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Gamma dose rate evaluation of the working places in the zinc-lead mine

The objective of this work was to carry out an initial characterization of the potential occupational doses due to the presence of natural materials of natural origin (NORM) of the workers of an open-cast Lead-Zinc mine. For this purpose, preliminary measurements were made in the workplaces that were already in operation at this initial stage of the mineral extraction process: two sectors of the deposit and in the location area of the open pit dump site. The monitoring consisted of continuous measurements of the gamma dose rate throughout the work area, using an IdentiFinder brand portable equipment. The dose evaluations by external exposure in both scenarios showed values between 140 and 420 $\mu\text{Sv}/\text{year}$, taking into account the extreme assumption of 2000 hours of stay in the same workplace. Bearing in mind that the Basic Radiological Safety Standards of the International Atomic Energy Agency, consider for cases of NORM as exempt from regulatory control those when the material does not produce doses to the worker greater than 1mSv/year, it is possible concluded that for the evaluated working places do not consider any type of regulatory control necessary, as long as the considerations taken into account for dose calculations do not vary. Now, once the entire project is fully operational, it is recommended to make a radiological reassessment of all jobs linked to the technological process, as well as an evaluation of the final products, by-products and waste in order to evaluate the entire process.

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