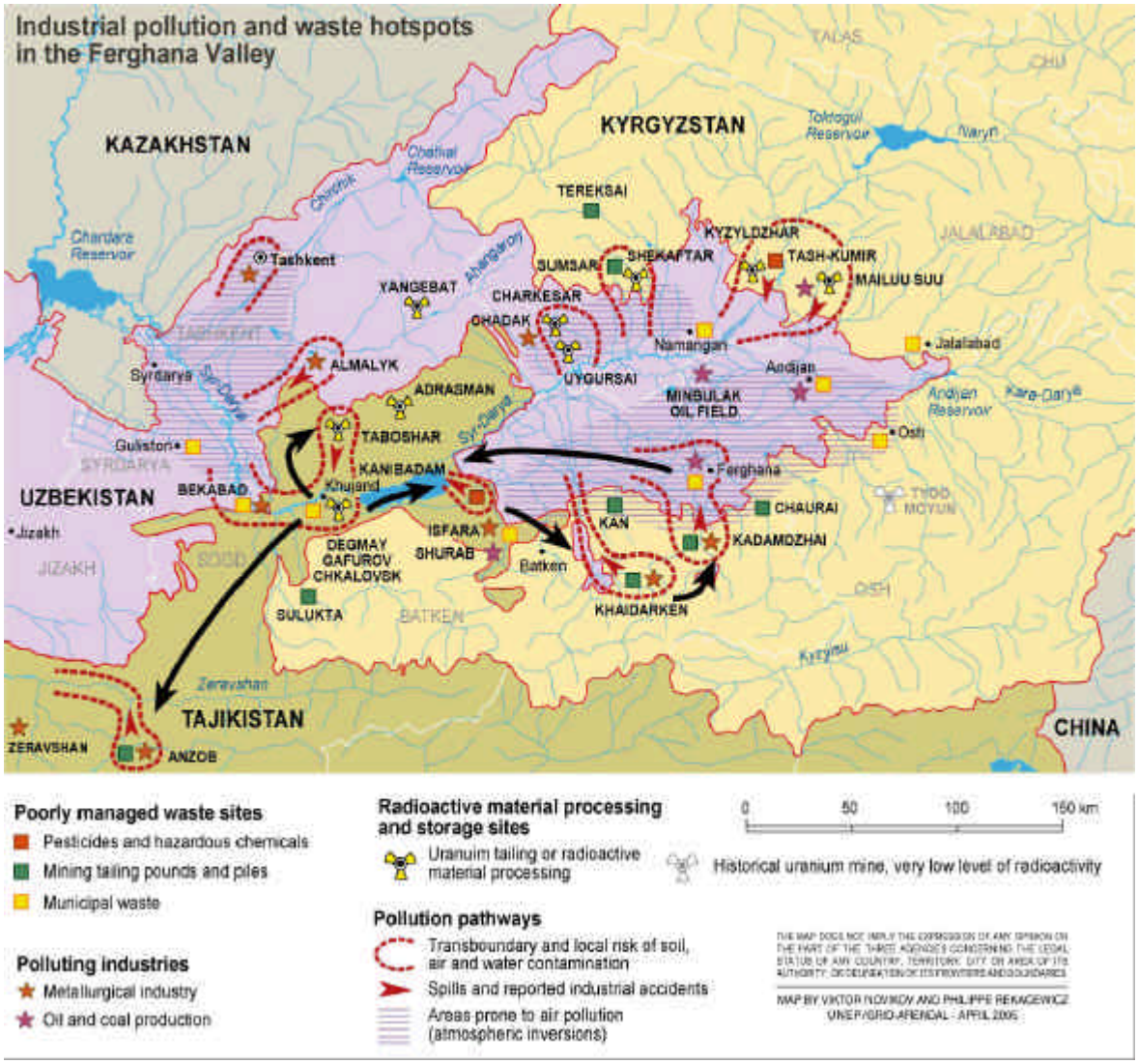
ENVSEC

Ferghana Valley Environmental Media Tour
5 - 10 June 2005

A short account including articles published by the press



The primary objectives of the Ferghana Valley media tour were to conduct a field exercise for regional media and international journalists in support of the ENVSEC initiative implementation in Central Asia and to improve knowledge base and stakeholder involvement into on-going and planned ENVSEC projects in the Ferghana Valley area. The tour included activities as described below. It took place between June 5 and 10 2005, with five international journalists (1 Swiss, 2 French, 2 Kazakh), four representatives from ENVSEC UNEP GRID-Arendal meeting about 25 representatives from national and local environmental authorities and from industry.

MEDIA-TOUR PROGRAMME

Dates	Activities
1 June 2005	▪ Visit to the Nurek hydropower dam and reservoir (as a part of Dushanbe Water Forum sight-seeing tour)
2 June 2005	▪ Cartographic workshop for Tajik environmental authorities and NGOs (GRID-Arendal contribution to the Tajik National environmental action) ▪ Attending the Rogun dam construction workshop (by Nickolai Denisov) ▪ Visit to the Tajik National cartographic agency, meeting with managing director and staff, assessing the cartographic techniques and needs
3 June 2005	▪ Visit to the Romit nature reserve (post-conflict area), meeting with director and staff ▪ Observation of the traditional lifestyles and nature of the Romit valley ▪ Meeting with the Tajik Ministry of industry (deputy minister, international relations officer), discussing the pollution issues and industrial development plans
4 June 2005	▪ Visit to the Tajik aluminum plant and its neighborhoods ▪ Visit to the Shirkent natural-historical park and the Hissar medieval castle ▪ Observation of the traditional lifestyle and nature of the Shirkent valley ▪ Arrival of international media-tour participants to Dushanbe, meeting at the airport/hotel/accommodation
5 June 2005	**Traveling north** ▪ Driving from Dushanbe through Varzob gorge and Anzob pass (3300 m.a.s.l.) to the Zeravshan river valley ▪ Visiting the Anzob stibium-mercury mining and enrichment plant (visiting main production facility and tailings), meeting with local environmental authorities and enterprise management ▪ Observation of the traditional lifestyle and nature of the Yagnob valley ▪ Visit to the Iskanderkul lake (stop over on the lake)
6 June 2005	**Zeravshan valley** ▪ Driving through the Zeravshan valley ▪ Visit to the Zeravshan gold mining and enrichment plant (and tailings), meeting with local environmental authorities and enterprise management ▪ Observation of the traditional lifestyle and natural environments (tugai and juniper forests, flood- and landslide-prone areas, arid landscapes) ▪ Driving from the Zeravshan valley through Shahristan pass (3300 m.a.s.l.) to the Syrdarya river basin (stopover in Khudjand)
7 June 2005	**Radiation hazards in Northern Tajikistan** ▪ Visit to the VOSTOKREDMET enterprise, meeting with enterprise management, engineers ▪ Trip to nuclear tailings around Khujand: Degmay, Karta 1-9, Taboshar
8 June 2005	**Natural resource depletion, pesticide dump site and natural hazards** ▪ Meeting with Sogd region environmental authorities ▪ Driving along the shore of the Kairakkum lake, Arka-Kistakuz

	transboundary lands and areas with eco-migration due to water-table rise ▪ Meeting with local environmental authorities and Kanibadam district administration ▪ Visit to the land salinization hotspots (cotton and grain cultivation in lower Kanibadam), areas affected by recent natural disasters (floods, mudflows) ▪ Visit to the pesticide dump site in Kanibadam and coalmines in Shurab
9 June 2005	**Industrial pollution risks in southern Kyrgyzstan** ▪ Visit to the mercury production plant in Haidarkan (ore enrichment facility), meeting with engineers, local environmental authorities ▪ Visit to the antimony production plant in Kadamjai (ore enrichment and tailings), meeting with enterprise management and engineers
10 June 2005	**Concluding visits** ▪ Trip to nuclear tailing Karta 1-9 of VOSTOKREDMET enterprise ▪ Sight-seeing tour in Khudjand ▪ Travel back and departure from Dushanbe
11-12 Jun 05	**Varzob valley** ▪ Visit to the environmental hotspots in the Varzob valley (for Kazakh media)

Brief information on sites visited:

Nurek hydropower dam - major supplier of electricity to central and southern Tajikistan, plays an important role in irrigation and flood protection. The dam was built on the Vakhsh River in 1972, with projected generating capacity 3,000 MW and average annual electricity production of 15,000 MWh. This is one of the highest dams in the world 300 meters tall, containing 10 cub.km of water. After putting the Nurek dam in operation, the local seismic activity intensified and water table increased. In 1970s, the government established the Nurek nature reserve to monitor the environmental changes around the reservoir.

Rogun hydropower dam under construction - construction started in the middle 1980s and has never been completed. The dam was designed to be 335 m tall, located upstream of the Nurek dam on the same Vakhsh River. In 1993 severe floods destroyed a significant part of the infrastructure and dam's initial basement (20-30 meters high at that time), while subsequent civil war added to its further deterioration. In 2004-2005, the government has revitalized the dam construction plans and took actions to attract local and foreign finance.

Proposed UNEP's follow-up:

1) participate in the assessment review and provide comments if and when necessary
2) pay short visit to the dam construction site and neighborhoods for rapid assessment of the state of local environment and post-conflict (civil war) impacts
3) highlight environmental concerns and suggest concrete actions regarding the dam for appropriate environmental considerations in dam's construction plans

Tajik National cartographic agency – established in 1970s; formed an important component of the cartographic network and satellite data processing in the former Soviet Union. The key outputs in the past include: Four-volume Tajik Environmental Atlas (1986), cartography works for Afghanistan, natural resource/fossil fuel estimates for Central Asia, etc. In the past 10 years, the agency experienced severe brain wash out, many skilled specialists left. Technical equipment deteriorated with no archive system in place (whilst no computer-based cartographic techniques are used in the agency). Today's cartographic works are limited to irregular local contracts.

Proposed UNEP's follow-up:

1) identify resources to assist the agency with GIS/cartographic software and hardware – highest priority is archiving/digitizing of recently completed maps (especially natural disaster monitoring and prevention maps)
2) promote integration of agency's cartographic outputs with natural disaster prevention projects and programmes and rapid response operations
3) consider the existing opportunities for training of the Afghan cartographers and geographers at agency's premises/facilities

Romit nature reserve - established in 1959, covers an area of 16.1 thousand ha. The reserve is located on the southern slopes of the Hissar Mountains on elevations between 1,200 to 3,200 masl, where hilly-rocky landscape dominates. Fauna is diverse including eagle, griffon, snow leopard, brown bear, wolf, ibex, etc. The 1992-1996 armed conflict in the Romit valley had negatively impacted the local ecosystem. One dramatic example is a vanished red deer population and a heavily depleted forest. Recent intrusion of human settlements into nature reserve's lands and lack of energy put additional contemporary pressures on this mountain ecosystem.

