

## HEALTH EFFECTS OF URANIUM MINING

### What are the health risks of uranium mining for mineworkers?

The health of miners that work in conventional uranium mines is most at risk. Uranium ore is relatively harmless, as long as it remains outside of the body, because it only contains a little pure uranium. But through the mechanical extraction of uranium ore from the rock around it, miners are exposed not only to fine particles of uranium but also to radon, a by-product of uranium in the form of radioactive gas, which they breathe in.

The inhalation of uranium particles and radon can cause cancer, particularly in the lung. It was already proved in the 1920s that contamination with radon gas (Schneeberger disease) caused bronchial and lung cancer in mineworkers.<sup>1</sup>

Uranium is highly toxic and attacks the inner organs, such as the kidneys. Studies show that uranium causes birth defects in fetuses and infants, and that the risk of leukemia is increased. Uranium mutates human DNA and chromosomes and deforms them.<sup>2</sup>

Health risks are not only caused by uranium. Uranium is radioactive and therefore instable, it changes and decays into other elements. Radon and polonium are just as toxic as their parent element.

In 2007, the Strahlentelex information service named the following diseases that are scientifically proven through studies to have been caused by an exposition to radon, uranium and decay elements of uranium: bronchial- and lung cancer, leukemia and other blood diseases, cancer of the bone marrow, stomach, liver, intestine, gall bladder, kidney and skin, psychological disorders and birth defects.<sup>3</sup>

### What are the health risks posed by uranium mining for the local population?

Not only natural uranium from the ore gives off radioactivity, serious health risks are posed by the heaps, tailings and evaporation ponds. The left-over rock itself is radioactive, the slurry and the chemicals used to make „yellow cake“ are highly toxic. One of the dangers that the tailings pose is the contamination of groundwater through the porous separating layer, erosion and seeping rainwater. Another danger is caused by the

<sup>1</sup> [http://de.wikipedia.org/wiki/Schneeberger\\_Krankheit](http://de.wikipedia.org/wiki/Schneeberger_Krankheit)

<sup>2</sup> Factsheet on Uranium Radioactivity and Human Health,

<sup>3</sup> Strahlentelex Nr. 494-495, 2007;



insufficient covering over the tailings. Erosion through wind carries radioactive particles and radon many kilometres away from the heaps.

The immense amount of water that is required by uranium mining represents another problem. For instance: Greenpeace, ROTAB – the NGO network of Niger, and CRIIRAD French research laboratory examined the effects of uranium mines in Niger. They concluded that, among other things, the mines had used 270 billion litres of water over 40 years of operation. After its use in uranium mining the contaminated water was dumped back into rivers and lakes.

As well as the direct health effects of the contaminated water, the large consumption of water damages the mining region both ecologically and economically – and therefore in turn human health. The extraction of water leads to a reduction of the groundwater table and to desertification; plants and animals die, the traditional means of subsistence for the local population is thus destroyed.

The authors of the study report that the waste rock from the mines is used for improving roads and building houses in Niger. Radioactive metal and articles from the mines are reused by the local population and sometimes even used to make cooking utensils.<sup>4</sup>

Even when uranium is no longer extracted, the health risks remain. Usually, unused mines are flooded with water. This leads to the mine water – contaminated with radioactivity and heavy metals – seeping into the groundwater.

Due to wind erosion from inadequately covered heaps and tailings, leaky tailing dams and the contamination of water, radioactive substances are incorporated into the body through both the respiratory and – via the food chain - digestion systems.

The whole population in the area surrounding the mine is endangered. Lung cancer, leukemia, stomach cancer and birth defects are the diseases most often to be found as a result of uranium mining.<sup>5</sup>

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<sup>4</sup> Report „Left in the Dust – Areva’s radioactive legacy in the desert towns of Niger“, Mai 2010 (Greenpeace International).

Greenpeace-Factsheet: „Niger: Zurückgelassen im Staub,“ (Greenpeace Schweiz)

<sup>5</sup> Strahlentelex Nr. 494-495, 2007; [http://www.strahlentelex.de/Stx\\_07\\_494\\_S01-07.pdf](http://www.strahlentelex.de/Stx_07_494_S01-07.pdf)