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Measurements of Plutonium Activity Concentrations and $^{240}Pu/^{239}Pu$ Atom Ratios in Brown Algae (*Fucus distichus*) Collected from the Littoral Zone of Amchitka Island using Accelerator Mass Spectrometry (AMS).

Terry Hamilton, Doug Dasher, Tom Brown, Alfredo Marchetti,
Roger Martinelli and Steven Kehl

Lawrence Livermore National Laboratory
PO Box 808, Livermore, CA 94551-0808, U.S.A

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Plutonium-239 (^{239}Pu) and plutonium-240 (^{240}Pu) activity concentrations and $^{240}Pu/^{239}Pu$ atom ratios are reported for Brown Algae (*Fucus distichus*) collected from the littoral zone of Amchitka Island (Alaska) and at a control site on the Alaskan peninsula. Plutonium isotope measurements were performed in replicate using Accelerator Mass Spectrometry (AMS). The average $^{240}Pu/^{239}Pu$ atom ratio observed in dried *Fucus d.* collected from Amchitka Island was 0.227 ± 0.007 (n=5) and compares with the expected $^{240}Pu/^{239}Pu$ atom ratio in integrated worldwide fallout deposition in the Northern Hemisphere of 0.1805 ± 0.0057. In general, the characteristically high $^{240}Pu/^{239}Pu$ content of *Fucus d.* analyzed in this study appear to indicate the presence of a discernible basin-wide secondary source of plutonium entering the marine environment and is not necessarily linked to the underground nuclear test program on Amchitka Island (1965-71).

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University of California
Lawrence Livermore National Laboratory
Technical Information Department
Livermore, CA 94551