year 1991. Had the incident not contributed to the fall of the communist government, the ironclad grip the Soviet Union maintained on the distribution of information may have prolonged the collapse.

[25] Adam Higginbotham, *Midnight in Chernobyl,* 736-741.

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