

Specific approach to assess the exposure of the local population around a legacy uranium tailings pond in Kitwe (Zambia)

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A wide experience has been gathered in the last two decades in assessing exposures of the local population at former uranium mining and milling sites in Germany, but also at sites in East European countries and in countries of the former Soviet Union. Thereby, the German “Calculation Bases for the Determination of Radiation Exposure due to Mining-caused Environmental Radioactivity” (Berechnungsgrundlagen Bergbau) have been proofed as a useful tool to consider both standard scenarios as well as site specific exposure conditions. In 2007, Wismut experts together with experts of the Wismut daughter company WISUTEC were first time faced with the task to calculate doses for people on the African continent, - people who lived next to legacies of uranium mining and milling. In the frame of the World bank funded AMCO project WISUTEC/Wismut had to develop a concept for the remediation of an abandoned radioactive uranium mill tailings pond in Kitwe (Zambia). The exposure analysis as part of the justification and optimization of the remedial measures required a very site specific approach. This was mainly caused by a situation which have arisen from the loss of institutional control in the early sixties in Zambia. As a follow, people in Kitwe were not aware that they live close to and even on radioactively contaminated areas. As a consequence, exposure scenarios very different from standard scenarios had to be considered, as for example harvesting of food on a tailings pond, babies laid down on the ground of the tailings area and people living in a house built on the tailings pond. Due to the lack of data and lack of information on living habits effective doses were calculated on the base of the German “Berechnungsgrundlagen Bergbau”, whereby as much as possible the site specific conditions and local exposure scenarios were taken into account. Effective doses of members of the local population of up to 50 mSv/a were calculated for the scenarios under investigation.