

ATOMIC STEPPE

How Kazakhstan Gave Up the Bomb

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CONTENTS

Maps, Tables, and Photographs ix

Acknowledgments xi

Explanatory Notes xv

Abbreviations xvii

PART 1: RULED BY RUSSIA, SCARRED BY NUCLEAR TESTS: KAZAKHSTAN UNDER THE RUSSIAN SHADOW

PROLOGUE 3

- 1 The Steppe 12
- 2 Forty Years of Nuclear Tests 29
- 3 The Human Toll 54
- 4 The Nation Rises 73
- 5 The Swan Song of the Soviet Union 100

PART 2: FREEDOM DAWNS, BUT THE ARSENAL REMAINS

- 6 Fears in Washington and Alma-Ata 125
- 7 A Temporary Nuclear Power 145
- 8 The Final Push 172
- 9 Project Sapphire and the Nunn-Lugar Cooperative Threat
Reduction Program 185
- 10 Farewell to Bombs 208

EPILOGUE: Reimagining the Atomic Steppe 243

Notes 277

Bibliography 325

Index 351

CHAPTER 3

THE HUMAN TOLL

IN THEIR RUSH TO DEVELOP A NUCLEAR ARSENAL, Soviet leaders gave little thought to protecting the locals and the Polygon's workers. Nor did they know enough about the immediate and delayed dangers of nuclear explosions. During the early years of the testing program, scientists left animals on the test sites to study radiation's impact on living organisms, but not much was known about how radiation affected humans specifically.

Within a few years after the first test of 1949, however, the Soviet government began to monitor the health of the local population, gaining insights into the effects of radiation on people. But throughout the decades of nuclear testing, contradictory narratives were presented on these effects, sowing confusion and uncertainty. Officials and medics from the Semipalatinsk region reported to authorities in Alma-Ata and Moscow that people were suffering from deteriorating health. However, Moscow stood firm in defense of its testing program and claimed that the nuclear tests did not harm people. The military insisted locals' health problems stemmed from poor diet and living conditions.

The Soviet ways of hiding and dismissing evidence that nuclear tests made their people sick were similar to those in the United States. The American Energy Commission dismissed concerns about radioactive contamination. People who lived in states close to the Nevada Test Site, where the US military carried out more than nine hundred nuclear tests, ingested radioisotopes with their food and milk that resulted in a spike in cancers years later. As with the Semipalatinsk Polygon, most of the contamination occurred during the atmospheric

nuclear tests of the 1950s. The rural town of St. John, Utah, home to a Mormon community, is one example of a hard-hit area. Like rural settlements near the Semipalatinsk Polygon, almost no family in St. John was spared from tragedy. Native tribes in the affected states, who, like ethnic Kazakhs, very much relied on land in their everyday lives, suffered from similar ailments as the Kazakhs halfway across the world. Cancers became commonplace.

In a notorious case that still haunts Hollywood, almost half of the two-hundred-member crew that worked on the movie *The Conqueror* in St. John and in nearby desert locations in 1956 developed cancer by 1980. Forty-six of them died, including the movie's stars, John Wayne and Susan Hayward. While nobody could tell with certainty—and some thought the alcohol and chain-smoking of the Hollywood crowd could also be blamed—radiation contamination of the area likely played a hidden role.¹

Away from the continental United States, people in the Pacific islands had even less influence over their well-being and future. As a result of more than sixty nuclear tests from 1946 to 1958, their land became contaminated, even rendering one of the Marshall Islands—Bikini—uninhabitable. The US National Cancer Institute estimated that, because of the tests, the Marshallese over their lifetimes would suffer from five hundred additional cancer cases—“about a 9% increase over the number of cancers expected in the absence of exposure to regional fallout,” in the institute's words.² In the 1980s, the United States agreed to set up a \$150 million Nuclear Claims Trust Fund for medical and property damages caused to the Marshall Islands people by its nuclear testing program.³

The people of the Semipalatinsk Polygon shared with movie stars, American downwinders, and Pacific Islanders the host of ills caused by nuclear testing.

TAKING RISKS

At the Semipalatinsk Polygon, the military bosses themselves took health risks and pressured their subordinates to do the same, especially in the early years of the program. The top officials did so partly because of the rush to catch up with the Americans and partly because they did not fully appreciate the dangers. Episodes described by test participants attest to that. Shortly after the first test in 1949, secret police General Avraami Zaveniagin—one of the chiefs of the nuclear program—ordered an engineer to open the mock subway tunnel built in the epicenter to check the explosion's effect on the infrastructure. When the engineer explained that doing so would be too dangerous, since radiation levels were still high, the annoyed general screamed at him.⁴

In an incident following another test, Zaveniagin drove to the testing grounds and his car got stuck. He got covered in highly radioactive dust when he got out of the vehicle. The general's contaminated uniform and shoes set off the radiation measuring devices when he reached the sanitary facility at the Polygon. Witnesses recalled that the head of the sanitary division asked him to take a shower and change into clean clothes. The general initially resisted and only obeyed after prodding by sanitation services.⁵

