High radio-cesium contamination of wild reindeer from southern Norway following the Chernobyl accident

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Abstract: The mean summer values in 1986 from Dovrefjell were 16 Kbq/kg fresh reindeer muscle which were about 20 times higher than peak values from the Kola peninsula USSR in 1965 after the culmination of fallout from nuclear arms testing. The values decreased from about 19 Kbq/kg in June to lowest levels in August, about 8 Kbq/kg, and increased as reindeer started to feed more on lichens in September, to about 15 Kbq/kg muscle. Values in calves were on average 1.4 times higher than in adults (variation from 10 - 40 Kbq/kg. It appeared that 80% of wild reindeer were contaminated (in 23 of 26 wild herds). Only those herds in the SW part or W side of the Langfjella had escaped the fallout. It appeared that most of the fallout from Chernobyl were absorbed in vegetation and particularly lichens on the east side of the continental divide (Langfjella), and increasing with altitude (E. Gaare pers. comm.). Since most wild reindeer herds had been summer grazing on the west side of the divide, summer values were moderate compared to the absorbed values in the lichens (on the east side of the divide) which is their main winter food. Based on those values, ranging from 40 - 80 Kbq/kg DW lichens, and earlier published data on the bioconcentration factor for lichens, radio-cesium values in wild reindeer fresh weight muscle in the winter 1987 is expected to reach 20 - 100 Kbq/kg in the Dovrefjell - Jotunheimen - Hallingskarvet areas, but variation in mean values are expected to be large, depending on how high up in the mountains and how far east of the continental divide nomadic wild reindeer will go foraging, and how much lichens are available (varies with a factor of 5 between wintering areas).