

Title	Long-term decline of radiocaesium in Fennoscandian reindeer
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Abstract	<p>The NKS-B project REIN was established to synthesize the available information on contamination levels and effective half-times for ¹³⁷Cs in reindeer in Finland, Sweden and Norway. Several studies of radiocaesium contamination in reindeer have been carried out in the Nordic countries over the last 50 years. However, the current slow decline in concentrations, which will maintain the consequences of the Chernobyl deposition for Swedish and Norwegian reindeer husbandry for at least another 10-20 years, have not previously been observed nor predicted. In the Chernobyl affected areas ¹³⁷Cs concentrations in reindeer initially declined by effective half-times of 3-4 years, whereas the current decline appears to be mainly governed by the nuclide's physical half-life (30 years).</p> <p>The review of effective half-times of ¹³⁷Cs in reindeer across Fennoscandia suggests that concentrations declined more rapidly in the northernmost areas. The reason(-s) remains unclear, and demonstrates the need for more long-term sampling of the various components of reindeer's diet. Such sampling should aim at covering climatically different areas, as climate may influence transfer of radiocaesium to reindeer via lichen growth and weathering rates, composition of plant communities and lichen availability, as well as soil-to-plant radiocaesium uptake. The lack of long-term data on radiocaesium in natural vegetation in the Nordic countries is one of the main limitations for the development of mechanistic models for radiocaesium in reindeer, and for further elucidation of the observed long-term trends in ¹³⁷Cs concentrations in reindeer. Currently our understanding of the long-term trends observed in various areas is not good enough to predict how future radiocaesium deposition will behave.</p> <p>The high transfer of nuclides to reindeer, the geographical extension of reindeer herding and the special position of the Sami population in Finland, Sweden and Norway, demonstrates the need for maintaining competence and further developing the common basis for Nordic fallout management and emergency preparedness related to this food-chain.</p>
Key words	Radiocaesium, ¹³⁷ Cs, reindeer, lichen, long-term