Radial Distribution of ^{137}Cs in Japanese cedar and Its Implications for Sustainable Forest Management in Fukushima.

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Radiocesium (^{137}Cs), with a half-life of 30.04 years, remains the dominant long-term contaminant in Fukushima Prefecture and surrounding regions following the nuclear accident. Forests, covering about 70 % of the affected areas, are of critical concern due to their vital ecosystem services (timber, food, recreation, etc.). The potential resumption of commercial forestry, particularly in high-contamination zones, depends on adherence to national radiocesium standards for wood products. Japanese cedar, the dominant coniferous species and a key timber resource, presents an unusual radiocesium distribution pattern, with higher concentrations in heartwood than sapwood—a deviation from typical trends in other tree species. This anomaly demands rigorous investigation into the underlying biochemical and environmental mechanisms governing ^{137}Cs uptake, translocation, and retention. This study examines the driving factors behind these patterns, identifies key knowledge gaps, and proposes future research directions to enhance risk assessment and sustainable forest management. cedar.

Keywords: radiocesium, forest ecosystems, Japanese cedar, Fukushima