Proposed UNEP's follow-up:

1) assist government in the strengthening management capacity of the reserve
2) assess the post-conflict impacts on nature reserve's ecosystem and develop nature protection area management plan for post-conflict rehabilitation
3) rise public awareness and promote wider use of renewables by population

Tajik aluminium plant – is the largest producer of aluminium in Central Asia, with annual production of 350,000-450,000 tonnes. On national level, it is one of the key industrial sources of greenhouse gases, fluorine and toxins. The plant is located nearby the Tajik-Uzbek border, regularly erupting complaints from the Uzbek authorities about high pollution levels associated with aluminium production. Though comprehensive air pollution monitoring network is absent in the adjacent area, the random and scarce air quality data generally suggest acceptable limits of air pollution levels with episodic decrease of air quality due to stable meteorological conditions.

Shirkent natural-historical park - established in 1991, covers 31.9 thousand ha. The park stretches along the Shirkent River valley on the southern slopes of the Hissar Mountains ranging between 800 to 4,500 masl. The landscape and geology of the park is contrast and comprise of sedimentary-metamorphic rocks, igneous rocks, granitoides etc. Ecosystems vary depending on altitude - broadleaved and juniper forests, xerophytic forests, alpine meadows, steppes, savannoides. Fauna is diverse and includes 30 species of mammals like snow leopard, brown bear, etc. There are over 40 geomorphologic, paleontologic, tectonic, glacial and historic sites, including dinosaur footprints, fossil remains from Jurassic age and Stone age human settlements. The park experiences environmental pressures due to over-grazing, lack of fuel and electricity, and lacks appropriate management plans hardly utilizing the existing brilliant eco-tourism opportunities.

Proposed UNEP's follow-up:

1) assist government in the strengthening management capacity of the park
2) promote eco-tourism and involvement of local communes into the conservation
3) assess the state of natural and historic sites and suggest/develop the park management and eco-tourism development plan

Anzob antimony-mercury mining and enrichment plant – located in the mountain environments of Central Tajikistan (1,800-2,700 masl) in the Yagnob river valley. Ore extraction begun in 1940s, culminating in 1967 in the establishment of the main enterprise. Installed production capacity is 30,000 tonnes of antimony-mercury concentrate a year, with antimony contents 40-65% and mercury up to 1 percent. The highest ore consumption rates were achieved in 1991 amounting 372,000 tonnes. Before 2002, the final product (concentrate) was transported for reprocessing at the Kadamjai smelter in southern Kyrgyzstan. Recently, due to the fall of kyrgyz industry and increased demand from China, the Anzob plant made a deal with international business to export the antimony concentrate to the east. In 2005, the enterprise will be modernized and the production volumes are expected to increase. Long-term development plans include an on-site antimony smelter construction. Safe disposal of waste is an urgent and key environmental issue. In 1996-1998, the 6 km long waste transportation pipeline (∅ 42 cm) was destroyed by a natural disaster with subsequent discharge of waste into the Zeravshan River. To prevent further waste discharge, in 2002 a temporary waste tailing in the immediate proximity of the river nearby plant was built and

by the present time it is almost filled. The enterprise severely lacks funding for environmental clean-up and reconstruction of the destroyed pipeline (estimated at 10-25 mil. USD), but takes some efforts on the pollution prevention.

Proposed UNEP's follow-up:

1) assess the state of environment (focus on water) and needs in reconstruction/clean-up
2) assist the Anzob plant in search for additional funding for environmental remediation
3) recommend to the investing partners to reconstruct the waste pipeline and introduce local environmental monitoring and emergency response systems and plans.

Zeravshan gold company – established in 1993 on the northern slopes of the Zeravshan range in the Magian valley, near Pendjikent. Major product is a gold-silver alloy 2.5-3.5 tonnes annually. The initial production technology (in 1993-1995) was based on the floatation method with extraction efficiency 50-60%. In 1995 the joint Tajik-British venture has been established with introduction of CIL "Coal in Leach" technology based on cyanide dissolution of gold and absorption by coal. After the mentioned technological modification, the extraction efficiency and production volumes increased significantly. In the last few years, an additional production line based on heap leaching technology was introduced at the Zeravshan plant. The tailing containing over 10 million tonnes of emptied rocks is well engineered, with plastic and mud protective layers on the bottom and sides and monitoring wells to prevent ground water pollution. Roads are regularly watered to reduce dust formation. Cyanide spill response and industrial accident response action plans are in place. The industry helps to local communities in mitigation of natural disasters, which are frequent here.

Adrasman lead-silver ore extraction and enrichment plant (not visited) – one of the pioneer sites of uranium ore exploration and extraction in northern Tajikistan. Recent occupation of the enterprise (since 1970s till present) is a lead-silver (Pb-Ag) concentrate production on average 9,000 tonnes a year with lead contents 31-34 percent. Major consumers are Kazakhstan (Shymket lead smelter) and Russia. Ore extraction is based on Kanimansur deposits with consumption of 300,000-500,000 tonnes annually and extraction efficiency between 73 to 78%. Tailings contain an estimated 18,000 tonnes of lead (Pb) and over 250 tonnes of silver (Ag). Facility is located in a disaster prone area with high seismic risk (8M) and frequent flashfloods. In summer 2005, part of the tailing was eroded by floods with subsequent exposure of contaminants to open air and leakage into surface waters. Another environmental issue is a formation of lead-containing dust.

Proposed UNEP's follow-up:

1) consider the Adrasman plant for environmental assessment and remediation within ENVSEC Initiative projects
2) raise awareness of local communes and authorities on environmental risks

VOSTOKREDMET, uranium ore extraction facilities and nuclear tailings:

1. Gafurov tailing (conserved)

Gafurov tailing was in use between 1945 and 1950 and can be considered as the first nuclear tailing site in Tajikistan. It was conserved in 1963 with over 400,000 tonnes of accumulated materials, covered with 0.5 m soil layer. Increase in urban area in 1970s led to the establishment of human settlements nearby the tailing, and VOSTOKREDMET management was asked to keep radioactivity at lowest possible levels or remove the site. The tailing then was covered with 2.5 m layer of gravel, mud and sand so the radioactivity and emissions of radon are reduced to minimal levels. The site is fenced with a small wall and easily accessible for people and animals.

2. Degmai (not conserved)

Open in 1963, Degmai is a large open tailing covering 90 hectares with radioactivity levels on the surface above average 15-20 times (200 to 350 μR/hour). To prevent dust formation and dispersion, its surface was once covered with water and in the last few years with grass cover. Another concern is potential transportation of radioactive elements water (infiltration and contamination of the aquifer), or damage to the slopes or dam by natural disasters.

3. Taboshar (not conserved)

Located on the southern slopes of the Kuramin Mountains, the Taboshar uranium extraction complex (former mine, transformation plant and tailings) is a huge assembly of facilities spread on over 400 hectares that has been operational between 1949 and 1965. The site consists of open-pit, few underground mines, dismantled facilities and a series of 7 tailing sites covering 150 hectares and containing 20 million tonnes of waste. The site requires urgent rehabilitation as it poses danger to the health of population of a nearby city Taboshar, local communities and farmers.

Kanibadam obsolete pesticide dumping site is located 7 km up Kanibadam, close enough to the Kairakum reservoir. The pesticide site was operational from 1973 to 1989 and accumulated some 3 thousand tonnes of outdated and banned agricultural chemicals. Size area is 2 ha, the thickness of dumped material (pesticide containers, bags, barrels with solid and liquid DDT, phosphorganics, chlororganics, etc) is from 3 to 4 meters deep. In many sections pesticides are exposed to the open air and subject to erosion from rains and strong winds. There is no protective and waterproof coverage of the bottom. As a result, high concerns are voiced by local, regional and national authorities about the state and environmental safety of the site. Reportedly, contamination levels of the surrounding territories within 1 km show significant exceedances of environmental standards. Apparently, local ecosystems and fauna are highly affected and the safety of drinking water in Kanibadam is of special concern. Formerly, the Kanibadam site was managed by Tajikselhozhimia (Tajik agrochemical association). However, recent institutional reformation left this site without due control. Kanibadam city administration suggests rehabilitating/rebuilding this site urgently.

Haidarkan mercury producing plant is the largest producer of mercury in Central Asia. Since its establishment in 1942 about 40 thousand tonnes of mercury has been produced. The technology involves a roasting process followed by a condensation section, leading to a final stack collecting fumes to the atmosphere. Confirmed mercury deposits at Haidarken and Chonkoi (both located in the same area) estimate to have 45 thousand tonnes. In 1996-2002, mercury production varied 541-629 tonnes a year. Large tailing pond has been progressively filled up with wastes from ore extraction facility. In addition to mercury compounds, the contaminants accumulated in the tailing include arsenic, copper, antimony, manganese, lead, zinc. The tailing dam is located 50 m away and is raising 15 m above a nearby river, tributary of the Syr Darya river. Nearby the metallurgic plant, there is a slug deposit with over 500 millions tonnes of exhausted ores containing scents of mercury. Tailing pond and slug deposit are exposed to the erosion agents – water and wind – potentially leading to the spread of the pollutants to environment and contamination of soils and waters. Lack of fences allows agricultural animals to access sites for drinking and grazing.

