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and Analysis of CTBT-Relevant Xe Isotopes Global Background Between 2010 and 2016

Reliable measurements of radioxenon isotopes are essential for the International Monitoring System (IMS) as required for the Comprehensive Nuclear-Test-Ban Treaty (CTBT). IMS measures continuously the four Xenon isotopes of interest for CTBT verification: 131mXe, 133mXe, 133Xe and 135Xe. The characterization of the global Xe isotopes background is very important for the accuracy of IMS measurements and hence for the CTBT verification. In this work, we thoroughly analyze the global distribution of the four Xe isotopes depending on data measured by the IMS noble gas stations from 2010 to 2016. The ratios between different Xe isotopes were calculated for all the available stations. The ratios between different Xe isotopes were drawn and compared to the separation line between the nuclear explosion regime and civil regime according to Kalinowski graph. Then, we focused on studying stations with the highest Xe concentrations.

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