

## **PROBLEM OF NONDETECTS IN EARTH SCIENCES – DOSIMETRIC CASE STUDY**

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It is common, especially in monitoring cases, that measuring results are reported as below the limit of detection (LOD, DL). These are censored or left-censored results also called nondetects. To circumvent the problems in performing statistical analyses on data containing censored results nondetects are either extracted from data set or replaced with a simply the LOD values or a fraction of LODs. This approach is considered controversial because it introduces bias into the estimations and therefore may leads to erroneous conclusions. Nevertheless, it is still used in measurements in earth sciences. In addition to these simple methods, there are also estimates of statistical parameters based on survival analysis methods and non-parametric survival analysis methods.

To create consistent system for calculation doses to biota some assumptions have to be made, like the organism is immersed in an infinite medium where the distribution of radionuclides is uniform. As it is obvious, those assumptions are not fulfilled in real assessments. Results of measurements which are base for dose rates calculation often include censored data. To prepare the most reliable assessment censored results should not be excluded.

Present work will discuss different approaches to deal with nondetects in case of dose rate calculation for biota in the Antarctic environment. Various ways to include LOD results in statistical analysis (extraction, replacements with LOD fractions, statistics based on survival statistics) will be compared, their advantages and disadvantages in certain context will be elaborated and the conditions of their use will be compared as well.