



Implications of Xe-emissions from medical isotope production

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The isotope production from uranium irradiation adversely affects the verification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT). The chemical separation releases radioactive xenon that is used as atmospheric indicator for nuclear explosions. First experiences with the international monitoring system show that most detections are caused by a few facilities known to produce medical isotopes. A global radioxenon emission inventory shows that these are by far the strongest sources. A single extraction plant can release in the order of 10^{15} Bq of xenon-133 per year. This is as much as all nuclear reactors of the world taken together are emitting in the same time. In addition, due to the short irradiation time, the isotopic activity ratios of isotope production may be difficult to distinguish from the signature that is characteristic for nuclear explosions.