Kadamjai antimony producing plant - constructed in 1936, located in the proximity to the Uzbek border and very near to the town of Kadamjai. In the 1970s with an output of 18-20 thousand tonnes a year it was the fourth largest producer in the world, contributing about 15% of the world antimony production. The production cycle includes an enrichment section, a refining section, pirolytic and hydrometallurgical parallel sections, followed by separation and purification phases. Due to progressive depletion of antimony content in the local ore (now 1% Sb), raw materials have been transported from Tajikistan – Djidjiktrut ore deposit (Sb concentration 40-60% after enrichment at the Anzob plant). Hydrometallurgical process tails are collected to a series of tailing ponds located at higher elevations 4 to 7 km from the plant, total surface area of seven tailing ponds is 56 thousand sq.m, with capacity 158 thousand cub.m. Tailing ponds started operation in 1976; all of them have protective coverage at the bottom and sides. At the maximum production capacity, tails are filled in at rates of 100 cub.m a day. Electrolyte tails contain highly aggressive substances H2SO4, NaOH, salts Na2SO4, Na2SO3, Na2S, metals (As, Sb, Pb, Cu, Mn, Fe) and oils. The leaks of such substances affect and endanger soil and water resources and pose high risk of contamination to the environment. In case of intense rainfall, drainage of contaminated waters increases and tailings are leaking due to fractures in the lined bottom and low maintenance works. Due to reformation crisis, in 2004 the plant was nearly not operational. In June 2005, the international investors (Russia and Kazakhstan) started the reconstruction and renovation process that expected to be completed in the end of 2005. Environmental issues are not included into reconstruction plans, however new owners of the industry were obliged to keep the state of the environment as it is now and not to worsen it.

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Published work

Susan Boos, "Silber, Gold, Strahlenmüll" (in German) in "Wochenzeitung" WoZ (weekly), Zürich, Switzerland, July 14, 2005 (English translation enclosed)

Elena Elfimova, "The future starts tomorrow, or environment and security in Central Asia" (in Russian, English translation enclosed) in "EcoPravda-Kazakhstan" electronic newspaper, No. 562, 3 August 2005, Almaty. http://www.ecopress.kz/ecopress/ecopravda/Ekopravda.html
and in "Znamya truda" ["The Banner of Labour"] 06 August 2005, Taraz, Kazakhstan

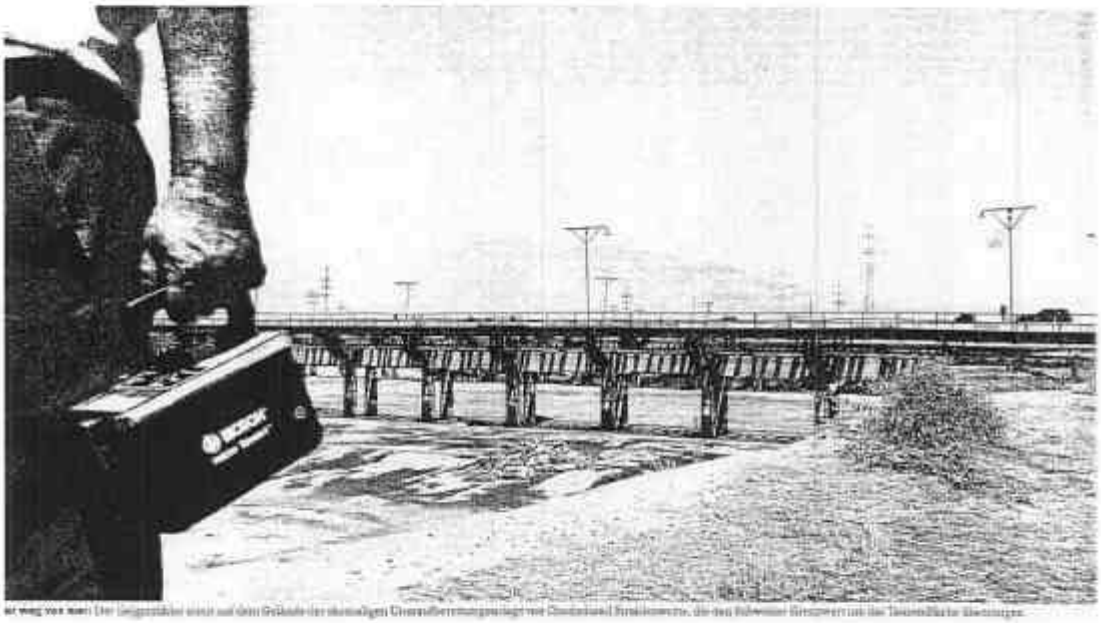
Dinara Shettykbaeva, a TV feature on 20 June 2005 on "31 Channel" (one of the largest TV companies in Kazakhstan, also owns Kyrgyz 'Independent Bishkek Television' and broadcasts towards other countries including southern Russia, UZB and TAJ). (some images from the feature are on the back cover)

in preparation....

Philippe Rekacewicz, "Dans le sud de l'Asie centrale. La gestion de l'héritage industriel et agricole soviétique contrarié par les nouvelles frontières" in Le Monde Diplomatique, tentatively December 2005

Helène David and Guy-Pierre Chomette. Article in the French magazine 'GEO'

WOZ, Zürich, 14. July 2005



SOWJETISCHE ALTLASTEN In Zentralasien lagen die wichtigsten Uranminen, aber auch Gold oder Quecksilber wurde in grossen Mengen gefördert. Heute vergammeln die Industriepaläste, und niemand hat das Geld, die Altlasten zu entsorgen.

Silber, Gold, Strahlenmüll

A deadly Soviet legacy: The largest uranium mines were in Central Asia, a region also heavily mined for gold and mercury. These days the industrial fortresses have gone to rack and ruin, and no one has the funds needed to clean up the contamination.

Kanibadam's dirty secret
By Susan Boos (text) and Hélène David (photos)
Translated by Avril Wright

In the days when Tajikistan was under Soviet rule, it helped make the USSR the world power it once was. Far beyond the Aral Sea, landlocked by Afghanistan, China, Uzbekistan und Kyrgyzstan, the country looks a little like a goat on the map. Right where the goat's heart should be is Dushanbe, the capital of Tajikistan. Just one road leads northwards towards the head of the goat and into its horns, the Ferghana valley.
This solitary road is wide and pot-holed. Drivers here race along it, ignoring the gaping chasm that lies just two metres from the roadside. Down below, the River Varsob swells up into a raging torrent of brown water. Herdsmen settle along the edge of the road, their sheep and goats lying immobile in the burning sun. High above them, drivers take a break at the 3000m-high Anzob Pass. Winter has come: it's cold up here, and the surrounding summits 4,000m and 5,000m high are covered in snow. Beyond the mountain pass lies the town of Anzob.

Mercury from Anzob
Anzob is known for its mining combine. A 20m-long mosaic displayed at the entrance shows a large, strong hand holding a shiny stone, with brawny workers posing on either side with their helmets and pneumatic drills. Perched up on the mountainside is a huge building made of concrete sheets. The windows are broken. A 5m-high dump truck is parked in front of the building. Its tyres are flat. Only a third of the complex is operating, says the head of the plant. Here, mercury and antimony are extracted from the ore mined somewhere up in the mountain. Mixers knead a greyish black substance in enormous troughs. Machines splutter, clank and roar. The troughs are rusty, the engines are rusty, the pumps are rusty, and the steps have rusted away. The plant manager tries to explain how the process works. He speaks so fast it's hard to follow him: all we grasp is that the ore is first broken down into small lumps, then dissolved in palm-oil, thickened, concentrated and exported to China. New machines are due to be installed soon: a US company has taken a 49% stake in the company and is planning to invest a million dollars. In four years' time, the plant should be operating at full capacity again, says the manager. He adds that there have never been any serious accidents at the complex and that the effluent flows into ponds underneath it.
And so we find ourselves outside again. No one has realised how dangerous this plant could actually be. Except for that effluent pond just a few metres away from the Yagnob river. Whenever the dams burst, the mud slides directly into the Yagnob. The plant manager brushes off any danger in this, saying that the solvent used was only palm-oil. But the sludge would also contain the dregs of the toxic mercury and antimony in the greyish black substance. And that's something he didn't say. The Yagnob is an important river, just as every river in Tajikistan is important. After all, farming would be impossible without adequate irrigation for the dry landscape. Although we've no specific data, we suspect that whatever flows into the Yagnob will eventually end up in the fields.

War and waste
We are a UN delegation of four journalists, a photographer and four representatives from UNEP, the United Nations Environment Programme. UNEP is something like Greenpeace for the UN acting in Central Asia. The UNEP people go about their business without much ado. Their philosophy is based on war and peace, in the belief that environmental problems can help solve conflicts. Ecological issues know no boundaries: they affect those who actually created them but also those who happen to live on the other side of the border and may well be subject to the same pollution. Both sides end up sharing a serious problem, even if they can't stand each other. If both sides can be brought together to work out the problem jointly, at least then they're talking. And once they're talking to each other, it's easier to work out some kind of peace. Even if the UNEP people would not quite put it that way, hazardous waste – if handled correctly – can actually serve to build bridges and create peace.
And this region has no shortage of waste. Last May, UNEP joined up with other international organisations to publish the report "Environment and Security: Transforming risks into cooperation".

This report includes the Soviet-era contamination between Dushanbe and Bishkek in Kyrgyzstan. This mountainous region contains a plentiful supply of gold, silver, uranium, mercury and the antimony mined in places like Anzob. This silvery-white, brittle semi-metal is mixed with other metals to form alloys and is most commonly used as a form of fire retardation in textiles, rubber and plastics.
The UNEP report focuses on the Ferghana valley, which lies to the north of Anzob behind the Turkestan mountain chain. Ferghana is more than just a valley: it's a huge, densely populated and fertile basin – the garden of Central Asia. The entrance to this basin – the Sogd province with its capital Khujand (formerly known as Leninabad) and the Kayrakum reservoir – belongs to Tajikistan. The fertile bottom of the valley is in Uzbekistan; this is where the town of Andijan is, where Uzbek troops shot dead hundreds of civilian anti-government protesters last May (see WOZ no. 27/05). The edge of the basin belongs to Kyrgyzstan.
In 1874 the Tsar of Russia annexed the Ferghana valley to his empire. At that time it was an administrative unit. Following the Russian revolution, the Soviets created autonomous "national" republics. This led to the valley being broken up – as it still is today: after the collapse of the USSR, the Soviet borders were turned into national borders, complete with barriers and armed soldiers.

