



Global radioxenon emission inventory for 2014 by normal operational releases from nuclear power plants and medical isotope production facilities

Martin Kalinowski (1) and Halit Tatlisu (2)

(1) CTBTO, Vienna, Austria (martin.kalinowski@ctbto.org), (2) Vienna University of Technology

Global radioactivity monitoring for the verification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) includes the four xenon isotopes ^{131m}Xe , ^{133}Xe , ^{133m}Xe and ^{135}Xe . These four isotopes are serving as important indicators of nuclear explosions. The Kalinowski/Tuma (2009) establishes the first global radioxenon emission inventory by normal operational releases from nuclear power plants and Kalinowski/Grosch/Hebel (2014) summarizes the emissions from medical isotope production facilities, both for a generic year. The best estimate of the global emission inventory for the year 2014 was presented by Gueibe et al. (2017). That paper focusses on the year 2014 but only with annual total release values based on peer-reviewed publications. The only information specifically valid for 2014 is the operational status of known sources. In the updated emission inventory presented here the real 2014 emissions with variations over time as reported by the facility operators are used whenever available. This emission inventory can be used for source-receptor studies with atmospheric transport models and for comparing the simulated and observed radioxenon concentrations at the locations of the noble gas systems that are part of the CTBT International Monitoring System (IMS).

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Kalinowski, M.B.; Grosch, M.; Hebel, S. (2014): Global Xenon-133 Emission Inventory Caused by Medical Isotope Production and Derived from the Worldwide Technetium-99m Demand. *Pure and Applied Geophysics: Volume 171, Issue 3*, 707-716.

Gueibe, Christophe, Martin B. Kalinowski, Jonathan Baré, Abdelhakim Gheddou, Monika Krysta, and Jolanta Kusmierczyk-Michulec (2017): Setting the baseline for estimated background observations at IMS systems of four radioxenon isotopes in 2014. *Journal of Environmental Radioactivity* 178, 297-314.