Institut für Geologie – Lehrstuhl für Hydrogeologie

Henk Coetzee

UMH IV Workshop Summary

Workshop "Long-term fate of uranium tailings"

1 Issues raised

1. The 1000 year time frame discussed is more a political number than a realistic timeframe for the management of existing tailings piles. Other timeframes mentioned were:
   - the design life of 1 million years required for high-level waste disposal
   - the assumption that all memory of such a waste disposal will be forgotten within 500 years
   - the age of an analogue site (200-400) years in the Czech Republic
   - The 200 year design life currently specified for tailings facilities in Germany. Even this does not imply that sites will not require ongoing care and maintenance.
2. The primary aim of tailings management is the protection of human health and safety, although environmental protection is also important. There may be limited data regarding the ecotoxicology of uranium and other contaminants.
3. It should be accepted that during this 1000 year period people may move onto previously unoccupied land, meaning that different standards cannot be applied to tailings management in remote areas. Dilution can therefore not be applied in any pathways other than radon emanation, although even this should take cognizance of the fact that unoccupied land may be reoccupied.
4. During a timeframe of several centuries both short and longer term climate change is to be expected.

2 Analogues

1. An interesting analogue to tailings management is the maintenance of the dykes in the Netherlands. These are well managed as the consequences of poor management are extremely serious. The recent hurricane in New Orleans does however indicate that poor management can occur, particularly when national and local political priorities change.
2. Natural analogues and old mines can be used to verify predictive models. Uranium mines are typically less than 60 years old, with the exception of mines where uranium was a by-product e.g. the Witwatersrand and mines in the Czech Republic. Older residues are generally not comparable with more modern fine tailings.

3 Requirements for good management

1. Tailings can only be managed well where a strong and competent regulator exists.
2. Since most tailings are legacy tailings where no provision was made for rehabilitation, the polluter-pays principle cannot easily be applied.
3. It was suggested that the IAEA be strengthened as a source of regulatory advice. This will however be difficult to institute, owing to different specific local conditions in different countries.
4. It is vital that institutional memory be preserved regarding tailings and other mining legacies. This can be achieved where a competent state agency is specifically charged with preserving this memory.
5. It is easy to fall into the trap of doing nothing as the uncertainties involved in long-term management are high. This should not be an option.

4 Approaches to tailings management

1. These are likely to be highly site and environment specific, including the social and economic context of the site.
2. Some ideas are developing regarding alternative uses of tailings sites, for example the planting of technical crops such as fibre and fuel crops.
3. The possibility of re-exploitation of tailings for uranium or other contained resources cannot be ignored, although it can equally not form the basis for management.
4. Since we cannot reliably plan 1000 years into the future, uranium tailings management should aim to do the best possible today, with the understanding that future generations will have to manage tailings (There is unlikely to be a walk-away solution). While we cannot rely on it, it is possible that better approaches and technologies will be developed in future.