Between 1945 and 1992 the world suffered more than 2,000 nuclear weapons tests. Bombs with a combined explosive force of 500 megatons released radioactive gases and dust into our atmosphere, soil and rivers. The harmful long-term effects of this pollution, though still impossible to fully calculate, are becoming increasingly clear in on-going levels of genetic ill-health and disability.

*Sow the Wind* tells how one of the greatest man-made assaults on our planet and its resulting human tragedy was finally ended by an unsung grassroots movement formed in the depths of the then USSR.
THE STORY OF THE FILM

A man walks slowly through a cemetery, pausing occasionally at certain gravestones. He walks awkwardly; he is short, and has no arms. He enters a studio and sits, surrounded by paints and canvas. Expertly, with one foot, he picks up a brush and begins to paint.

August 1949, in the north-eastern corner of the vast country of Kazakhstan, then part of the Soviet Union, an area of 18,500 sq. kilometres has been designated ‘the Polygon’.

Recently, there has been Soviet activity here - buildings, trenches, people, equipment - all heavily cloaked in secrecy.

Clearly, something is planned.

At 7am on the 29th of August the residents of the Polygon are surprised by a flash of light and a huge explosion. From its centre rises a vast, spreading mushroom cloud.

More than 60 years later, it is this image that haunts the paintings of the disabled artist.

The story begins in 1945, when the US bombings of Hiroshima and Nagasaki announced the arrival of a new, ferocious weapon of war – and heralded a new and bitter contest.

Senator Nunn: “It was immediately clear that possession of this technology was the key to military power. As the confusion of the post-war period settled into the impasse of the Cold War, developing and stockpiling nuclear weapons became the preoccupation of every nation aspiring to a place on the world political stage. It became a competition.”

Soviet spokesperson (tbc): “The technology was new; the weapon systems unreliable. They had to be tested, and the only way to do that was to detonate them, and as publicly as possible - what better way to demonstrate your capability than to regularly explode bigger and bigger bombs?”
A compelling graphic shows the true, shocking extent of testing over these years – a virtually non-stop barrage of bombs as the world accelerated towards catastrophe.

**Senator Nunn:** “Together, the competing countries released radiation many thousands of times higher than the combined US attacks on Japan. That’s just atmospheric tests - excluding extensive underground and underwater tests.”

**Soviet spokesperson (tbc):** “Testing was bad enough – but the consequences of a war involving these weapons were even more terrifying. Yet the world was accelerating towards disaster – and no-one, it seemed, knew how to stop it.”

The Soviet choice of testing ground was an area of north-east Kazakhstan, designated the Polygon. Although the immediate test site was deemed uninhabited, in fact more than 200,000 people were living in the area; all told, a million Kazakhs were within the reach of fallout from the explosions.

**Karipbek Kuyukov, the disabled artist,** remembers from his childhood: “When there was scheduled testing, there was a blast with a huge radius on the ground and this wave would go through our house. We often woke up and I would see the light bulbs tossed around, and dishes rattling. So we would run outside in fear since we lived in an old house and were afraid that the house would collapse. After the explosions they would announce on the radio that for peaceful purposes there had been nuclear explosions. They told that there had been no emission of radiation to the outside. It was a performance to calm people who lived in Soviet Union telling us it was important that we should have such weapon with which we could defend ourselves from other countries.”

Neither of Karipbek’s elder siblings survived their first year. He himself was just one of many children born with deformities and serious, often fatal medical conditions. In the Polygon’s Medical Museum, preserved remains of babies and children born during this period tell the story.

**Berek Syzdykov is a musician,** he too suffered a disability – untreatable facial tumours that have rendered him blind.

His mother, **Zeinelhan:** “When we were working outside I saw a light in the sky. Then I saw it again. I was in my 7th month of pregnancy.”

**Dr Akmaral Mussakhanova,** Medical Director at SwissKazMed confirms that damage to the local population was extensive, particularly affecting foetuses, babies and children.
Villagers such as Berek and Karipbek belong to a group of herding peoples who once followed a traditional nomadic existence. They were skilled horsemen, moving freely with their herds across the steppes before Soviet government policy forced them into settled villages in the first half of the 20th century.