The suppressed uranium legacy
Khujand is an easy-going town. A town that lives in blissful ignorance of the danger it has faced in the past and still does today. This danger exists under the name VostokRedMet, an enterprise based in a majestically cool Soviet edifice. Zafar Abduqahhorovich Roziqov, Director General of VostokRedMet, greets us in his large, high office with its long and imposingly polished conference table. On the wall hangs a woven portrait of Tajik President Emomali Rahmonov. VostokRedMet once stood for uranium. Trains came from all over to bring uranium ore to Khujand. It was an important place for the Soviet Union, as Khujand's uranium was much needed for atomic bombs and for nuclear power plants. But when the Soviet Union collapsed, business caved in. VostokRedMet left the uranium business in 1995. The state-run firm is now in industrial manufacturing, mainly the building of buses. These days it would rather forget its past.
At the edge of Khujand is a small hill fenced in with concrete sheets. Little yellow radioactivity symbols shine on the concrete. The top of the mound is flat and overgrown with withered grass. Under this lies what is called the uranium overburden. To understand how this once brought Khujand fame and fortune, one has to know a little about how uranium is extracted. The uranium ore is first mined from the ground. However, the ore rock contains only about 0.2% pure uranium. The uranium is dissolved from the rock in a processing plant. The rock is first crushed and mixed with water and different chemicals (including sulphuric acid, nitric acid and ammonia gas). The result is a hard, yellow uranium concentrate, known as "yellowcake". Each tonne of uranium ore generates around one tonne of solid waste and two tonnes of liquid waste. This hill in Khujand hides the solid waste.
Leonid Pavluk holds his Geiger counter over the dry grass and claims it poses no danger whatsoever. It's a different story at the factory, however. Pavluk is in charge of the uranium legacy at VostokRedMet. He's Russian, one of the few who decided to stay. At one time there were lots of Russians living in Tajikistan, highly qualified specialists with good jobs. Most of them left after the USSR broke up and the factories closed.
Pavluk steers the minibus through bumpy lanes, stopping at the edge of the town. Behind a broken fence lies an opening covered with tufts of grass and undergrowth and huge empty concrete basins. A rail track leads towards the basins. Pavluk stands at the edge of one and switches on his Geiger counter. "25 microRoentgens," he says and moves on to another place. "50 microRoentgens? 150 microRoentgens? Children shouldn't come here, it's too dangerous," he says. Pavluk uses the old microRoentgen unit, but what he means is sieverts. Anyone living in a place that emits 50 microsieverts per hour on a constant basis would get a radiation dose of over 400 millisieverts in a year. In Switzerland the upper limit for the general population is 1 millisievert a year.
The uranium ore used to be loaded over the basin from the train. To the left is the enrichment plant, a deserted concrete building. Yellowcake was produced here for 60 years. Today it's a no man's land. Russia offered to tear it all down and get rid of it if Tajikistan would foot the bill, says Pavluk. But Tajikistan doesn't have the money.
The next stop we make is a few kilometres down the road, on the hills behind the town. A valley of clayey soil opens out before us, sealed off on one side with a dam. This is what is known as a sludge settlement tank. The liquid waste from the enrichment plant used to be pumped into this hollow. The artificial lake has long since dried up. The edges are now covered in grass, with cows

grazing away. There are no warnings to say that this hollow will be radioactive for millions of years. There are a few houses right behind the dam. No one knows just how contaminated the cows' milk is. This hollow and the 36 tonnes of nuclear waste it contains were supposed to have been cleaned up, "except that," sighs Pavluk, "we just don't have the money."

The depleted uranium mine

Taboshar lies 50km to the north of Khujand. History was made here. This was the mine that produced the first uranium for the Soviets' first atomic bomb, says Pavluk. The place certainly looks like a bomb hit it. But, in fact, it has only been a victim of time. The buildings of the mine are not just dilapidated, they've been ransacked. The locals have most likely been taking bricks out of them to build their own homes. The mine hasn't been in use for 30 years now. A small lake flickers in a deep hole. There are people bathing down there. This hole was once the open uranium mine. Taking the Geiger counter, Pavluk says, "We shouldn't go down, but it's quite safe to swim there." Mounds of broken rust-red rocks from the cliff lie strewn about. Pavluk holds the Geiger counter over one and says, "78 Roentgen". These are the capital of the future. One day, when the technology has improved and the uranium price goes up, these rocks will be processed to extract the uranium, says Pavluk, smiling. It's as if he's talking about his own personal fortune.

Deadly rain

Kanibadam is a sleepy little town deeper in the Ferghana valley, on the eastern board of the Kayrakum reservoir. Green fields and lush apricot groves line the way. Kanibadam seems to be at peace, but this town hides a terrible secret, one that lies a little away from the centre, in the hills. No roads go there, just a narrow path that turns into a raging stream whenever it rains. It's a barren area, almost like a desert – which is just as well, as water could well mean death. There are 3,000 barrels up there. 3,000 barrels containing the most poisonous chemicals ever made by man, such as DDT, for example. Until 1989 these barrels full of poisonous substances that could no longer be used were simply thrown between the hills and covered with a bit of soil. Dozens of rust-covered barrels are just lying around. The poison has long since trickled into the ground. Plastic bags filled with a whitish-yellow substance lie around. A pungent smell hangs in the air. The lake and the irrigation canal are just 15km below us.

If they had the money, say the Kanibadam town councillors, they'd get rid of the material and have it stored in a secure location. And if they had more money, they'd incinerate it in a furnace like they do in the West. But because they've no money, they're planning on pouring a concrete lid on it, just to make sure the rainwater doesn't wash away the poison. But they can't even get the money for that from the West, they complain, even though it would cost just 15,000 dollars. This may sound cruel, but it's not quite true. The Italian government has offered to help Kanibadam, but they're not too keen on the concrete-lid solution. The only way to make sure the toxic residue does not continue to pose a threat in another 100 years is to dispose of it properly using a safe and reliable method.

The leaky ponds of Kadamjai

The next disaster waiting to happen is in Kyrgyzstan. Nestled between the naked hills is the Kadamjai antimony combine. The complex looks like the one in Anzob – rusty and at the end of its life. It hasn't been operated for a year now. Recently, however, the Kazaks took over the plant and have promised to waken the sleeping dragon with a cash injection of 18 million dollars. They've already brought in their head engineer. Dimitri Donsskich has been on the job for just two days, but he's certainly no rookie. He previously worked in Kadamjai for 13 years before heading back to Russia in 1992. At that time the combine was in good shape, producing some 17,000 tonnes of antimony a year. But then production levels fell. In the future, the ore will come from Kazakhstan and Siberia, and the antimony produced will go to Russia and South Korea.

Donsskich says, "The plant may be on its last legs, but there's still some life in it." He's planning to get it up and running by September. By the start of 2006 he hopes to have produced 4,000 tonnes of antimony, employing 2,000 people.

But despite his enthusiasm and obvious commitment, Donsskich cannot solve the real problem. This is located seven kilometres away from the combine, right on the Uzbek border: seven settlement basins, tailing ponds that used to hold the factory effluent. Donsskich stands beside it, stating in a matter-of-fact tone, "For each tonne of antimony produced, there are five cubic metres of liquid waste." A cloudy, stinking liquid rolls around some of the ponds. Some of them are completely empty. Little puddles form outside of the ponds themselves: they're obviously leaking. Donsskich calls these "an ecological time bomb". The tailing ponds contain sulphur, which – when

combined with water – produces sulphuric acid, a toxic, hazardous substance. If the ponds were to overflow in bad weather, the poison would wash down directly to Uzbekistan. The closest Uzbek village lies just 50 metres behind the last pond. Donsskich will have to worry about every storm that passes over Kadamjai. He would need 25 million dollars, he says, to clean up the tailing ponds properly. But the investors' 18 million dollars are only for the factory itself; they don't have to worry about the contamination. The only requirement made by the Kyrgyz government was not to worsen the situation any further. A good deal for the investors, a bad one for their Uzbek neighbours.
The Ferghana valley is home to dozens more places like Anzob, Khujand and Kadamjai: towns like Khaidarkan, Mailuu-Suu and Uygursay. They all have a similar past, and they all have come to realise one thing: it takes a lot to catapult a huge country into the modern era – and even more to clear away the waste afterwards.

БУДУЩЕЕ НАЧИНАЕТСЯ ВЧЕРА, ИЛИ ОКРУЖАЮЩАЯ СРЕДА И БЕЗОПАСНОСТЬ В ЦЕНТРАЛЬНОЙ АЗИИ

Future Has Started Yesterday, or Environment and Security in Central Asia
by Elena EFIMOVA

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Translated by Nargiza Usmanova

It was an opportunity that comes only once in the life-time and to ignore it was the most stupid thing to do. The only doubt was which clothes are best to take. The sense of wit told that the local people of the Central Asian However, lack of time and shiver did not let us think that a jacket would also be quite useful to take to the snowy mountains, where we were going.

The International media-tour for Central Asian journalists and national experts in the sphere of ecology was conducted in the frameworks of the UNDP "Environmental security issues in Central Asia" program. A UNEP/GRID-Arendal was also organized, where representatives from Switzerland, Norway, France, Tajikistan and Kazakhstan took part. Our delegation consisted of two people. The second person there was Dinara Shattykbekova, editor of the 31 channel of in Ust-Kamenogorsk. Last fall Shattykbekova was nominated for the "Environment and security" in the Central Asian Feast of Ecological Journalism and became the winner. As a prize she won a place in this tour.

The thoughtful moon accompanied us through the dark. However the night did not oppress us too long. At about 5a.m. the horizon became light with the dusk.
The plane was higher than the first sun-glow. Down there beneath the clouds you could see the silhouette of the wonderful Tajik mountains appear. It was too dark to film it. We could only wordlessly observe the beauty, taking our turns to look into the illuminator. It was hard to believe, but mountains were everywhere. The snowy peaks, tangled in the clouds, were fascinating. In the ravines villages and towns ghostly shone with electric light.

We arrived in Dushanbe, when it was light in the morning. The capital met us with its warm, or rather hot weather. Oh, plane trees, plane trees! If it wasn't for you, this city would be long since burnt by the sun. Houses hid under the green heads of the tall trees and numerous fountains were there throughout the city. Several hours are enough to feel that this city is so familiar. Unbelievably kind Tajiks could tell right away that we are travelers here. They speak Russian fluently. Some bring you flowers, some offer to be your guide in the city, some just smile. It is hard to believe that in quite recent years there was a civil war here. There is no religious fanatism, not even a hint of disapprove for our non-Muslim clothes. Simplicity is felt everywhere: In the architecture, in clothes people wear, in food… The musical Persian speech sounds so good. Almost all women have national dresses with national pants on. The clothes are sewed from showy materials, all having the same fashion. Some of the dresses are decorated with goffering at the bottom. On their heads they wear headdresses called "tyubiteyka", decorated with beads. In the cities and the villages it is common for women to carry load on their heads. Once we even saw how they carried buckets full of water on their heads with another two buckets carrying with their hands! Circus performers don't even compare!