With the military brass acting so heedlessly, it is no surprise that Polygon workers, sometimes unknowingly, sacrificed their own health. Acute radiation sickness was never officially reported, making it hard to know how common it was. But individual anecdotes reveal a culture of ignorance and secrecy. In 1956, for example, while retrieving films after a nuclear test, several cameramen were exposed to extremely high levels of radiation, to which their bodies reacted violently. One minute they burned from fever, the next they shivered under fur coats. Their faces turned red from the damage to their skin cells, and the lymph glands in their necks swelled—all effects of radiation. “Stupidity and enthusiasm” were at play, one of them admitted, but also a dearth of knowledge: “What did we know about radiation? Nothing pretty much! A lack of information is to blame for what happened to us.”⁶

In another case in 1962, eight young dosimetrists disregarded safety rules while working in the epicenter after a test explosion and likely received a radiation dosage of 250–300 roentgen per hour. Spending more than an hour in 100 roentgen per hour conditions can be fatal. Like the cameramen, the dosimetrists did not know much about the acute radiation sickness from which they would suffer—fever, skin and gum bleeding, blood in the urine and excrement. It would take them four weeks to recover.⁷

Melgis Metov was one of thousands of Kazakh soldiers who served at the Polygon. An engineer by training, he toiled at the testing field with his teammates, setting up and fixing equipment to measure electromagnetic waves before and after nuclear tests. “We did not have real protective gear,” Metov, now in his seventies, said with tears in his eyes.⁸ Protected by nothing more than the standard issue cotton overalls, army boots, and a simple filtering half-face mask, Metov went to the testing grounds after each explosion to retrieve the recorded measurements during his two years of service at the Polygon, from 1961 to 1962. This added up to many trips. The Soviets conducted more nuclear tests in Semipalatinsk in 1962 than in any other year, as the anticipated ban on atmospheric testing loomed.

Metov would spend the rest of his life suffering from poor health. But because he was a citizen of Kazakhstan, he did not receive any compensation for his sacrifice. Russian legislation authorizing benefits to “atomic soldiers” like him did not cover citizens of other republics, and Kazakhstan’s similar legislation awarded benefits only to civilians.⁹ His first name—Melgis—consists of the initials of Communist ideologues and leaders (Marx, Engels, Lenin, Stalin). In a sad irony, he grew to hate the Communists for what the ideology and its adherents had done to him.¹⁰

IMPACTS ON PEOPLE

The weather was monitored more attentively at the Polygon than anywhere else in the Soviet Union. Before each test, scientists and military personnel studied the forecasts to predict the movement of radioactive plumes and avoid contaminating nearby settlements. In some instances, they waited for better weather, but sometimes, under pressure to deliver results, they proceeded with tests despite weather that could shower contaminants on innocent populations.

When more powerful tests were scheduled, the military, aided by local authorities, would on rare occasions evacuate people from nearby settlements to safer areas. Soldiers remained on standby near the evacuated towns to deal with damage and radioactive fallout, equipped with glass to fix broken windows as well as foaming devices to put down fires, cement machines, and other technical equipment to repair structural damage.

During the first few years, locals were not warned about the tests and carried on with their everyday lives. Only in 1953 did radio announcements start to warn residents in the military town and nearby settlements to leave their houses before a high-yield test. Tests of nuclear weapons with the explosive power of more than 100 kilotons were scheduled for days when people were off work or during early morning hours when fewer people were outside. Sometimes authorities advised residents to leave buildings during a seismic wave.¹¹ In settlements lacking radios, authorities dropped message bags that contained information about the time of the explosion and safety measures to be taken.¹²

“Yes, I remember the tests,” recalled a woman whose family lived in the military town. “I remember my grandma waking me up on Sundays, asking us to go outside. The radio announcements were usually broadcast during lunch break when people would go home to eat.”¹³

Such were the measures taken. They were nowhere enough to protect people living and working in the vicinity of the testing.

The nuclear tests disrupted the lives of both local civilians and military families. Since the government was not compelled to explain anything, people were left without reliable information and could only guess at the causes of their health problems. Those problems did not stop at injuries and exposure to radioactivity in the immediate aftermath of the tests. Contamination of water, food, and soil meant that, long after each test, people continued to absorb radioisotopes.

