

## **Comparison of Regulatory and Occupational Exposure Provisions for Naturally Occurring Radioactive Materials (NORM) in Zimbabwe to the International Safety Standards**

COMPARISON OF REGULATORY AND OCCUPATIONAL EXPOSURE PROVISIONS FOR NATURALLY OCCURRING RADIOACTIVE MATERIALS (NORM) IN ZIMBABWE TO THE SAFETY STANDARDS.

Authors

A. Muzongomerwa

Radiation Protection Authority of Zimbabwe.1 McCaw Drive. Avondale West. Harare

Email: amuzongomerwa@rpaz.co.zw

The Radiation Protection (Naturally Occurring Radioactive Materials) Regulations, 2013, is the sole regulation responsible radiation safety within facilities that have the potential to elevate radiation levels. In line with international standards the deliberate exclusion of a particular category of exposure from the scope of an instrument of regulatory control on the grounds that it is not considered amenable to control through the regulatory instrument in question is an excluded exposure. Further, the determination by a regulatory body that a source or practice need not be subject to some or all aspects of regulatory control on the basis that the exposure (including potential exposure) due to the source or practice is too small to warrant the application of those aspects, or that, exemption is the optimum option for protection irrespective of the actual level of the doses or risks.

The regulations do not provide specific provision for graded approach to regulation as there is no possibility of exemption above 1 Bq/g. There is no possibility of disposal or unrestricted release of NORM if dose exceeds 0.25 mSv/a while the international criterion is 1 mSv/a thus possible limitations on NORM waste management options. There are also possible implications in the mining of ores as the definition of NORM excludes material in which the radionuclide concentration has not been enhanced by human activity.

In the Zimbabwean legislation, doses from indoor radon and its progeny shall not be included in Effective Dose calculations. The use, transfer or disposal of NORM shall be done in such a way as to prevent accumulation of radon in residential structures and other public buildings in concentrations exceeding 0.2 Bq/l and 1.0 Bq/l respectively. No person shall dispose or release NORM for unrestricted use in such a manner that the reasonably maximum exposed individual will receive an annual Effective Dose more than 0.25 mSv/yr, excluding natural background.

In conclusion, Zimbabwe regulations with regards to NORM and occupational exposure to some extent meets international standards but must be reviewed to address the highlighted areas in this paper. The regulation should go beyond just establishing that the 1 Bq/g criterion is exceeded. It should consider, in addition, particular types of operation, process and material in more detail, including a prior radiological evaluation of exposure or dose and consideration of the costs of regulation in relation to the benefits achievable.

### REFERENCES

- [1] THE GOVERNMENT OF THE REPUBLIC OF ZIMBABWE, Radiation Protection Act [Chapter 15:15], Harare, (2004)
- [2] THE GOVERNMENT OF THE REPUBLIC OF ZIMBABWE, Radiation Protection Safety and Security Regulations, 2011 (Statutory Instrument 62 of 2011), Harare
- [3] THE GOVERNMENT OF THE REPUBLIC OF ZIMBABWE, Radiation Protection, Naturally Occurring Radioactive Materials, Regulations, 2013 (Statutory Instrument 99 of 2013), Harare
- [4] INTERNATIONAL ATOMIC ENERGY AGENCY, Occupational Radiation Protection No. RS-G-1.1, Vienna, (2004)

### **Speakers email**

amuzongomerwa@rpaz.co.zw

## **Speakers affiliation**

Radiation Protection Authority of Zimbabwe

## **Name of Member State/Organization**

Radiation Protection Authority of Zimbabwe

**Primary author:** Mr MUZONGOMERWA, amos (Radiation Protection Authority of Zimbabwe)

**Co-author:** Mr KAMUSASA, Walter (Radiation Protection Authority of Zimbabwe)

**Presenter:** Mr MUZONGOMERWA, amos (Radiation Protection Authority of Zimbabwe)

**Session Classification:** Session 7. Occupational radiation protection in the workplaces involving exposure to naturally occurring radioactive material, radon, and cosmic rays

**Track Classification:** 5. Occupational radiation protection in the workplaces involving exposure to naturally occurring radioactive material, radon and cosmic rays