Kazakh Elder (tbc): “Many of us still farm with animals, and some follow seasonal grazing. This a tough country and a tough climate, but our people are resilient and independent – we’re used to challenges.”

Yet there was little they could do in the face of this new threat. Over the course of forty years more than 450 devices were exploded within the Polygon - including bombs dropped from the air - exposing those living nearby to fallout equivalent to 20,000 Hiroshima bombs.

The exact details of the tests are preserved at the Soviet scientific centre at Kurchatov.

Dr. Sergey Lukashenko, Director of the National Nuclear Centre in Kurchatov: “The various structures and vehicles were placed at different distances to establish the impact of the various blasts. Animals were tethered at measured distances too – they were retrieved and examined afterwards to gauge the effects . . . there were human observers too, although not as close as the animals, and protected, or so they thought, by bunkers, buildings and trenches. There was some idea that the area was uninhabited but there was, of course, a local population.”

Olzhas Suleimenov, a Kazakh poet prominent in Moscow literary life during the Soviet era: “We saw how the ground would blow up after the explosions. The earth would crack, and steam would come out of it. There were clouds, radioactive clouds, spreading over hundreds of kilometres. They would calculate how the wind blew in such a way that the cloud wouldn’t go over a big city after the explosion. They preferred it to blow over the steppes, over the deserts.

We have an atomic lake here. They tried to make an underground explosion, but it wasn’t very deep and a crater appeared, which then filled with water. I remember a colonel who supported the continuation of the testings. Colonel Petrushenko visited with his son. He was so convinced that it wasn’t dangerous... he called the others: “Why are you afraid. It is so hot, come on, let’s swim!” So one of us, Khailev, also jumped into the lake. They had a swim, everything seemed alright... Shortly after, though, they all died. All three of them. The Atomic Lake is still there.”
As the years went by, it became increasingly obvious that the Kazakh population was suffering from the tests. Yet still they continued and the villagers had no choice but to continue living in their shadow.

Boris Gusev, neuropathologist on a research project in the Polygon:
“This was at the height of Soviet Union power. Kazakhstan was governed through a combination of propaganda, appeals to patriotism, and coercion; fears were dismissed with denials and reassurance, while dissent was swiftly quelled.

Who could object to a project when they were told that it was the only thing preventing a catastrophic attack from the USSR’s Cold War enemies?”

And while villagers could see the effects for themselves, they had no power in the face of official denials.

Gusev: “It was hard to prove, they didn’t have the data over time, and without hard evidence the local population was helpless”.

Boris Gusev, however, did have evidence.

“We reported directly to Moscow with records of illness. We knew precisely how much of the different types of radiation people received. The Soviet Union allowed its citizens to live through the most real type of nuclear war – they had to know what would happen, therefore no-one was evacuated. Instead, they were observed.”

One of the most important creators of the Soviet atomic programme was physicist Andrei Sakharov. It was his design that was incorporated into the Tsar Bomba, the most powerful nuclear device ever detonated. As the 1950s progressed Sakharov’s experience at the Polygon gave him direct insight into the effects of exposure to nuclear radiation. This, and his despair at the relentless escalation of weaponry led him to agitate for the cessation of atmospheric testing and an end to the arms race. His subsequent political activism brought him into extreme disfavour with the Soviet regime; in 1975 he was awarded the Nobel Peace Prize but not permitted to travel to receive it.

Even with Sakharov’s efforts it took until 1963 for the Partial Test Ban treaty, which banned atmospheric testing, to come into effect. It had been 14 years of intense radiation fallout for the Polygon and the nearby population – a legacy that will last hundreds, if not thousands of years. The tests did not stop, however – the detonations simply moved underground.

Olzhas Suleimenov: “We believed that the underground tests were not harmful, either for people’s health, or nature. We were assured that everything was alright.”

Local mine officials, however, knew differently. Margulan Hamievich was an engineer and miner in Karaganda, located just west of the test site:
“I was invited to an underground explosion as an observer from Karaganda. I attended. There was an explosion at a depth of 560 metres... Even though we were 4 kilometres away it seemed like the ground under your feet lifted you... there was a strong smell of sulphurated hydrogen... it was so strong and at that moment the crew told us to come back to the cars.”