One Russian officer who worked at the Polygon described the disruption of daily life:

My daughter was born on February 1, 1953. During the tests, in the middle of winter with temperatures below -20 or -30 Celsius [-4 or -22 F], my wife had to leave the house with the baby in her arms after opening and propping up the windows and doors and propping them up with special wedges [to prevent them from breaking]. Sometimes the tests got canceled, and she had to go back inside the cold house. The next day everything repeated itself [as the tests continued]. . . . After a nighttime explosion, when all the residents had to stay outside and saw the illuminated skies, she developed a fear of the tests. All military personnel were required to be at their work stations during the testing, and their families had to make decisions on their own.¹⁴

Though military personnel like this officer had to endure nuclear tests during their stints at the Polygon, their postings were temporary; the locals experienced these conditions for decades. One of them was a Kazakh woman named Gulsum Kakimzhanova, who was born in 1952, three years after the testing program started. Kakimzhanova, who grew up in a small settlement near a rail station not far from the Polygon, described her childhood in the testing zone:

I remember I was a little girl, maybe eight or nine years old. . . . My dad woke up to find all his hair had fallen out on the pillow! . . . It was only later that I understood the reason why. . . . He had worked for the railway. They probably never even covered their heads, and there were atmospheric nuclear tests up until 1962. He was exposed to radiation and became sick for a very long time.¹⁵

She also recalled an early morning spent out on the steppe: "When I came home, I felt very sick; my nose was bleeding. I felt weak and slept the whole day."¹⁶ In her adulthood, Kakimzhanova would establish an NGO to help victims of nuclear tests.

It didn't take long for people in the Semipalatinsk region to suspect that the Polygon was making them sick. However, daunting government bureaucracies stymied their search for help. In the mid-1950s, a Semipalatinsk resident's appeal had to be routed first to Semipalatinsk officials, then to the government of Kazakhstan in Alma-Ata, and only then to the Soviet government in Moscow. The veil of secrecy and the helplessness of local Kazakh officials and regular citizens in the face of the central government and the military-industrial complex prevented locals' concerns from being recognized.

The chief radiologist from Kazakhstan's Ministry of Health, Saim Balmukhanov, recalls that in the early 1950s on one of his visits to Semipalatinsk, a chief doctor from a regional hospital described the unusual illnesses of the locals. Balmukhanov noticed that the pathology looked similar to what victims of Hiroshima and Nagasaki attacks had experienced. Balmukhanov and his colleagues conducted some small-scale surveys in the areas near the Polygon. But these were not enough to prove the damage to locals' health was from nuclear tests.¹⁷

CLASHING NARRATIVES

In the 1950s, the Soviet and American governments already knew well their nuclear tests were harmful to people, but they did not know precisely how a nuclear war would impair its own and its enemies' troops and population. The exact impact of the ionizing radiation was hard to grasp. The animals left on the testing field during explosions provided some idea; the skin of baby piglets, for example, was somewhat close to human skin. But no animal could provide all the answers to how radiation would affect people.

With only limited data from the Hiroshima and Nagasaki bombings available to them, the Soviet military sought to understand the impact of radiation on humans.¹⁸ What information the Polygon staff did collect and analyze on radioactive contamination, however, was not shared with civilian health authorities for reasons of secrecy surrounding the nuclear program. That meant health authorities had to rely on guesswork, with no support from others for safeguarding the health of the local population.

The Soviet government did not engage in any meaningful monitoring of public health until 1956, seven years into nuclear testing.¹⁹ Following the first test in 1949, medical authorities examined only ten inhabitants of a nearby village. After the first thermonuclear test, in 1953, the authorities examined two

hundred people in one area near the test site. But there is no public record of how the government used these early data.

The first systematic Soviet radiation survey and comprehensive medical examinations were conducted after a nuclear test carried out on August 24, 1956. A nuclear device dropped from a 100-meter (more than 300-foot) tower produced a yield of 27 kilotons. Because of rain, the radioactive contamination spread beyond the Polygon. The radioactive cloud traveled directly over the rural settlements and the industrial city of Ust-Kamenogorsk.²⁰ In the wake of that test, the Soviet Ministry of Health received reports of significant ground contamination outside the testing site.²¹ Reportedly, 638 people ended up in hospitals with “radiation poisoning,” four times more than after the Chernobyl nuclear power plant later exploded in 1986.²² People’s skin turned red, and the tests revealed changes in the composition of their blood. Spurred by the large-scale contamination and numerous hospital admissions, the government authorized expeditions of experts from the Institute of Biophysics to the Polygon area to understand the extent of contamination.²³

Following the public outcry, the Soviet government also established two special clinics in Kazakhstan to monitor locals’ health—Dispensary No. 3 in Ust-Kamenogorsk, where most of the fallout had occurred after that test, and Dispensary No. 4 in Semipalatinsk. The Ust-Kamenogorsk clinic was closed within a few years.²⁴ Dispensary No. 4 remained and became the primary facility for monitoring the effects of radiation on people.

One persuasive explanation for why the government began collecting data was the desire to understand how radiation impacted humans, since that information would be valuable for military planning.

From 1956 to 1960, several expeditions conducted radiological and health surveys across the region. The teams were made up of specialists from the Institute of Biophysics in Moscow, an institution affiliated with the Soviet military program, as well as from Dispensary No. 4 in Semipalatinsk, which was created under the umbrella of the nuclear program but staffed with civilian doctors. Starting in 1957, the Kazakh Academy of Sciences also sent its own expedition, staffed by the scientists from the Institute of Regional Pathology, which examined thousands of people living near the test site over the course of three years.²⁵

The Military Narrative: The Institute of Biophysics

The Institute of Biophysics and Dispensary No. 4 conducted joint medical expeditions in 1956 and 1957 to the Semipalatinsk region. The two

organizations wrote separate reports; they had similar findings but divergent recommendations.