The food in Tajikistan is modest. Most people here eat a soup that looks like Nauryz-kozhe, with sour milk added to it (it's considered that sour milk takes thirst away). Bread is baked of low milling flour. Salads are the most simple – cucumbers and tomatoes cut into small pieces, some fennel put on the same plate – all of it not even salted. Fruits are necessary on the table. Among favorite delicacies are quail meat and eggs. You can see living quails in cages in many cafes. I would not be the first to notice that there are a lot of fruits in Tajikistan, especially apricots, but fruit juices are imported from other countries. They almost don't have their own factories. As for the local production, we tried the herbal drink made of dogrose. However, it is not good to have too much of it, as it may affect blood pressure.

Upon arrival to Dushanbe, we were surprised with the fact that there was a lack of drinking water in this mountainous country, home country of “a roof of the world” - Pamir.
It turned out that it is impossible to drink what’s coming out of the tap, as the water comes out half with sand. Someone bitterly joked with sarcasm that we were then in the giant mud bath. People are forced to let the water stay for a day or two, than to boil it, and afterwards let it stay again, in order to have a cleaner substance to cook or wash, or use it otherwise in housekeeping. It was clear why people in Tajikistan, despite hot weather, never give preference to white color. We did not risk washing our white clothes in such muddy water coming out of a tap. Just on the eve of media tour an international conference on the issue of providing clean drinking water to the population was conducted, where participants discussed different possible ways of water purification.
One more detail accompanied us throughout the country - working children. In many families fathers leave home country for Russia or other more or less prosperous countries for earnings. Children sweep streets, sell bread, different thingies, and perfectly multiply and divide multiciphered figures in mind. Some kids beg.
The average salaries of adults are around fifty dollars.
The goods in shops are not cheap; people mostly prefer to shop at the markets. The only thing free-of-charge is outgoing calls from land phone to mobile within city. Comparison which is not favorable for our mobile lines, capable to ruin even a well-off people.

During the launch of the international media - tour we met colleagues from different countries and realized at once that they are workaholics who do not come off a map and a computer even during meal. However, later on we made friends with them and even became attached to each other. The western reserved character and Asian emotions perfectly complemented each other, thus making our joint trip unforgettable.

The route of media – tour went through the highly mountainous areas of Tajikistan and Kyrgyzstan. Assessment mission visited a number of industrial enterprises in Zarafshan ridge, Sogd oblast and Ferghana valley. By the way, the last one is considered one of the most densely populated areas in the Central Asia.

Tajikistan and Kyrgyzstan belong to the countries rich in mineral resources. The mining industry is of great importance in their economy, and foreign companies invest a lot into mining. Unfortunately, non-stable political situation resulted in significant economic recession. After the breakdown of the USSR the most important business relations with other partner countries were lost. As a result the mining industry came to decline, and solution of environmental issues was practically out of agenda. Now, in spite of the fact that foreign investors invest into economy of these countries, they are not interested to solve long lasting issues of environmental character, such as tailings of harmful waste, recultivation of land, and conducting other activities to conserve environment. Actually, the countries of Central Asia are used by foreign investors as a raw material bases. The speed of production here has a potential to increase tremendously, but the procession industry is mainly concentrated at the territories of other countries, where all raw material is directed to.

Long outstanding environmental issues may lead to and result in new problems, which concern the interests of neighboring countries, which practically are “hostages” of environmental risks in Tajikistan and Kyrgyzstan. That is why a detailed analysis of most important environmental issues at the territories of these countries is required. Probably, studying of issue will assist to attract foreign investments into problematic zones to solve environmental issues. And there are lots of environmental issues. For instance, no activity is implemented with regard to neutralization, recycling and tailings of toxic industrial waste. This waste is chaotically driven out to the special and non-special dumps and, are basically, stored at the territory of the enterprises. As a result, not only soil is negatively affected, but underground waters as well.

As per the data of the National Committee on Statistics of Kyrgyz Republic, by the end of 2002 it has been collected around 62, 9 million tons of waste in the country, 75 % of which constitutes dangerous waste. For the time being the situation is not going to radically change. As a rule, the waste consists of a number of chemical elements, which can negatively affect the environment, human health, flora and fauna. The basic part of toxic waste products In Kyrghyzstan is formed at the enterprises of non-ferrous metallurgy, located in Batkenskaya, Issyk – Kulskaya, Chuiskaya and Djalal-abadskaya oblasts.

In Batkenskaya oblast visited by journalists and experts, the main source of toxic waste products was the State Stock Company Khaydarken mercury enterprise and the joint stock company "Kadamjai enterprise on antimony production ".

There is a necessity to solve the issue of toxic waste accumulation by constructing the enterprises for its neutralization and burial at the specialized ranges. As Dmitry Donskih, a chief engineer, head of reconstruction program of Kadamjai enterprise, says, "the enterprise seems to be sleeping, non-conscious, but its heart is beating". Within a year and a half it is planned to invest 17 million dollars into Kadamjai enterprise. For liquidation of old maps of salt collectors, which were illiterately overused, thus totally destructed, 25 million dollars are a must. Investors of the enterprise are not ready to invest that much money for this purpose. By the way, the border of Uzbekistan is located in around 50 meters from salt collectors by the mountains. Potential ecological threats from the territory of Kyrgyzstan and Tajikistan are directed to Kazakhstan as well.

Natural cataclysms, such as mudflows and earthquakes, may result in contamination of transboundary rivers by radiation waste products out of uranium deposits. Mr Leonid Pavlyuk, the chief of the department for environmental conservation of the State Enterprise “Vostokredmet” in Chkalovsk, expressed a special concern by the fact that the government of Tajikistan allocated insufficient funds to prevent mudflows in the areas which bear a potential mudflow threats and where the tailings are located. There were cases, when a washout of uranium tailings already took place.

In Sogd area of Tajikistan there is a burial of pesticides which does not meet ecological and sanitary requirements. During the period of 1972 to 1989 up to 4 thousand tons of harmful substances, most of which are obsolete pesticides, were delivered from the whole territory of the republic and collected on the spot. Potential ecological threat affects, first of all, the local population. The city of Kanibadam is located in around seven kilometers below from the burial spot, Kairakkum water reservoir is located in less then 15 kilometers from the source of danger. In case of mudflow there is a probability of the washout of chemicals into the channel, by which afterwards the chemicals will get into Syr-Darya. If it happens, the pollution of transboundary river is inevitable. It is necessary to add that there is no constant control of a situation in this area, there are no guards at the spontaneous burial spot of chemicals. So called "black businessmen" break open the warehouses and sell those out-of-date pesticides at the markets. As Mr Abdumannon Djabarov, the vice-president of Kanibadam, informed the members of assessment mission, 46 thousand US dollars are required to solve the problem.

An estimated 22 million dollars are required for Tajikistan to put into safety the existing uranium tailings. Mr Zafar Razykov, the general director of state enterprise "Vostokredmet" mentioned these figures at the meeting with experts and journalists in Chkalovsk. The enterprise was formed 60 years ago, fifty of which it dealt with extraction and procession of uranium. In 90ies the uranium deposits were exhausted. Its heritage consists of nine tailings which are scattered all around Sogd. Only one of them, Gafurovskoe, after an accident on the Chernobyl atomic power station, was buried upon demand of citizens of Gafurov city. Now a radiation background in Gafurovskoe is normal.

Together with Leonid Pavlyuk the members of mission measured the radiation background in the industrial warehouse of "Vostokredmet" where it reached up to 800 microrentgen in an hour. Such measurements were also conducted at the number of tailings, including the one which is still operational – Digmayskiy tailing.

It is natural that the radiation background there is higher than usual 25 microrentgen per hour. By the way, in three kilometers from Digmaiskoe tailing there is Syr-Darya river. The object, as well as all others, is not protected, not fenced and is open for animals and people. It is subject to erosion and aeration. In order to somehow solve an issue of radioactive dust, the reed was sown on one of the sites of operational tailing. It reduces aeration process up to 70-75 percent. However "Vostokredmet" faced another problem: local population started to use the place as a pasture for cattle and collects hay because of the lack of other pasture lands. In general, as the interviews showed, the inhabitants of kishlaks and cities, which adjoin to the areas of former uranium spots, do not realize clearly how much and what kind of danger the radiation is, whereas they potentially exposed to radiation, for example, while they collect industrial radiation-infected scrap metal, which

was frequently practiced there. Non - governmental organizations of Tajikistan persistently inquire and talk about the real degree of radiation influence and its consequences with regard to health of people living in the areas of former uranium development.

In response to the inquiries of journalists, whether Tajikistan can develop and provide funding for the program on rehabilitation and recultivation of zones of industrial development of uranium in the country, the management of "Vostokredmet" shrugged shoulders with doubt. To solve serious environmental problems Tajikistan is compelled now to only apply for and expect the aid of international agencies.

Just like in Kazakhstan, in Tajikistan and Kyrgyzstan there are excellent opportunities for development of tourism. This fact was pointed out by the mission, traveling mainly on mountainous spots. Members of assessment mission traveled to a number of so called “health” resorts in the territory of Kyrgyzstan and Tajikistan, which were once famous all around the Soviet Union. The economic crisis became the reason of their decline, however, the infrastructure is still there, and even now it is possible to have a nice rest and contribute to healthy lifestyles there at almost no cost.

Driving up the serpentine of Varzob gorge, we suddenly saw behind one of abrupt turns in mountains a magnificent multi-storeyed sanatorium which roof was "guarded" with low clouds. For many years there are radon saunas bringing a sensation of unusual ease, making one breathe deeper and in general improving one’s health. If you add to it a fine landscape and fresh mountain air, you will understand, what is meant.

In general the Tajik mountains are similar to Afghani which we know about from the Afghani war films. Huge territories look quite lifeless, without rich pasturable land, in the majority of places the vegetation as if it has been scratched out by scraper from mountains. It is enormously hot in the afternoon, and rather cold at nights. There are villages scattered on the slopes of coombs. Stone folds and masonry fences give original architectural-picturesque view to them, and everything is on a lifeless surface of loose mountains.
It is surprising, what keeps people in these homeless places?..