The Soviet authorities were still very much in control and the pulses of generalised suspicion and anger sweeping through the local population lacked a focus. It would take Olzhas Suleimenov, then in Moscow and a leading figure in the Soviet arts world, to light the fuse.

**Olzhas Suleimenov:** “In February 1989, we heard underground explosions. I received a call from a man from the military in the Semipalatinsk region. He told me that all the Geiger counters were showing a very high level of radiation.”

Olzhas took advantage of his privileged position in Moscow to send a note to the central Soviet government seeking clarification of this and other disturbing reports, and was told that the explosions were harmless. It was the last straw.

**Olzhas:** “This is when I decided to give a talk on TV. I had 15 minutes of live show. And for the first time I used this media as it should be. I urged people to meet in front of the Writer’s Soyuz building, to talk about this issue. Because I had different sources of information about these explosions than those provided by the government from Moscow.”

Olzhas’ public call was answered immediately. The anger that had been contained for so long swept through the region and beyond. By the summer of 1989 more than 50,000 Kazakhs were actively protesting, and a petition to stop the tests was signed by more than a million. It was an unprecedented, far-reaching mass movement led by everyone from miners to writers and poets, and included the young artist, Karipbek Kuyukov.

Even as the Kazakh protest movement was causing shock waves in Moscow, an echo was sounding on the other side of the world.

**American Senator Dr Bill Monning** was Executive Director of the International Physicians for the Prevention of Nuclear War in the USA at the time.

“Atomic testing by the USA had followed a similar course to that of the Soviet Union as the weapons contest unfolded. The Nevada Desert was the main US site; although there were fewer people within direct range than in Kazakhstan, enough of their effects had been felt to provoke disquiet.”
Carrie Dann, Shoshone Elder: “The prevailing wind carried the radiation cloud from the Nevada tests away from Los Angeles and the West Coast cities. People living downwind, which included the Native American Shoshone people, (the “downwinders”) suffered the full force of the fallout, sometimes in the form of thick layers of white radioactive ash – like snow.”

Claudia Peterson – resident of St George, Utah: “Whole streets of people in our town had a cancer sufferer in every home – sometimes whole families. Children were hardest hit.”

The American government steadfastly denied that the tests were dangerous. Did they, like the Soviets, decide that the unwitting sacrifice of the downwinders was justified?

Bill Monning: “There was a movement to ban the tests but it met fierce political opposition on the grounds of patriotism and national defence – basically, of course, they were afraid to stop unilaterally, it was too big a risk, especially as they were lagging a bit behind the Soviets. In addition, the Nevada test site was valuable to the state economy – it was huge and supported a lot of local industry. So the protests stalled – they couldn’t get enough support.”

Olzhas saw that a world-wide test ban was the only possible solution. He began approaching American protestors with the idea of international cooperation. Led by the Kazakhs, the leaders of both protest groups exchanged visits, staged conferences and planned strategy.

Olzhas: “At a meeting, on the 28th of February 1989 we established the Nevada-Semey movement. Because we knew we were stronger together.”

The joint movement was now growing so rapidly it seemed it must succeed.

But which of the major powers would back down first?

In the end, it was the Soviets who conceded to the huge groundswell of Kazakh protest.

Olzhas: “I brought the resolutions with me to the High Council of USSR in Moscow, whose chairman at the time was Mikhail Gorbachev. The High Council agreed to our resolutions and on the 20th of November 1989 presented an unprecedented ruling to the Government, to consider the closing of the Semipalatinsk Polygon. The Government suspended the tests. One year later, on the 29th of August 1991, President Nazarbayev of Kazakhstan signed a decree to close the Semipalatinsk Polygon.”

It was the signal for the rest of the world to follow the lead of Kazakhstan. In 1992, the United States capitulated and ended testing in Nevada, and subsequently its other test sites.

Now the Polygon Research Centre is a museum and the Kazakh site cleared.
Sam Nunn: “It took four years of international collaboration to destroy the SILOS, plug contaminated wells and seal the tunnels to and from the underground sites and waste dumps. They poured thousands of tons of concrete but of course they can never get rid of all the contamination up there.”

The Kazakh were finally triumphant, the tests ended, the appalling costs to their people in part, at least, acknowledged; the 29th of August is marked in the UN international calendar as a day of celebration. But what future awaits the descendants of those who reaped the whirlwind?

