Mailuu-Suu, Kyrgyzstan
Uranium mining site

The former uranium mining town of Mailuu-Suu is notorious for its insecure radioactive waste rock heaps and tailings dumps in tectonically unstable hillsides. Thousands of people have already been affected by radioactive contamination of the Mailuu-Suu river system and the region's high seismic activity continually threatens to wash more radioactive waste into the drinking water supply of the valley.

History
From 1946 to 1968, the "Zapadnyi Mining and Chemical Combine" at Mailuu-Suu produced and processed more than 10,000 tons of uranium ore, mostly to supply the USSR's nuclear weapons program with fissile material. Radiactive tailings that were created in the process were dumped around the town near geological fault lines, without consideration of hydrogeological conditions or the health of the local population. Today, 36 waste dumps are scattered throughout the area, containing a total of 1,960,000 m³ of unsecured radioactive mining waste. Twenty six of these waste dumps are located directly within the city boundaries of Mailuu-Suu with its 25,000 inhabitants. Small settlements in the valley are also affected by upstream tailings dumps. According to a 2006 study published by the Blacksmith Institute, an environmental NGO, Mailuu-Suu counts as the third most polluted place in the world. Landslides, earthquakes and floods occur regularly in the region and can cause severe radioactive contamination of the region's river systems. A single landslide in 1958 caused the release of more than 500,000 m³ of radioactive waste into the Mailuu-Suu River, threatening to flood toxic waste dumps and, in April 2005, when an earthquake caused a massive landslide dangerously close to a tailings dump.

Health and environmental effects
The greatest hazard is probably Tailings Dump No. 3, which was constructed as a temporary holding site without a proper safety design. It contains 176,000 tons of radioactive waste. The estimated dose from gamma radiation on the edge of the site is about 5.5 mSv/h – 20,000 times normal background radiation of 0.0003 mSv/h. In Kara-Agach, a settlement built on a radioactive waste dump, the population is exposed to radiation at a rate of 10 mSv per year through radon gas and 10–30 mSv per year through contaminated food stuffs in addition to the impact of contaminated water from upstream tailings. Altogether, the local population is exposed to radiation that substantially exceeds normal background radiation of 2–4 mSv per year.

Unaware of the dangers of radioactivity, locals take equipment from old mines and sell it to scrap metal dealers, not only risking their own lives, but also spreading radioactivity even further. An additional problem is the use of irradiated waste rock as construction material for houses and roads. Uranium and its decay product radon are highly carcinogenic. In 1999, a study conducted by the Institute of Oncology and Radiobiology on more than 1,200 people in Mailuu-Suu showed that this area's cancer rate was twice as high as that of the rest of the country: 172.2 per 100,000 as opposed to 93.5 per 100,000. The Kyrgyz Ministry of Health stated that "long-term statistical data showed the increase in the incidence of cancer, blood diseases and endocrine pathology." A project run by the Blacksmith Institute in 2008 and 2009 improved houses, water and food in the region, introduced water filters, provided assistance in purchasing water supplies, installed radon counters in homes and ran training workshops for the local population, introducing them to basic radiation hygiène techniques. At least five families had to be relocated due to severe radion contamination of more than 1,000 Bq/m³ in their homes. Usual safety limits for indoor radon concentrations are 100–200 Bq/m³, the average in countries such as Germany is 40 Bq/m³. As a direct result of these efforts, the content of uranium in drinking water and indoor radioactive exposure of the population sank by around 50 %.

Outlook
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