However, there are also pleasant exceptions. Having been late once in mountains, we were compelled to spend a night at the Iskandarkul. On the shore of the lake there is a residence of the president of Tajikistan and a cozy tourist base, though it is now half abandoned. There is a quick-fence of dense dazzling-brightly flowering bushes of different kinds of dogrose around this high-mountainous pearl. There are five purest springs near the residence. And there is a boat named "Tajik Queen" floating on waves. In spite of the fact that the trip was quite tiring, after we had a nice rest in the mountains we felt completely fine.

The local bath house made a great impression on foreigners - Suzan from Switzerland and Helen from France. They cheerfully squealed, pouring each other with water from the big tub, washing off weariness and obtaining positive energy. Suzan likes to travel and once already visited a Russian bath with a friend in Ukraine on the eve of the New Year. She remembered the trip to Russia with pleasure, and tried to retell Helen a movie named "Irony of Fate, or Hope You Enjoyed Your Bath", which impressed her a lot, but then gave up the idea hopelessly and said in Russian with sweet accent: "No, You should watch it". No need for explanations why she had associations with the New Year and the film...

We had a light sleep on that night, but the rest we had made us feel fresh: at four o'clock in the morning some noisy twittering birds in grove woke us up... Surprisingly, but few hours of rest were enough to feel very fresh. I understood that it was impossible to fall asleep any more, and I decided to wander in the mountains.
In spite of very early hour, there were already daylight beams of the sun on tops of mountains. The lake, playing different colors and reflecting snow peaks with dark blue sky at the background, looked quiet. An old boat on coast complemented to the perfect landscape: a walk on the shore gave a sensation of some ease and full unreality. One of the locals narrated that every night bears came down to the camp, somewhere by the place there lived snow leopards, wild bears and other wild animals.

It was a pity that we couldn’t see any bear. We did not feel danger at all. We did not fear even the lake of snakes located in ten minutes of walk from Iskanderkul which we reached in a couple of hours together with our coordinator, Mr Victor Novikov.

The time for photo and video-meditation in this serenely peaceful miracle of fine lakes and falls, was very much limited, therefore everyone tried to feel every minute of life, considering it a blessing of fate.

Leaving the places at the end of media - tour, journalists and experts repeatedly said to each other, that a piece of their hearts already and for ever would remain in these tremendously contrasting

ASIE CENTRALE : LA VALLÉE DE FERGHANA MENACÉE PAR LES CATASTROPHES ÉCOLOGIQUES.

A l'heure où l'Asie centrale devient une pièce incontournable de l'échiquier mondial, tant pour ses ressources énergétiques que pour sa situation stratégique, la vallée de Ferghana, partagée entre Ouzbékistan, Tadjikistan et Kirghizstan, semble cristalliser sur elle la plupart des tensions à l'œuvre dans la région. Tensions transfrontalières, montée en puissance du trafic de drogue, confrontations ethniques, renforcement des courants islamistes radicaux, dérive autoritaire de gouvernements économiquement aux abois (1)… Un sombre tableau que ne vient pas éclaircir une situation environnementale porteuse d'un risque supplémentaire : le conflit géo-écologique.

Khujand (ex Leninabad), Tadjikistan. Au siège de l'entreprise Vostokredmet, le directeur, Zafar Razikov, reçoit une délégation du PNUE (Programme des Nations Unies pour l'Environnement) chargée d'évaluer les risques environnementaux liés aux sites industriels hérités de l'ex-Urss dans la vallée de Ferghana, au cœur de l'Asie centrale (2). Il est à la fois ouvert à l'idée de collaborer avec elle sur les questions de sécurité et d'environnement, et méfiant par réflexe, partagé entre l'envie de jouer cartes sur table pour mieux justifier ses demandes d'aides financières et le devoir, si bien intégré pendant les années soviétiques, d'en dire le moins possible. Vostokredmet n'appartenait-elle pas à la filière nucléaire, et donc ultra-secrète, du complexe militaro-industriel soviétique ?

Immédiatement après la fin de la Seconde Guerre mondiale, l'Asie centrale (3) devint le terrain de prédilection de l'Urss en matière nucléaire, tant dans la recherche de l'uranium (jusqu'à 50 mines y ont été creusées) que dans sa transformation et… dans son exploitation. Le 29 août 1949, la première bombe atomique soviétique explosait sur le site de Semipalatinsk, au Kazakhstan. Son uranium provenait du Kirghizstan, et il se peut qu'il ait été traité et enrichit au Tadjikistan, à Khujand, dans les installations de Vostokredmet, inaugurées dès 1945 et dont Zafar Razikov a désormais la charge.

La plupart des mines d'uranium d'Asie centrale, dont celle de Taboshar, à 60 km au nord de Khujand, se sont épuisées à partir des années 1970. *« Mais nous avons continué à traiter de l'uranium qui provenait de certaines mines du Kazakhstan,* explique Zafar Razikov. *Avec la disparition de l'Urss, tout s'est arrêté. Depuis, nous nous sommes réorientés. Nous avons acquis de nouvelles machines et produisons par exemple des minibus… Nous raffinons de l'or et de l'argent, nous produisons de métaux ferreux, nous avons un département construction, un département transport… En tout, nous avons seize activités différentes ».* De la grande époque où le système ne refusait rien à des entreprises comme Vostokredmet, il ne reste que des sites désaffectés, abandonnés. Et irradiés.

Responsable des questions d'environnement à Vostokredmet, Leonid Pavluk se charge de la visite. Contrairement à la plupart des ingénieurs russes installés au Tadjikisan, il n'est pas reparti vivre en Russie après la dislocation de l'Urss en 1991. Pas facile, pour cet ingénieur à la soixantaine bien entamée, d'arpenter les restes démembrés et dangereux d'installations auxquelles il a consacré sa vie, et d'avouer qu'elles nécessitent une aide d'urgence pour être sécurisées. A 60 km au nord de Khujand, non loin de la frontière avec l'Ouzbékistan, se situe le fantôme de la gigantesque mine d'uranium à ciel ouvert de Taboshar. Ouverte en 1949, le site comptait 10 000 employés et s'étalait sur 400 hectares au plus fort de son activité, dans les années 1950. Epuisée, la mine a fermé en 1973. Depuis combien de temps le site est-il abandonné, livré à lui-même à quelque 2 km de la

ville de Taboshar qui héberge 12 000 habitants ? Rien n'en délimite l'entrée ni les contours. La mine elle-même est désormais un vaste trou taillé en colimaçon au fond duquel les eaux de ruissellement ont formé un lac. Cet après-midi là, il fait chaud et des adolescents s'y baignent. Leonid Pavluk affirme qu'il n'y pas de danger mais avoue qu'il ne s'y baignerait pas… Tout autour, les installations minières sont en ruines, comme bombardées. Depuis leur fermeture, elles ont été pillées, grignotées méthodiquement. L'ossature d'une usine de traitement du minerai, jamais terminée, se dresse au milieu du paysage lunaire. Deux terrils de plusieurs millions de tonnes rassemblent du minerai mis au rebut car trop pauvre en uranium. Leonid Pavluk enregistre 78 micro-rems par heure (µR/h) sur son compteur Geiger, soit environ huit fois la dose de radioactivité naturelle. Il assure que la population environnante est informée du danger, mais des blocs de minerai disparaissent régulièrement des terrils pour servir de matériau de construction. Un troisième terril (estimé entre 10 et 20 millions de tonnes) expose au vent et au ruissellement des eaux de pluie du sable issu d'un premier filtrage du minerai. Sa radioactivité varie de 120 à 250 µR/h. Il recouvre 80 hectares et s'élève à plusieurs dizaines de mètres. Sur ses flancs, des ravines trahissent l'écoulement des eaux de pluie recueillies par un ruisseau qui coule vers Taboshar. Perchée sur une colline à 500 mètres du terril, une école, installée depuis deux ans dans un ancien bâtiment rénové de la mine, est exposée aux vents chargés de sable radioactif.

Le minerai d'uranium arraché aux profondeurs de la terre ne contient environ que 0,2 % d'uranium pur. Pour obtenir celui-ci, le minerai est concassé, dissout et filtré à l'aide de substances chimiques telles que l'acide sulfurique, l'acide nitrique ou l'ammoniaque. Il faut retourner à Khujand pour se rendre sur le site où avait lieu la transformation du minerai en uranium pur. A moins de 500 mètres du siège de Vostokredmet et du bureau de Zafar Razikov, Leonid Pavluk pénètre sur un terrain de 18 hectares clôturé par une enceinte de béton aux plaques disjointes, affaissées, souvent manquantes. Rouille, délabrement, abandon. Des rails de chemins de fer surplombent un bassin de béton percé de mauvaises herbes. Un haut bâtiment décrépit et croulant dresse sa silhouette menaçante sur le site désert. *« Plus des trois quarts du minerai d'uranium qui ont transité ici provenaient de mines qui sont désormais à l'étranger, en Ouzbékistan, au Kazakhstan,* explique Leonid Pavluk. *Le site a fermé en 1993, faute de fournisseurs. Ce bâtiment servait au traitement du minerai. Il est radioactif est a besoin d'être entièrement sécurisé. Ne vous éloignez pas trop de moi ! Je mesure la radioactivité… Sur ce site, elle varie de 150 à 3 000 µR/h ».* A en croire les déjections éparpillées ça et là, les vaches ne s'embarrassent pas de la radioactivité pour venir brouter ici. Les enfants de Khujand ne doivent pas non plus ignorer ce vaste et énigmatique terrain de jeu, dont aucun panneau ne signale la dangerosité.

