

Maine Sea-vegetable isotope report

Three samples of edible seaweeds were provided for assessment of radionuclide content, with particular attention given to looking for evidence of anthropogenic contamination. The samples were shown to contain radioisotopes common to the marine environment and to all terrestrial vegetation. In particular K-40, the naturally occurring radioisotope of potassium accounted for nearly all of the activity of these samples. Other radioisotopes measured were Bi-214 and Pb-214, these naturally occurring isotopes are found in many varieties of plant material.

The activities of the samples ranged from 1100 Bq/kg to 3950 Bq/kg, and this is well within the range expected for seaweed. For comparison, bananas contain about 150 Bq/kg, spinach is about 250 Bq/kg and again this is almost entirely due to high potassium content and does not represent any risk or potential hazard.

Sample-Isotope (Bq/kg)	K-40 +/- 5%	Pb-214 +/- 14%	Bi-214 +/- 20%	Cs-137 +/- 45%	Cs-134 +/- 99%	I-131 +/- 99%
#1 Bladderwrack lot #23003049	1068	2.04	1.54	.256	<MDA	<MDA
#2 Alaria lot #78071612	1685	.898	.616	.117	<.172	<.126
#3 Kelp powder lot #68110151	3920	.688	.771	.384	<.066	<MDA

Measurements listed as '<MDA' mean less than minimum detectable activity. This means that the channels associated with the isotopes in question did not register enough activity to produce a valid measurement. These values may be read as zero, all three of these samples were closely scrutinized, particularly for Cs-134 and I-131, measurements below the MDA represent a confidence level of 95% that these isotopes are not present above a level of ~.035 Bq/kg.

Previous samples of kelp have been recounted for comparison to the decay rate associated with Cs-134 and this returned only negative results. The detectors used for this measurement are extremely sensitive, and the threshold values of anthropogenic isotopes associated with these samples are several orders of magnitude below acceptable limits.