



## **Mayak - Greenpeace briefing, May 2002.**

Hidden in Russia's Southern Ural Mountains, the Mayak Chemical Combine is the world's largest nuclear complex. It is responsible for destroying hundreds of thousands of people's lives.

Over the last five decades Mayak has discharged frightening quantities of radioactivity into the surrounding land and waterways. Until recently it was deleted from every map of Russia. Mayak now holds the inauspicious title of the most nuclear contaminated place on the planet. Mayak's operation has been plagued with nuclear disasters, environmental contamination and public health scandals.

Yet, rather than decommission and decontaminate the site, in 2001, the Russian parliament overturned the ban on the import of radioactive waste and spent nuclear fuel. The Russian Atomic Ministry, MINATOM, plans to import radioactive waste not only for intermediate storage, but also for final disposal and even plutonium reprocessing. Mayak is the front-runner to host these foreign nuclear wastes. MINATOM believes it could import some 20,000 tonnes of nuclear waste in exchange for over 20 billion US dollars.

This development will not only add to the already dangerous burden of radioactive waste in the Southern Urals but will increase security risks from the transportation of the spent nuclear fuel (SNF) and also nuclear proliferation, if Russia decides to reprocess the plutonium contained in the spent nuclear fuel.

### **The History of Mayak**

The Soviet nuclear weapons program was initiated by Stalin following America's "success" at Hiroshima and Nagasaki. Mayak was an early and key part of the program. Construction at the site began in November 1945 and by June 1948 the first reactor for plutonium production began operating. The first Soviet nuclear bomb was detonated in August 1949 – with plutonium produced at Mayak, just in time for Stalin's 70<sup>th</sup> birthday. Ever since, Mayak has been the key Soviet and Russian facility for the production of weapons plutonium and reprocessing of spent nuclear fuel.

Although all five of Mayak's plutonium production reactors were closed in 1991, it remains Russia's most important nuclear site. Plutonium is still separated from spent nuclear fuel there. In addition to reprocessing facilities, Mayak has a nuclear waste treatment plant with interim storage and pilot facilities for the production of Mixed Oxide (MOX) fuel and a facility for the vitrification of liquid radioactive waste.

### **River Disease**

Until Glasnost, the 124,000 residents of the villages around Mayak were told nothing about the accidents or the routine discharges of radioactive waste into their environment and food chain. Although they now know that radiation from the nuclear plant is responsible for many deaths and illnesses, they still call it "River Disease".

**GREENPEACE**

Between 1948 and 1956 high-level radioactive waste was poured straight into the Techa River, which is not only the source of the villagers' drinking water but also a place where they swam, fished and their children played. It exposed 124,000 people to medium and high doses of radiation. More nuclear waste was dumped into lake Karachai. In 1967, during a long hot summer, the lake dried out and a storm blew radioactive dust across a vast area. In 1957 one of the concrete storage tanks' cooling systems broke down. Its 8 feet thick lid was blown off and over half the amount of radioactivity released by Chernobyl spewed into the atmosphere and across the countryside. Only some villagers were evacuated, most were left there ignorant to the danger. This time the villagers are aware of MINATOM's dangerous proposal and are strongly opposed to it.

Today, with more known and understood about the disasters at Mayak, ignorance has turned to grave concern. The deputy head of the Mayak plant told a government commission: "We cannot guarantee the safety of the people living downstream of the Techa River". The villagers simply don't believe that the storage and handling of nuclear waste will take place in a safe and responsible manner. Their scepticism is understandable.

They have suffered so much from radiation that virtually every week someone dies of cancer. Thirty percent of their children are born with birth defects. They have diseases of the nervous system, the heart and the blood along with brain tumours and speech problems. Leukaemia and cancers of the digestive system, the skin, bones and lungs are rapidly on the increase. There is a high rate of prematurely born babies and miscarriages. Fifty percent of men and women of childbearing age are sterile.

### **Urals Research Centre**

Once or twice a year, the inhabitants of the affected areas receive notice urging them to attend the Urals Research Centre in Chelyabinsk. Until the early nineties none of the local people understood why they had to go for check-ups. The government knew that the accidents at Mayak had exposed the surrounding villages to the dangers of radiation and that they were now suffering the consequences, but instead of informing the inhabitants, it shared the data with research institutes in Japan, USA, Germany, France and Sweden. When the people discovered that the government was collecting the data on the effects of radiation many stopped going.