Margulan Hamievich: “Even today, one in every twenty children born near Semipalatinsk is born with serious deformities. Some die, some are cared for by parents, most go to orphanages. Many struggle with different types of cancer; more than half the local population has died before the age of 60. Post-atomly’s irremovable genetic damage caused by radiation – that’s a legacy that will carry on into future generations. Those directly affected by fallout are obviously most at risk – but it’s worth remembering that every single person alive today and over the next 10,000 years will carry within their bodies radioactive elements from the testing and deployment of nuclear devices.”

No-one believes that the battle against nuclear testing is finally won, as the recent tests claimed by North Korea amply illustrate. International non-proliferation treaties are constantly revised and efforts to include non-signatories and rogue states continue.

Looking to the future, Kazakhstan has been chosen by the UN as the site for the world’s first Nuclear Fuel Bank. It’s way to provide countries with access to enriched nuclear fuel for peaceful industrial purposes without those countries needing to set up their own enrichment technology. This will dramatically cut the dangers of multiple enrichment plants, and increase security.

The Kazakh protest movement does not rest on its laurels. It’s determined to keep the issues in the public eye.

As part of this the Kazakhs are preparing to celebrate the 25th anniversary of the closing of the Polygon. It’s a chance to bring together those who pulled off what had once seemed impossible – bringing to a full stop a lethal contest that had been gathering pace for forty years. Survivors from both Kazakhstan and Nevada will reunite, joined by politicians and scientists from around the world.

As part of the commemoration there’s an orchestral concert, featuring the specially composed Polygon Suite – a perfect opportunity for everyone to gather and reflect on their achievement – and to look ahead to what may be an uncertain future.

The Concert – A Kazakh orchestra featuring both traditional and western instruments including the dombra playing of Berek. As the music plays, we see again key images of the journey from the first deadly explosions to the abandoned sites, now inactive but still reservoirs of pollution, devastated lands poisoned by fallout. And we see again the victims, consciously sacrificed by their governments to the political expediency of the time.

Shot on location in Kazakhstan and the USA. Including rare archive footage; interviews with witnesses, participants and experts.

INTERNATIONAL DAY AGAINST NUCLEAR TESTS IS HELD AT THE UN ON THE 29TH AUGUST EVERY YEAR. IT IS OUR AMBITION TO PREMIER SOW THE WIND AT THE UN ON THAT DAY 2016.
Interviews already recorded:

**Karipbek Kuyukov** – from a village on the edge of the Polygon. Despite being born with no arms as a result of the nuclear testing, he is an accomplished painter and honorary ambassador of the Atom Project – an organisation that works to stop nuclear testing all over the world. His paintings continue to keep testing issues in the public eye.

**Berek Syzdykov** – from a village on the edge of the Polygon. When his mother was pregnant with him she was exposed to nuclear fallout from atmospheric tests. As a result Berek was born with a large facial tumour blinding him. He plays the dombra and sings and will join with other musicians in the commemorative concert.

**Zeinelhan Syzdykov** – Berek’s mother. She remembers seeing 'lights in the sky' over the test site whilst she was pregnant, and going outside to watch. She now cares for her son full time.

**Dr. Sergey Lukashenko** – Director of the National Nuclear Centre in Kurchatov, the purpose built science city on the edges of the Polygon. He oversees current research at the test site and examines the effects of radiation on the environment.

**Margulan Hamievich** – former miner and engineer, Margulan Hamievich is now Chairman of the Nevada-Semey movement. He is the only one of four civil witnesses present at the last nuclear test still alive, although he is struggling with chronic illness.

**Olzhas Suleimenov** – influential Kazakh poet and activist who sparked the local uprising against nuclear testing in the Polygon in 1989 by interrupting his own poetry reading on Kazakh TV. He formed and led the *Nevada-Semipalatinsk Movement to Stop All Nuclear Weapons Testing*, which pushed the Soviet Government to announce a moratorium on nuclear testing.

**Dr Astaeva Shinar** – paediatrician at Semey State Orphanage, oversees the care and treatment of the children affected by exposure to radiation.