Chaque tonne de minerai traitée générait environ une tonne de déchets solides et deux tonnes de déchets liquides, radioactifs dans les deux cas. Leonid Pavluk poursuit la visite des sites sensibles de Vostokredmet par la décharge de Gafurovsk, située à 14 km du centre de Khujand. Etalé sur quatre hectares, un tertre de huit mètres de hauteur renferme environ 400 000 tonnes de déchets solides radioactifs. Ouverte en 1945, cette décharge n'était à l'origine recouverte que par une couche de 50 cm de terre et de gravier régulièrement humidifiée par un vaste système d'arrosage pour éviter au vent de disperser de la poussière radioactive. *« Après l'explosion de la centrale nucléaire de Tchernobyl en 1986, la population a pris peur,* poursuit Leonid Pavluk. *Nous avons ajouté 2 mètres de terre et de gravier, notamment pour retenir les émissions de radon. A l'indépendance du Tadjikistan, faute de moyens, le pays a cessé d'arroser la butte. Nous avons planté du gazon qui retient*

la poussière. Le site est sûr. Sa radioactivité est à peine plus élevée que la normale ». Inscrite en russe, en tadjik et en ouzbek, l'inscription « Zone dangereuse – Défense d'entrer » est placardée sur l'enceinte de béton que Leonid Pavluk franchit par une des nombreuses ouvertures sauvages. Des enfants le suivent mais il ne leur dit rien ; ils vont jouer au ballon. Au sommet du tertre, il relève une trentaine de micro-rems. Rien à signaler. En descendant, il surprend une belette qui s'enfuit et s'engouffre dans son terrier. Il ne sait pas à quelle profondeur la galerie s'enfonce dans la décharge… Autour de celle-ci, l'ancien réseau de tuyaux d'eau qui humidifiait le sarcophage gît à ras de terre, rouillé, démantelé. Il se perd parmi les immeubles de la banlieue de Khujand qui ont poussé jusqu'ici, parfois à moins de 100 mètres de la butte.

Quelques kilomètres plus loin, Leonid Pavluk termine la visite par Degmay, la décharge de déchets radioactifs liquides issus du traitement de l'uranium, cachée dans le creux des collines qui surplombent Khujand. Pendant des décennies s'y sont déversés pêle-mêle l'eau, les acides, l'huile et toutes les substances qui servaient à la transformation du minerai. Du haut des pentes abruptes qui l'entourent, le réservoir, d'environ 300 mètres de diamètre, semble épouser les courbes naturelles des collines sans aucune fondation. Seul un talus artificiel ferme un côté ouvert de la cuvette dont le fond est tapissé d'un épais dépôt jaune ocre asséché et craquelé. De fait, les liquides ont été déversés à même le sol, en pleine nature. On estime que 20 millions de tonnes de déchets reposent au fond du bassin. Clôture en ruines, là aussi. A quelques jets de pierre de la boue toxique et radioactive, un berger fait paître son troupeau de vaches. Juste au-dessus, des gens cherchent à récupérer des détritus dans une décharge. *« Nous avons beau dire aux gens de ne pas venir ici, rien n'y fait. Si au moins nous avions de quoi refaire une vraie clôture… »*, se désole Leonid Pavluk, en précisant que personne n'a jamais mené d'étude poussée sur la santé des habitants qui vivent non loin de ces décharges radioactives. Ni sur la chaîne alimentaire dont ils sont l'ultime maillon… *« La radioactivité des abords de Degmay s'élève à 50 µR/h,* poursuit-il. *Au centre du bassin, on atteint les 1 000 µR/h. Nous devrions vérifier si le Syr-Daria, qui coule à proximité en drainant toutes les eaux de la région, n'est pas infiltré par ces déchets, car nous n'avons jamais fait de mesures consécutives au tremblement de terre qui a secoué Khujand en 1985… ».*

De retour au siège de Vostockredmet, Zafar Razikov ne peut plus guère cacher que la compagnie a besoin de fonds pour sécuriser tous ses sites dangereux laissés à l'abandon. *« Nous avons besoin d'environ 18 millions de dollars pour des interventions de première urgence, et peut-être du double pour rendre l'ensemble plus sûr durablement »,* estime-t-il. En Asie centrale, le PNUE a répertorié pas moins de 14 ensembles radioactifs semblables à celui de Vostockredmet, dont 9 sur les seuls Tadjikistan et Kirghizstan. Si les conséquences liées à l'extraction et au traitement de l'uranium concernent toute l'Asie centrale, notamment au niveau de la santé des populations sur lesquelles il n'existe pas d'études médicales fiables, ils prennent dans la vallée de Ferghana une dimension transfrontalière particulière, porteuse de tensions internationales.

La vallée de Ferghana, poudrière environnementale

Longue de 300 km, large de 70 km, la vallée de Ferghana s'enfonce vers l'est dans les contreforts des montagnes du Pamir. Elle appartenait au Khanat de Kokand lorsque l'empire russe s'en empara en 1874, tout en y maintenant une unité territoriale qui transcendait largement les divisions ethniques entre Ouzbeks, Tadjiks et Kirghizes présents dans la vallée. Lorsque les Républiques Socialistes Soviétiques (Rss) sont créées et

délimitées au sein de l'Urss dans les années 1920, la vallée de Ferghana est divisée entre la Rss d'Ouzbékistan, qui hérite des basses terres du fond de la vallée, et les Rss du Tadjikistan et du Kirghizstan qui en possèdent les flancs et les sommets environnants. Une division dont hériteront les trois pays lors de leur accession à l'indépendance en 1991. La vallée de Ferghana concentre quelque 10 millions d'habitants sur ses 22 000 km², soit le cinquième de toute la population d'Asie centrale. La moitié des 4 millions de Kirghizes y habitent, 31 % de la population du Tadjikistan (6,5 millions d'habitants au total) et 27 % de celle de l'Ouzbékistan (26,4 millions d'habitants au total), alors qu'elle ne représente que 4,3 % de la superficie de ce pays. C'est dire si la densité de population y est élevée et si le partage des ressources naturelles de la vallée, et en premier lieu l'eau, est un enjeu capital.

L'économie de l'Asie centrale repose en partie sur l'agriculture. Une dépendance qui s'est aggravée dans les années 1990 et la disparition du tissu industriel soviétique. En Ouzbékistan, 33 % du PNB et 45 % de la main d'œuvre proviennent du secteur agricole, et donc principalement de la vallée de Ferghana, véritable oasis de fertilité en Asie centrale. Hérité d'une très longue tradition d'irrigation, un réseau dense de canaux arrose les terres ouzbèkes de fond de la vallée… selon le bon vouloir des Tadjiks et surtout des Kirghizes qui ont les moyens de réguler les cours d'eau grâce aux réservoirs et aux barrages construits sous l'ère soviétique. Pendant l'été, lorsque les besoins en eau des agriculteurs ouzbeks sont importants, les Kirghizes ont tendance à vouloir retenir un maximum d'eau en altitude pour faire tourner à plein régime leurs centrales hydroélectriques une fois l'hiver venu. Ce faisant, ils relâchent des millions de mètres cubes qui viennent inonder les terres agricoles ouzbèkes en plein hiver. Des rencontres intergouvernementales ont lieu pour anticiper les tensions mais le Kirghizstan n'en a pas moins été pointé du doigt à quatre reprises depuis 1993 pour avoir retenu trop d'eau en été et relâché trop d'eau en hiver du lac de retenu de Toktogul. Les relations entre les deux pays se tendent parfois au point que le Kirghizstan a jugé bon de déployer ses troupes pour protéger le réservoir de Toktogul en 2000 et 2001.

Au-delà des tensions géopolitiques que sa gestion chaotique génère dans la vallée de Ferghana, l'eau est également le vecteur par lequel un accident industriel peut rapidement se transformer en catastrophe transfrontalière majeure. Or, sur la vallée se concentre un faisceau étonnamment dense de risques naturels : glissements de terrains et torrents de boue particulièrement fréquents, inondations, vidanges de lacs glaciaires et tremblements de terre font chaque année des victimes et d'importants dégâts. Autant de détonateurs possibles pour une catastrophe industrielle que redoutent les experts du PNUE. Exemple parmi tant d'autres : si le petit barrage non entretenu du bassin de déchets radioactifs de Degmay venait à céder lors d'un tremblement de terre ou d'un glissement de terrain, le Syr-Daria, qui coule à quelques dizaines de kilomètres et vers lequel convergent toutes les eaux de la vallée, ne tarderait pas à être durablement empoisonné. Le grand fleuve de la région, qui irrigue la vallée de Ferghana avant de traverser une bonne partie de Kazakhstan, charrierait les substances radioactives de Vostockredmet jusqu'en mer d'Aral… Un torrent de boue pourrait également emporter une partie du terril de sable radioactif de Taboshar vers l'Ouzbékistan…

Depuis une dizaine d'années, quelques rencontres intergouvernementales ont eu lieu. Elles ont souligné la volonté des pays qui se partagent la vallée de Ferghana d'anticiper ensemble des problèmes qui les concernent tous. Elles se soldent en général par des déclarations résolues concernant l'échange d'informations et la coopération transfrontalière en cas d'accident. Mais, de l'avis des responsables locaux, elles ne sont pas suivies d'effets

sur le terrain. A 50 km à l'est de Khujand, Djabar Abdumano, directeur du district de Kanibadam, le confirme. Il ne sait pas qui prévenir en urgence dans la région voisine d'Ouzbékistan au cas où l'épée de Damoclès chimique suspendue au-dessus de Kanibadam finirait par s'abattre sur la ville avant de frapper, peu après, au-delà de la frontière.

Radioactivité, pesticides, antimoine : pollution sans frontière

Le dépôt de pesticides de Kanibadam n'est pas facilement accessible. Il faut impérativement trouver un véhicule tout-terrain pour s'y rendre, car il s'agit de se frayer un chemin au cœur d'une décharge sauvage, démesurée, épousant l'ondulation des collines qui dominent la ville. Quelques personnes fouillent les détritus dans l'espoir de trouver quelques babioles à revendre sur les marchés. Il faut monter jusqu'à la lisière de la décharge pour trouver le site d'enfouissement des pesticides qui préoccupe Djabar Abdumano. L'odeur se fait peu à peu pénétrante, nauséeuse. Sur deux hectares d'un terrain en pente douce, des barils rouillés et défoncés affleurent la surface. Certains laissent s'écouler des poudres blanches et jaunes, d'autres sont vides depuis longtemps. Les 50 cm de gravier qui les ont jadis recouverts ont disparu par endroits, soulevés par le vent ou emportés par les écoulements de pluie. Le corps décomposé d'une grosse marmotte gît parmi les barils.

« Cette décharge a fonctionné de 1973 à 1989, précise Djabar Abdumano. *Au début, il s'agissait juste d'entreposer des pesticides utilisés pour l'agriculture dans la vallée. Mais la région recevait beaucoup trop de pesticides par rapport à ce qu'elle pouvait en consommer. Le surplus a été enfouis, puis abandonné… ».* On estime à 3 000 tonnes la quantité de pesticides enterrée ici jusqu'à 4 mètres de profondeur. Des substances aussi dangereuses que le DDT, des esters phosphoriques ou des arséniates y sont mélangées à même la terre. Aucun grillage n'en défend l'accès, aucun panneau ne met en garde. *« Les gens savent qu'il ne faut pas venir ici, mais je ne serais pas étonné d'apprendre que certains paysans de la région viennent encore se servir discrètement »,* ajoute Djabar Abdumano.