"First priority is medical examination and rehabilitation of the exposed population in the Urals region" states a promotional brochure from the Urals Research Centre. What it does not say is that rehabilitation is not possible. If the population had been evacuated immediately from the affected areas they might have stood a chance. There is no method to extract accumulated caesium and strontium from bones.

Instead, all the centre can offer is non-steroid medication against inflammation, painkillers, vitamins and physiotherapy. The post Soviet collapse of the public services has made the situation worse as maintenance of the centre has now stopped and it is falling into a state of disrepair.

The Chelyabinsk region has 3.2 million inhabitants, more than 1.5 million have been affected by the radiation.

**GREENPEACE**

## **Compensation**

When the villagers became aware of the cause of their illnesses some sought compensation from the government or from Mayak itself. Lawyers representing them believe the plant is still unsafe, but the government and the plant refuse to accept responsibility even though thirty thousand people from the area already received a small government compensation. The Mayak plant has so far only offered compensation to two people after being forced by the courts. Even after the verdict, they had to return to court as Mayak refused to pay.

## **The World's Radioactive Waste Dump**

There is growing awareness that reprocessing, storage of spent nuclear fuel and other radioactive wastes is a major environmental and proliferation threat and will remain so for thousands of years.

Yet, MINATOM insist there is a spent nuclear fuel reprocessing market across the world, citing Britain and France as their main competitors. In April 2002, Russian minister, Romyantsev, said that a contract to import spent nuclear fuel from British research reactors would be signed as early as next year. The spent nuclear fuel would be processed at the Mayak Chemical Combine. However, he also said that to cope with the imports, storage capacity would have to be increased five-fold, clearly identifying that current facilities are unable to deal with the MINATOM proposal.

The Mayak plant has repeatedly proven itself incompetent in dealing with its own nuclear waste, it is unthinkable to suggest increasing the quantity of nuclear material at the plant as this would only increase and extend the existing health hazards and environmental contamination.

In 1952, attempts began to isolate Mayak's liquid radioactive waste from the Techa River with the creation of several artificial reservoirs. Each year, 10 million cubic metres of waste from Mayak is dumped into the reservoirs, which are only separated from the Techa by small dams. However, the waste is leaking through the dams. Each spring the situation becomes critical due to substantial amounts of melting snow, threatening to break the dams and spilling radioactive waste into the Techa. Last year, the District Governor of Chelyabinsk wrote to the Russian Prime Minister warning that the reservoirs would reach breaking point by 2004.

Mayak was built to reprocess 400 tons of spent nuclear fuel every year, but in the past few years technical problems have reduced its annual throughput to 150 tons. Each ton of reprocessed fuel generates liquid, solid and gaseous radioactive wastes with a radioactivity of 600,000 curies. From the beginning of reprocessing at Mayak in 1977, medium level radioactive waste was discharged into Lake Karachay. It is still used for storing the liquid radioactive wastes. Every year the equivalent of 100-130 tons of SNF is discharged into the lake, increasing the environmental pollution of the Chelyabinsk area.

The waste discharges into Lake Karachay have created an underground radioactive "lens". It stretches over several badly cracked structures, contaminating other water sources in the area. Pollution was measured in the water basins in the village of Novogorny, which led to the closure of water pumps, located six to ten kilometres from Lake Karachay.

**GREENPEACE**

The “*lens*” has already reached the banks of the River Mishelyak, which flows into the River Techa. The Techa is part of the hydrographic system of the Ob River. Through the river system Techa-Iset-Tobol-Irtysh-Ob, liquid radioactive waste from the reprocessing of SNF enters the Kara Sea in North Russia and eventually the Arctic. If the “*lens*” travels further south it also threatens to contaminate the drinking water of the 1.5 million inhabitants of the city of Chelyabinsk.

Among the countries listed as potential clients are: Germany, Japan, South Korea, Switzerland, Spain and Taiwan - all have a severe spent nuclear fuel problem. It is a problem of their own creation, and it is for their government and people to seek to solve within their own boundaries, not something that can simply be exported or swept under the carpet. As there is no current solution, they should move as early as possible to phase out nuclear power, and to opt for national, monitored, aboveground storage.