Upcoming interviews:

**AMERICA**

**Sam Nunn** – currently co-chairman and CEO of the Nuclear Threat Initiative, former lawyer and Senator. Sam Nunn implemented the Nunn-Lugar Treaty during the period directly following the dissolution of the Soviet Union. Over the two years following 1991, Russia, Ukraine, Belarus and Kazakhstan all agreed to the Nunn-Lugar program, officially called the Cooperative Threat Reduction Program. This allowed them to safely secure and/or dispose of their inherited nuclear arsenal and reduce the threat of scavengers selling nuclear products on the black market.

**Senator Bill Monning** – currently serving in the California State Senate. He was Executive Director of the Nobel Peace Prize winning organization, International Physicians for the Prevention of Nuclear War (IPPNW), during which time he visited Kazakhstan and protested with Olzhas Suleimenov and the Nevada-Semey movement.
Jackie Cabasso – current Executive Director of Western States Legal Foundation, a non-profit public interest organization that seeks to abolish nuclear weapons and ensure appropriate management of nuclear waste. She went to Kazakhstan in 1990 with Senator Monning and attended protests and conferences there. An active anti-nuclear activist and friends with Karipbek Kuyukov.

Claudia Peterson – resident of St George, Utah, also known as the ‘Downwinder’ community. She lost her father, sister and daughter to radiation related diseases. She went to Kazakhstan in 1990 with Jackie Cabasso and Senator Monning, which ‘saved her’ from the grief of losing her daughter and gave her purpose again. She has actively campaigned and protested for ending nuclear testing.

Carrie Dann – Western Shoshone elder and activist who has campaigned for Shoshone land rights and compensation for the damage caused by fallout from the tests. In 2007 she was arrested with 38 other activists for trespassing at the Nevada Test Site.

KAZAKHSTAN

Boris Gusev – researcher and doctor at the Semipalatinsk Institute of Radiation Medicine. He worked as a medical researcher in the Polygon under the Soviet Union, to which he reported data. Believes that exposing local population to the fallout was part of the test agenda. He has worked closely with victims in villages around the Polygon over the last 50 years.

Karipbek Kuyukov (2nd interview) – finishing our commissioned painting.

Dr Akmaral Mussakhanova – Medical Director at SwissKazMed. Previously worked in Semey and has recently conducted research about the ongoing to problems of radiation related diseases in subsequent generations.

Cold war warrior (tbc) – explaining rationale of the time, dominated by fear of being the loser in atomic war.

Kazakh elder (tbc) – describes the current situation, how life is today for those living in and around the Polygon.

Almost all the interviewees will be filmed again at the commemorative concert in Semey and will be interviewed further there, where necessary, along with other interviews yet to be confirmed.
LOCATIONS

KAZAKHSTAN SHOOT 1 – completed
Throughout: atmospheric scenic winter views, travelling shots, cutaways, general views

1. Stronger than Death Monument, Semey – Memorial to the victims of the nuclear test site.
2. Park outside Hotel Nomad – Location for Berek and Zeinelhan Syzdykov walk establishers.
3. Lake Chagan – Crater formed by so-called peaceful explosion.
4. Kurchatov – Closed, purpose built, secret science city on the edge of the Semipalatinsk test site.
5. The National Nuclear Centre (NNC) in Kurchatov – A museum at the National Nuclear Centre with various artefacts from, and information about, the test site.
6. Semey Orphanage – For orphans and disabled orphans up to the age of 4.
7. Museum at Semipalatinsk Institute of Radiation Medicine – room at the Semipalatinsk Institute of Radiation Medicine that housed jars with preserved corpses of deformed babies and foetuses.
8. Cemetery on outskirts of Semey – Set up of Karipbek Kuyukov establisher.
9. Karipbek Kuyukov’s studio – In this case the hotel room.

Upcoming shoots:

AMERICA

1. General Views Las Vegas
2. St George, Utah – Cemetery, town GVs, local scenes, establishers for interviewees.
3. Edge of the Nevada Test Site – The site of previous marches and protests by Americans and Kazakhs. Local GVs.

Additional interview sites tbc.

KAZAKHSTAN

1. Semipalatinsk ‘Palace of Culture’ – Location of concert.
5. Local villages – Znamenka/Karaul/Egandybulak – Nomadic village life, grazing animals, cemetery, meeting and interview, local elder.
8. Aerial views of test site from Helicopter – Lake Chagan and Ground Zero.