Mais les risques sont ailleurs. D'abord, le fond de la décharge n'est pas étanche et rien ne dit que la nappe phréatique qui fournit Kanibadam en eau potable, malgré ces cent mètres de profondeur, ne soit pas un jour contaminée. Ensuite, les bords du site sont ravinés par les fortes précipitations qui s'abattent souvent sur la région. Un glissement de terrain emporterait rapidement des tonnes de pesticides vers la ville. Le 6 juin 2005, quelques jours avant que le directeur du district n'emmène les experts du PNUE visiter le site de pesticides, un torrent de boue dû à des pluies diluviennes a déferlé non loin de Kanibadam en causant la mort de quatre personnes et en laissant sans abri quelque 2 000 autres… (4). Djabar Abdumano a dessiné les plans d'un sarcophage qui recouvrirait les barils de pesticides de Kanibadam, mais il lui manque les 40 000 dollars nécessaires à sa réalisation. *« Je reconnais que nous ne sommes pas vraiment prêts à faire face à une situation de crise,* admet-il, *surtout en ce qui concerne les mesures à prendre en concertation avec les pays voisins. Ce n'est pas uniquement le cas ici à Kanibadam, mais partout dans la vallée où vous trouverez des décharges industrielles ».* Comme celles de l'usine de mercure et d'antimoine de Kadamjai, au Kirghizstan voisin.

Pas plus d'une centaine de kilomètres sépare Kanibadam, au Tadjikistan, de Kadamjai, au Kirghizstan. La route qui permettait de faire ce trajet en moins de deux heures auparavant n'est plus que l'ombre d'elle-même. Elle n'est pratiquement plus entretenue et les torrents

de boue qui déferlent fréquemment des hauteurs kirghizes l'inondent et la grignotent chaque année davantage. De plus, elle traverse désormais l'enclave de Sokh, territoire ouzbek de 325 km² et peuplé de 42 000 habitants isolés au Kirghizstan (5), ce qui multiplie les passages de frontières plus ou moins longs selon l'humeur des gardes-frontières.

Assis à son bureau qui fait face à une longue table de réunion, Dimitri Konstantinevitch, ingénieur en chef de l'usine d'antimoine de Kadamjai, tourne le dos à un grand tableau aux couleurs pastelles, à dominante verte. Il représente l'usine, blanche et belle, dans un paysage de montagne idyllique. Le décalage est cruel entre le rêve s'il y a cinquante ans et la réalité d'aujourd'hui. Dimitri Konstantinevitch le sait bien. Cet homme robuste d'une soixantaine d'années fut déjà employé de l'usine de 1979 à 1992. Il l'a connu quand elle tournait à plein régime, employait quelque 10 000 personnes, traitait plus de 200 000 tonnes de minerai pour une production d'environ 600 tonnes d'antimoine par an. D'origine russe, il est reparti vivre en Russie au lendemain de l'indépendance du Kirghizstan, comme des milliers de ses semblables, privant malgré eux le pays de sa main d'œuvre la plus qualifiée.

Il y a quelques mois, face aux immenses difficultés économiques qui ont progressivement mis à genoux l'outil industriel jusqu'à l'arrêt de la production en 2004, les responsables de l'usine l'ont rappelé à la rescousse. Une mesure qui s'explique sans doute par la restructuration en cours : l'Etat kirghize, jusqu'alors propriétaire de cette usine fondée par les Soviétiques en 1940, a cédé 70 % du capital à des intérêts privés. *« On m'a rappelé pour assainir la situation et préparer le redressement de l'entreprise. A mon arrivée, j'ai pris la mesure du travail qu'il faut fournir pour ranimer l'usine. Mais son cœur bat encore… Nous prévoyons un redémarrage de la production en septembre 2005 et une production de 4 000 tonnes en 2006 »,* estime Dimitri Konstantinevitch, qui déclare que 17 millions de dollars vont être investis d'ici 18 mois dans l'appareil de production. Et dans des mesures environnementales ? *« En cédant une bonne partie de son capital, l'Etat nous a simplement demandé de ne pas aggraver la situation écologique… »,* répond, sibyllin, l'ingénieur en chef, qui ne cache cependant rien de la pollution créée par l'usine et propose de la visiter : *« Vous ne serez pas surpris de constater qu'elle est dans un état critique, que j'explique par la combinaison d'une technologie dépassée et d'une maintenance inexistante… »,* dit-il en se dirigeant vers les installations de production.

Tels des monstres assoupis, les bâtiments de l'usine de Kadamjai, démesurés, sont déliquescents. Désertés, silencieux, ils abritent des installations antédiluviennes figées dans la rouille. *« Normalement,* explique Dimitri Konstantinevitch, *les gaz générés par le processus de production sont filtrés et contrôlés avant d'être rejetés dans l'atmosphère. Nous devons revoir nos procédures car avant la fermeture de l'usine, ils contenaient 70 % d'antimoine. C'est une question que nous allons maîtriser. Mais pour nos déchets liquides, c'est autrement plus difficile »*. Depuis des décennies, l'usine rejette aveuglément tous ses produits chimiques usagés en pleine nature, dans six bassins plus ou moins naturels situés à sept kilomètres à vol d'oiseau, cachés en hauteur dans le replis des collines,. *« Ces rejets contiennent environ 300 grammes de composants sulfurés par litre (6). C'est un problème majeur, car après évaporation, ils restent au fond des décharges. Les bâches de plastiques isolantes sont très détériorées et les liquides toxiques pénètrent dans le sol. Nous avons besoin de 25 millions de dollars pour sécuriser le site… »* poursuit l'ingénieur en ajoutant qu'il ne désespère pas trouver un jour ce financement…

Ces dépôts toxiques représentent un danger d'autant plus grand qu'ils surplombent de quelques dizaines de mètres la frontière avec l'Ouzbékistan, juste derrière laquelle se situe plusieurs villages ouzbeks. Dimitri Konstantinevitch précise que la frontière n'est pas matérialisée mais il ne souhaite pas s'en approcher car les incidents frontaliers sont fréquents et certaines portions sont minées par l'Ouzbékistan (7). Il ne sait pas si les villageois ouzbeks ont facilement accès aux décharges toxiques ou si l'eau de leurs puis est empoisonnée, mais il n'ignore pas la gravité du danger. *« Il y a une vingtaine d'années, nous avons frôlé la catastrophe,* se souvient-il. *A la suite de pluies très fortes, le niveau des décharges a monté. J'étais terrifié à l'idée qu'un réservoir déborde et s'écoule en contrebas, mais les pluies se sont arrêtées juste à temps. ».* En 1998, la vidange brutale d'un lac glaciaire bien en amont de Kadamjai, a provoqué un torrent de boue qui n'est pas passé loin des réservoirs. Une catastrophe dont les conséquences humaines (cent morts) auraient pu se solder par un bilan encore bien plus grave et dériver vers des tensions transfrontalières qui n'auraient fait qu'alourdir une situation déjà fortement tendue dans la vallée de Ferghana…

Guy-Pierre Chomette

(1) Symptomatique des tensions qui s'accumulent sur la vallée de Ferghana, la répression extrêmement brutale d'une manifestation lors du procès de 23 entrepreneurs locaux accusés d' « extrémisme religieux » s'est soldée par plusieurs centaines de morts à Andijan, en Ouzbékistan, le 13 mai 2005.

(2) Depuis quatre ans, le Programme des Nations Unies pour l'Environnement (PNUE), le Programme des Nations Unies pour le Développement (PNUD), l'Organisation pour la Sécurité et la Coopération en Europe (OSCE) et l'Organisation du Traité de l'Atlantique Nord (OTAN) élaborent un programme commun d'évaluation des risques environnementaux, baptisé Environment and Security (ENVESEC). En partant du constat que la détérioration de l'environnement peut catalyser des situations de tensions internationales, trois zones géographiques sont pour l'instant étudiées : l'Europe du Sud-Est, le Caucase du Sud et l'Asie centrale. L'évaluation des risques en Europe orientale et en Europe arctique est en projet. Les données retenues dans cet article s'appuient en partie sur le rapport de l'ENVESEC de juin 2005 : Environment and Security, Transformation risks into cooperation, Central Asia, Ferghana / Osh / Khujand area.

(3) Dans cet article, la dénomination « Asie centrale » regroupe les cinq anciennes républiques soviétiques, désormais indépendantes, que sont le Kazakhstan, le Kirghizstan, l'Ouzbékistan, le Tadjikistan et le Turkménistan.

(4) Source : AFP / Ministère tadjik des situations d'urgence.

(5) La vallée de Ferghana ne compte pas moins de neuf enclaves allant de 325 km² pour la plus grande à 0,4 km² pour la plus petite d'entre elles (environ 100 habitants). Cinq appartiennent à l'Ouzbékistan, trois au Tadjikistan et une au Kirghizstan. Source : Emmanuel Gonon et Frédéric Lasserre, Cahiers de Géographie du Québec, 47(132), 2003.

(6) Parmi les substances présentes dans les déchets liquides de l'usine d'antimoine de Kadamjai, des acides sulfuriques, du carbonate de sodium, de l'arsenic, de l'antimoine, du plomb, du cuivre, du manganèse et du fer ont été relevés.

(7) Les incidents frontaliers sont fréquents dans la vallée de Ferghana. Le 6 juin 2005, un paysan tadjik de 20 ans qui cherchait du bois à la frontière avec le Kirghizstan a été tué par un garde-frontière kirghize. La fusillade qui a par la suite éclaté a fait 4 blessés (source : AFP). D'autre part, considérés comme nécessaires par le gouvernement ouzbek pour le sécurité du pays, des champs de mines existent le long des frontières de l'Ouzbékistan. S'ils sont parfois indiqués par des panneaux, le peu d'information sur leur localisation, l'absence de clôture ou d'avertissements visuels se traduit par des accidents mortels ou des blessures très graves aussi bien pour l'homme que pour les troupeaux (source : Environment and Security, ENVESEC, juin 2005).