In its top-secret report, the Institute of Biophysics concluded that the radioactive fallout from nuclear testing negatively affected the population's health and the environment. In the worst cases, the report noted, the level of radioactivity of butter in Sarzhal—a settlement close to the Polygon—was 58 times higher than the norm, while one Semipalatinsk storehouse contained grain with radioactivity 20 times higher than usual.²⁶

Of the nearly five hundred people examined by the specialists on one of their trips, more than three hundred suffered from common illnesses such as brucellosis, tuberculosis, and heart disease, while more than a hundred demonstrated “symptoms occurring in cases of chronic radiation illness.”²⁷ The military medical experts concluded that only 10 percent of those examined were in good health. The Institute of Biophysics staff cautiously concluded: “The role of ionizing radiation could not be excluded.”²⁸

Military doctors recommended discontinuing ground tests (atmospheric tests where nuclear devices explode at ground level rather than in the air), the most hazardous type of atmospheric testing, during the harvest season. But in what became a familiar narrative, the military medical specialists emphasized poor conditions in the area as the principal culprit behind the local population's health troubles. Accordingly, the doctors recommended that the government rectify “the unsanitary conditions,” provide a better supply of fruits and vegetables, and improve health care services.²⁹ Their prescriptions did not include a call to end nuclear testing.

The Civilian Narrative: Dispensary No. 4

Despite the main purpose of Dispensary No. 4, it was disguised as an antibrucellosis clinic. Cattle are the primary victims of brucellosis, a chronic infectious disease. Humans who drink unpasteurized milk or eat dairy products from infected animals succumb to bacterial infection, leading to muscle pain, fevers, and night sweats. Brucellosis, widespread in the region due to cattle breeding, provided a convenient cover story for the Soviet military keen to study the impact of radiation.

It was not long after Dispensary No. 4's founding in 1957 that its doctors began raising the alarm about locals' health. In February 1958, in response to a request from Mukhametkali Suzhikov, then the highest-ranking Communist Party official in the Semipalatinsk region, a group of Dispensary No. 4 doctors

sent a classified letter.³⁰ Suzhikov had come to the job only a month earlier, but he was known for tackling difficult issues head on. In his prior position as the head of Kyzyl Orda region, in the southern part of Kazakhstan and famous for its rice production, he persuaded the Soviet leadership to invest in the rice industry and raise the prices for rice to help this region. He also took it upon himself to resolve the devastating problem of leprosy there, pushing the Soviet government to adopt a regional program to fight the disease.³¹

The letter from Dispensary No. 4 to Suzhikov described the widespread radioactive contamination in Semipalatinsk. In some places, soil radioactivity was eleven to forty times greater than normal, and staple foodstuffs also registered higher than normal radioactive levels. The radioactivity of meat bought at Semipalatinsk markets was double or triple the norm, and the levels in wheat flour, buckwheat, and rice were four to five times the norm. Local hospitals, kindergartens, and nurseries bought grains from city stores, which meant that even the most vulnerable—the sick and the young—ate contaminated food.³²

As for health impact, specialists from Dispensary No. 4 reported the same data points as the Moscow-controlled Institute of Biophysics. But their conclusions were different. Unlike the institute, with its timid recommendation to halt ground tests during harvest season, the Dispensary No. 4 staff called for a full cessation of all nuclear tests. The report from Dispensary No. 4 stated that the nuclear tests “[led] to contamination of soil, food supplies, grass and create[d] a significant danger to public health.” Also, it advised the government to improve the supply of fruits, vegetables, meat, butter, vitamins, and essential medications to the Semipalatinsk region.³³

Suzhikov, upon reading the Dispensary staff’s alarming reports, sent a secret letter to the Soviet leader, Nikita Khrushchev, and to Kazakhstan’s leader, Nikolai Beliaev (a native of Russia, appointed by Moscow), sharing the data with them. In response, the Soviet government authorized only insignificant financial and medical assistance to the region.³⁴ Many believe that Suzhikov’s direct appeal to the Soviet leadership was behind the loss of his job as the head of the Semipalatinsk region. He was dismissed under the pretense that his region failed its meat production quota.³⁵

Suzhikov was not the only one courageously raising his voice. In 1957, one of Kazakhstan’s most prominent writers and a native of the Semipalatinsk region, Mukhtar Auezov, carried the story of his fellow citizens to the world at the international antinuclear conference in Tokyo. This was a bold move during the time of complete secrecy surrounding the Soviet nuclear testing program.³⁶

A deep worry about his native region motivated Auezov. In 1958, he shared with his friend, President of the Kazakh Academy of Sciences Kuanysh Satpaev:

Rumor has it that in the villages neighboring the Polygon—Sarzhal, Karasu, Kainar, and many other places—the youth succumb to suicide. Would you believe it? Teenagers of fifteen or sixteen years are giving up on life. This is a horror that our Kazakh children have never before known in their lives! The youth of yesterday, who looked after cattle and chased balls, suddenly go into the corner of the barn in the middle of the night and hang themselves. Why? Because an accursed atomic bomb rumbles above them . . .³⁷

In 1962 a top Semipalatinsk official named Mikhail Karpenko, a native of Siberia, wrote to Dinmukhamed Kunaev, who by then was the republic's leader as the highest party official in Kazakhstan, requesting help with his region's overcrowded and unhealthy housing. Karpenko also mentioned radioactivity and that the local people understood what took place at the Polygon, despite being told nothing by the authorities. He implied that popular discontent was growing.³⁸

A few days later, Karpenko wrote another letter to Kunaev after a failed nuclear test. On August 7, 1962, a missile carrying a nuclear charge had failed to explode in the air, instead detonating on the ground. Then the winds changed in the direction of populated areas. Massive amounts of dust rose into the atmosphere as a cloud that then carried radioactive fallout to Semipalatinsk and other nearby settlements. Karpenko again asked Kunaev for help with funds to build housing for the local population and for better supplies of meat, milk, butter, fruits, and vegetables. He stressed again that the populations of Semipalatinsk and the rural settlements not only know but “many *see* and *feel* external manifestations of the tests.”³⁹

In the wake of the botched test, Soviet military-industrial officials continued to insist to the Kazakh local leaders that radiation levels were normal—despite possessing hard data showing that the radioactivity levels in grain were 10–60 times higher than usual, and speaking plainly of radioactive contamination in their own internal secret documents. Several Soviet officials representing the nuclear weapons complex—the Polygon's military division, the defense ministry, and the health ministry—responded to Karpenko. Radioactive pollution, they said, was “insignificant;” radioactivity levels satisfied the standard for “special sanitary zones,” defined as areas hosting facilities with higher impact on the environment and health, such as industrial plants that produce highly

toxic materials.⁴⁰ Soviet officials advised regional authorities to send contaminated grain to other parts of the country to even out the radioactivity levels. Still, they did not want radioactive grain to be exported outside of the Soviet Union, presumably to avoid negative publicity.⁴¹

While government officials in Moscow buried the complaints that came through official channels, the KGB was closely monitoring the correspondence of Semipalatinsk residents who had nothing to do with the military program. Intercepted letters from Semipalatinsk locals to their family and friends described frequent explosions and the rumbling of the shaking earth that locals had grown to detest. The letter-writers also complained about polluted air, contaminated water, and mysterious health problems.

A local whose letter was intercepted by the KGB in 1966 reveals the residents' growing wariness of the nuclear tests:

Everybody is fleeing, especially the last fifteen days. Now [the authorities] inform us in advance of the tests. At 12 p.m. [on test days], we go outside—it is dangerous to be inside. At the factory, everything stops, and everyone gets out onto the street. It feels like everything might collapse—[it's] so scary. All sorts of rumors are going around, and that's why everybody . . . is leaving this place.⁴²

Despair filled the letters. Non-Kazakhs with relatives in Russia, Ukraine, or other republics were eager to leave. One resident wrote, "As soon as I retire, I will leave Semipalatinsk, for I do not want to be a guinea pig and hear the rumble of explosions." Several cited the bleakness of the area as their impetus for leaving: "We want to leave for Ukraine. It is becoming difficult to live here. I feel sorry for the people; there is nothing except for sand, not even fruit. The air is very polluted, especially in winter. Children are sluggish, with dark circles under their eyes. Our houses are always swaying from tremors. In other words, we'd better leave this place soon."⁴³

For those who remained, health problems dogged whole families for generations. "My husband died of cancer at the age of fifty-four. My son was born in 1961 with encephalopathy and eye nystagmus [brain damage and uncontrollable eye movement]. . . . My grandson was born with six fingers on his hand. I have an allergy, joint pain, and heart and liver problems." Another local resident recounted her family's grim medical history: "My grandmother, uncle, and sister died from stomach cancer, my brother from lung cancer. I am losing my eyesight rapidly, and my arms, legs, stomach, and liver hurt."⁴⁴

Unlike non-Kazakhs who had relatives in other republics and could move there, ethnic Kazakhs had nowhere to go. Decades after the tests ended, their stories paint a picture of the individual and collective tragedy that enveloped the region.

