TRANSPORT OF NORM MATERIALS: DOSE ASSESSMENTS FOR WORKERS CONSIDERING REALISTIC SCENARIOS

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According to the international regulations on the transport of radioactive material (IAEA SSR-6 and SSG-26, 2018) exemption levels of NORM materials, in terms of activity concentration, are generally higher than the General Clearance Levels set out in the European Basic Safety Standards (EU-BSS) for the practices involving NOR materials. It follows that a load not classified as 'radioactive' under IAEA regulations may not be exempt in terms of activity concentration by the European regulations and requires a dose assessment.

In the European Union, the transport scenario described in the Radiation Protection 122-Part II (RP 122-II) guidelines is generally used for this kind of dose evaluations. However, since RP 122-II was published more than 20 years ago, pre-dating the current EU-BSS, the evaluations done according to this document have been updated in the framework of the European RadoNorm project and of the Italian "NORMA" project.

Following the recent ICRP Publications, dose coefficients for intake and external irradiation per unit of activity concentration have been recalculated. For external irradiation, these evaluations were performed both for the "driving" and the "loading/unloading" phase of the transport scenario, in contrast to the RP 122-II, which reports only one dose coefficient for both phases.

Moreover, a sensitivity analysis by varying parameters of the transport scenario, such as density and size of the load, have been performed. This analysis will allow more realistic dose assessments, overcoming the cautious assumptions of the RP 122-II in the selection of some parameter values.

All these evaluations will help the authors to improve a web-form screening tool (dose calculator) designed to assess doses to workers in selected scenarios, including a specific new one related to transport. The web-form screening tool will be available on the Italian Physical Agents Portal (PAF) website, with the aim of supporting stakeholders in their legal obligations under Italian radiation protection legislation.