Comments on the Husab uranium mine EIA (Oct. 2010)

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Appendix E - Geochemistry (ARD assessment)

The Namibian drinking water quality standard for uranium is absurdly high:

Group	A	B	C	D
Uranium [µg/l]	1000	4000	8000	8000

where:
Group A: Water with an excellent quality
Group B: Water with acceptable quality
Group C: Water with low health risk
Group D: Water with a high health risk, or water unsuitable for human consumption.

(Source: Handbook on Environmental Assessment Legislation in the SADC Region, DBSA/SAIEA, 2009, Table 11.2: Inorganic determinants for drinking water)

And: why is Group D of all groups being used in the EIA???

For comparison: the current WHO provisional guideline is 15 µg/l, the U.S. drinking water standard is 30 µg/l, and Germany is planning to establish a 10 µg/l standard.
While these standards are based on the toxic effects of uranium to the kidney, the Nambian 8000 µg/l standard moreover leads to exceeding the 1 mSv/year radiation dose standard (five-fold, at least).

Appendix H – Radiological

5.3 CRITICAL GROUPS AND EXPOSURE SCENARIOS

p.24
The exposure scenarios (receptor locations and assumed exposure times) describe only actually occurring situations, there is no account for any future change in land use and behaviour.

There is no clear standard for permissible offsite impacts of the operation.
There is no definition of a site boundary, beyond which a certain dose standard has to be achieved independent from land use and behaviour.

There is no assessment of post-closure scenarios.

Many undisclosed assumptions were made for the calculation of the source emissions. Moreover, figures from literature, rather than site-specific data, were used for many parameters.

6.4.1 Radon Inhalation Pathway

The dose coefficients used for radon exposure are obsolete and too low by a factor of more than two:

p.31
DC_{Rn} = Dose coefficient for radon exposure [$mSv.h^{-1}$ per $mJ.m^{-3}$]
= (1.1 for the public and 1.4 for workers)

This is true only for the old dose conversion factors of 4 mSv/WLM for the public and 5 mSv/WLM for workers (ICRP 65, 1993).
With the proposed new dose conversion factors of 9 mSv/WLM for the public and 12 mSv/WLM for workers, DC_{Rn} becomes 2.54 for the public and 3.39 for workers.

(Ref.: J.W. Marsh et al: Dose conversion factors for radon: recent developments, in: Health Physics Vol. 99, No. 4 (Oct. 2010), p. 511-516)

6.6.2 Radon Inhalation Pathway

p.34
The calculated doses from radon inhalation shown in Table 4 are <u>too low by a factor of at least 10^6 (one million!)</u>.
The exact cause of this error is not clear, as the full calculations are not disclosed. Possibly, some mix-up of units has occurred.

Consequently, the total doses from the atmospheric pathways shown in Table 8 (p.43) also are totally wrong, as the major contributor to inhalation dose is almost omitted.

Given that such a stupendous error remained undetected during the preparation of the EIA, the reliability of all other calculations performed must be questioned. It is therefore indispensable that all assumptions and calculations are fully disclosed.

With the correct data, the 1 mSv/year dose limit might in particular be exceeded for the scenario “Temporary Accomodation at Husab Project site”.

And, the scenario “Tourist Attractions” possibly is only viable, since the exposure times are assumed to be rather low. For a precautionary assumption of continuous exposure, the dose standard might well be exceeded.

6.6.3 Dust Inhalation Pathway

No uranium concentrate dust from the final product area was considered in the dose assessments.

Appendix P - Waste mitigation

(see also Main Report Table 6-5)

There is no definition of aims to be achieved by the closure, such as:
- the time period, for which the protective measures taken must remain effective,
- a statement, whether access restrictions will remain necessary and how these will be assured in the long term,
- a statement, whether continuous care and maintenance will remain necessary and how this will be assured in the long term,
- the required design robustness against natural events, such as heavy rain events and earthquakes.

There is no assessment of the slope stability of any slopes (open pit, waste disposal).

There is no assessment of the geotechnical stability of the proposed dumping of 80-100m of waster rock on top of the tailings.

There is no assessment of the impact of the dumping of 200m of tailings and waste rock on the integrity of the underlying 1.5mm HDPE liner.

The footprint of the waste rock deposit is declared as “12000Ha”. Assuming that “Ha” stands for hectares, this would be equivalent to 120 square kilometres, which is approx. 10 times the size shown in the site layout figure.