The mayor of Mukur, a village of a thousand people near the testing site, has her own family story:

At the age of fifty-two, my father passed away from lung cancer. Our world turned upside down because we always perceived him to be a healthy and strong man. When my mother became a widow, her youngest child was only six years old. We had been brought up to work hard—this had been our father's motto—and we did. We were left on our own, without much help from the outside. When my mother turned sixty-four, she had a stroke and was bedridden for four years before she died. My older brother's life ended at fifty-seven. A blood disease took him away from us. My younger brother suffered from neurodermatitis. My sister and I have problems with blood pressure.⁴⁵

A man named Nesipbai Diusekeev, an educator from Abraly, recalled the cost of the tests on local children:

I have lived in Abraly since 1950. Before I retired, I worked as a school director for many years. During the atmospheric and underground nuclear tests, we were told that they were harmless, that all safety measures were being taken. But from then on, locals started developing illnesses that we had not seen before—leukemia, for example. I am not a doctor, but I've seen sick people whose bones broke with the slightest movement. Among the children, there are many who are already thirteen or fourteen, but they look like they are only two, three, or four. Many children, born disfigured, always sit at home. Some died at thirteen or fourteen.⁴⁶

Children often observed the horrible consequences of nuclear tests on their surroundings without realizing the cause. Aliia, a native of Chagan, a village near the Polygon, recalls:

Every summer, I visited relatives in the Kumurza grasslands, where my uncle looked after the cattle. The road to the pastures was right on the way to the test site. I saw a newborn lamb with two conjoined heads with my own eyes. A lot of newborn cattle were born without body parts (like noses or ears) or with different pathologies and deformities of the skull. At that time, I found it interesting

and strange, and I didn't even think about how it had happened. Only when I grew up did I understand the reason.⁴⁷

The darkest side of the human tragedy unfolding in the Kazakh steppe was the rise in suicides and mental illness.⁴⁸ Suicide was previously such an alien

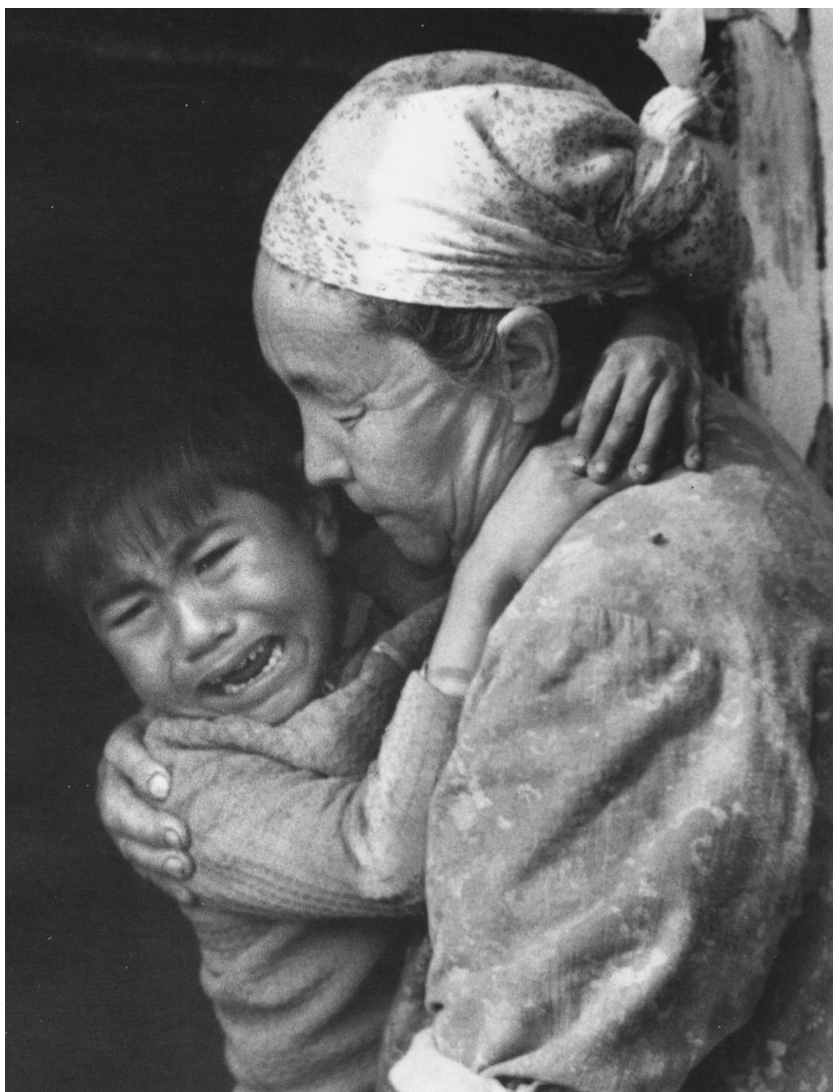


PHOTO 7 Victims of Soviet nuclear tests, Semipalatinsk region, circa late 1980s. Photograph by Yuri Kuidin.

concept to Kazakhs that they had no word for it. But now it loomed large for many, such as this woman from Sarzhal, a small settlement directly affected by nuclear contamination: “Two of our sons hanged themselves when they were 14 and 20 years old. The third son suffers from mental illness. My husband died from heart disease. There is no doubt the nuclear test site is to blame for everything.”⁴⁹ Her family was only one of many who suffered this experience. Dozens of people from villages close to the Polygon committed suicide each year, primarily by hanging.⁵⁰

The Kazakh Narrative: The Institute of Regional Pathology

It was hard to ignore the Polygon’s curse. In 1956, Bahiia Atchabarov, director of the Institute of Regional Pathology in Alma-Ata, visited his native town of Karkaraly. His friend, Syzdyk Takumbekuly, described the tragedies that beset the locals in their hometown:

Under the guise of night, young men commit suicide. We are haunted by leukemia and other diseases, when blood suddenly gushes from the nose, the heart pounds, there is shortness of breath, and the body becomes covered with spots. The saddest of all is the rise in births of babies who are mentally or physically disabled. Some were born without arms and legs, or with disfigured faces.⁵¹

Takumbekuly appealed to his friend, now the head of an entire institute in the capital: “Why don’t your doctors check [what is happening]?” Atchabarov explained to his friend that anything connected with the Polygon was for the military doctors to examine. His institute’s mandate, he said, was to study and prevent professional injuries at the large industrial enterprises.

But Takumbekuly’s plea stayed with Atchabarov, and in 1957, like writer Auezov, he shared his worries about the region with the president of the Kazakh Academy of Sciences, Kuanysh Satpaev. Atchabarov asked Satpaev to allow his institute, which was part of the academy, to conduct a clinical expedition in the region. Satpaev, a leading geologist who founded metallogenic science in Kazakhstan and was a highly respected scientist, gave his authorization. The initiative also had the support of Soviet Health Minister Mariia Kovrigina, despite the serious problems it could potentially cause her with the Soviet military establishment. Kovrigina was known for her courage and professionalism.⁵²

For three years, from 1957 to 1960, the doctors conducted clinical observations of 3,500 people in the area around the Polygon, and of 2,000 people from other areas around Kazakhstan, who served as the control group.⁵³ This was the

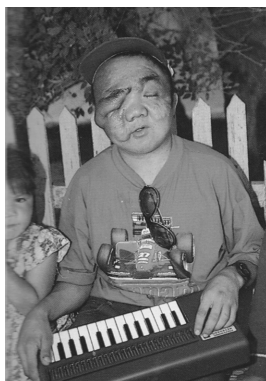


PHOTO 8 Victims of Soviet nuclear tests, Semipalatinsk region, circa late 1980s. Photograph by Yuri Kuidin.

first and last medical survey led by doctors from Kazakhstan during the Soviet period.⁵⁴

Dr. Atchabarov led a Kazakh research team that reflected the multiethnic composition of Kazakhstan, including Kazakhs, Russians, Jews, Germans, and others. These scientists faithfully recorded everything they observed, including information that would be damaging to the Soviet nuclear program, and did so

despite enormous personal risks. They could have been accused of state treason for describing how the country's most important national security project was ruining the health of their countrymen.

Their account was a clinical record written in medical jargon, but it painted a heartbreaking picture of innocent people suffering from the effects of nuclear tests through no fault of their own. The scientists noticed that people living in the settlements closer to the Polygon suffered from a range of ailments. The neurological pathologies made people tired and caused headaches and dizziness. Many locals were losing their swallowing reflex—the body's important defense mechanism against choking on food. In the villages of Kainar, Sarzhal, and Dolon-1, only about a third of residents could be considered neurologically healthy.⁵⁵

Atchabarov and his team also observed that blood circulation problems in the brain were more common and more severe among people living in the contaminated settlements than in the control group. For the people with long-term exposure to high amounts of radioactivity, there were also changes in the threshold for pain sensitivity, and in the senses of taste and smell.⁵⁶ Women in the contaminated settlements suffered from disrupted menstrual cycles, pathologies in genitalia, and other gynecological problems.⁵⁷

The Institute of Regional Pathology team found that low doses of ionizing radiation caused nose, ear, and throat changes among locals who lived close to the testing area.⁵⁸ Inhabitants of villages close to the Polygon aged prematurely as a result of infectious and somatic diseases (a condition where extreme focus on pain and fatigue leads to emotional distress) and generally unfavorable living conditions. In Kainar, for example, the villagers appeared to be ten years older than their actual age.⁵⁹

The specialists also studied animals, plants, and the overall environment. Animals were exposed to radiation even more than humans, since they spent all their time outside, eating contaminated grass, in constant contact with soil that absorbed radioactive particles. They suffered from deteriorating health, with blood and liver diseases, damage to their lungs and bleeding in their respiratory systems, mouths, and genitals. Even their brain tissue was altered.⁶⁰ Postmortem tests found strontium-90 in the bones of sheep and dogs.⁶¹ Strontium-90, a product of nuclear fission, has earned the terrifying nickname of "bone-seeker" because it lodges in bones and bone marrow and causes cancer of bone, nearby tissues, and leukemia.

Soil and vegetation in the rural settlements near the Polygon were seriously contaminated, irradiating people and animals not only externally but

internally. In the village of Kainar, for example, the experts said that the soil was full of tiny radioactive particles (up to five microns). Such particles were “most aggressive,” they explained, because they easily traveled into humans’ bloodstream when breathed in, delivering a large dose of internal radiation.⁶² It did not help that villagers lived in adobe houses they had built with raw bricks made of contaminated soil. As a result, even when indoors, they continued to be exposed to radioactive contamination.⁶³

Around 1958, Atchabarov and Saim Balmukhanov, the chief radiologist at Kazakhstan’s Ministry of Health and part of the expedition, also talked to Mukhametkali Suzhikov, the head of the Semipalatinsk region, who, as mentioned earlier, had bravely brought up the issue of the Polygon to the Soviet government and lost his job because of it.⁶⁴

The Atchabarov team concluded that the environment’s radioactivity levels were 20 to 300 times greater than maximum permissible levels. In some settlements, the radiation was 650 times higher than normal.⁶⁵

The findings of the Institute of Regional Pathology, which filled twelve volumes of classified documents, were sent to Moscow. The Institute of Biophysics, the military-affiliated organ whose earlier expedition had recommended nothing more than a pause in nuclear explosions during harvest time, called the team’s conclusions “tendentious.” Members of the Soviet military-industrial complex complained that local doctors blamed all health problems on radiation and “said nothing of sanitary and socioeconomic factors.” They argued that “the examination results do not present data on the sanitary state of inhabited settlements, living conditions of the inhabitants, nor the quality of food—dominating factors in the development of some diseases.”⁶⁶ This was in fact a false criticism, since these reports from Kazakhstan’s doctors did acknowledge difficult living conditions and infectious diseases as contributing factors to the poor health of the Semipalatinsk locals.⁶⁷

These officials, addressing the Communist Party Central Committee and the government of Kazakhstan, requested that Atchabarov be recalled and given an administrative punishment. Evidently, the Kazakh government resisted, as Atchabarov was not punished. “At the same time,” Atchabarov noted, “we never heard open disapproval of nuclear weapons testing at the Semipalatinsk Polygon from the Kazakh government.”⁶⁸ The Kazakh team was eventually forced to stop their clinical studies.

In his memoirs, Atchabarov writes that the president of the Kazakh Academy of Sciences, Kuanysh Satpaev, told him, “I protected you as long as I could.

This time, however, General [Avetik] Burnazyan [Deputy Health Minister, who was in charge of health issues in the military] followed me around demanding an end to the expedition. Your work has already made a difference.”⁶⁹

Those words marked the end of the expedition.

After the brief moratorium on nuclear testing between 1958 and 1961 (during the test-ban negotiations between the United States, United Kingdom, and the Soviet Union), Soviet nuclear tests resumed. But the statistics on cancer and mortality rates in the Semipalatinsk area remained classified.

Dispensary No. 4 continued to observe the effects on locals. From 1961 onward, the medical personnel from Dispensary No. 4 examined 20,000 people: 10,000 local inhabitants from areas exposed to radiation—the Abai, Beskaragay, and Zhana-Semey districts—and 10,000 from elsewhere in Kazakhstan, as a control group. The 10,000 locals from affected areas had been exposed to radiation at doses ranging from 10 to 150 rems.⁷⁰ To put this in perspective, in 2021, the annual limit of exposure for US emergency responders was set at 5 rem.⁷¹ Because Dispensary No. 4 began its first large-scale surveys of the radiological situation and people’s health only in 1961 and 1962, three years after being established and twelve years into the atmospheric testing, data on the immediate impact of radiation on people was lost.⁷²

The clinic at Dispensary No. 4 housed only fifteen to twenty hospital beds—it was designed to collect data, not treat locals, despite its disguise as an antibrucellosis facility. Meanwhile, doctors in regular hospitals were instructed to falsify the records of illnesses caused by radiation—to classify them as other illnesses or leave patients without a diagnosis.⁷³ Kabden Essengarin, the health official from the local village of Sarzhal, explained that “if somebody died of stomach cancer, we couldn’t report that. . . . We had to write down ‘stomach problems’ or something like that. People from the KGB came to make sure we said nothing more.”⁷⁴ In 1965, the Soviet Health Ministry forbade any studies to be conducted in the city of Semipalatinsk, thus restricting scientists and medics to studying rural settlements.⁷⁵ This restriction was likely motivated by fear that researching health issues in a big city like Semipalatinsk would lead to breaches of secrecy.

From the reports of the Institute of Regional Pathology, made available to scholars in Kazakhstan after the collapse of the Soviet Union, and from appeals by local government officials in Semipalatinsk, we get a rare glimpse into what Semipalatinsk, Kazakh, and Soviet authorities knew about the impact of nuclear testing on the local population starting in the 1950s. Some local officials

in the Semipalatinsk region rang alarms early on, but, as Atchabarov suggests above, the Kazakh government was unable to stand up to Moscow. The Soviet government, backed by the military-industrial complex, continued to deny that nuclear tests harmed people and the environment while at the same time it monitored the health of 10,000 people for scientific purposes, without treating them.

As the Soviet Union entered a stage of profound transformation with the advent of liberalizing perestroika and glasnost, the people in Kazakhstan rose up to demand the closing of the Semipalatinsk Polygon forever. Forty years of nuclear tests had wrought so much devastation that popular anger had swollen.

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