reservoir for carbon is continental shelf sediments. In addition, anthropogenic $^{129}\text{I}/^{127}\text{I}$ ratios can be used to study the biogeochemical iodine cycle, about which little rate-related information is available. Thus, $^{129}\text{I}$ could be used as a surrogate for studying the movement of the short-lived biohazard $^{131}\text{I}$ through the biosphere, and for the study of releases and transport of iodine radionuclides from nuclear facilities.

1Department of Oceanography, Texas A&M University, College Station, Texas 77843 USA
2Texas A&M University at Galveston, 5007 Ave. U, Galveston, Texas USA
3Department of Oceanography, Texas A&M University, College Station, Texas 77843 USA
4Texas A&M University at Galveston, 5007 Ave. U, Galveston, Texas USA
5Department of Earth and Environmental Science, University of Rochester, Rochester, New York 14627 USA

**PREPARATION OF ANTHROPOGENIC $^{129}\text{I}$ DIOXINE SAMPLES USING CARRIER IODINE - POTENTIAL PROBLEMS**

**JEAN E. MORAN, DAVID R. SCHINK**

Department of Oceanography, Texas A&M University, College Station, Texas 77843 USA

**PETER SANTSCHI and SARAH OKTAY**

Texas A&M University at Galveston, 5007 Avenue U, Galveston, Texas USA

The requirement of a 1-mg iodine sample for $^{129}\text{I}/^{127}\text{I}$ ratio measurement by AMS often presents a significant challenge in the chemical preparation of these samples. Post-bomb materials generally have high enough ratios that carrier iodine of known ratio is added to increase the bulk of the final silver iodide sample. Virtually all anthropogenic ratios reported in the literature are calculated from a weighted average, using measured values for the weight of iodine from the sample and carrier, the ratio of the carrier, and the ratio of the combined sample.

We performed two laboratory tests to determine the accuracy of the carrier method for post-bomb $^{129}\text{I}$ seawater and seaweed samples. A repeated extraction was performed on a 1-L surface seawater sample, with 2.5 mg of I carrier (as iodate) added at the beginning of the procedure. The seawater + carrier solution was left overnight, then iodine was extracted into carbon tetrachloride, and back-extracted into a sulfuric acid/sodium bisulfite solution, and the iodide in solution was precipitated using silver nitrate. The procedure was repeated two more times on the “waste” (+ additional carrier iodine) from the CCl₄ extraction. Results show that the measured ratio approaches the ratio of the carrier slowly, suggesting that the iodine in the seawater matrix is extracted at <100% efficiency into the CCl₄. The ratio of carrier to seawater iodine (which in the first case is 5:1) may also affect the extraction efficiency. The third extraction had a ratio that was within 2 σ of the measured ratio for the carrier I.

We also extracted iodine from modern seaweeds using the alkali leach and fusion method, adding carrier at different stages of the extraction, and as a control, making samples from the iodine-rich *Laminaria* without carrier. Two mg of carrier I (as iodide) was added, in one experiment as the leachate became liquid during heating, and in a second, after back-extraction into the sulfuric acid/sodium bisulfite solution. In both cases, the calculated ratio was higher by a factor of two to three than the ratio measured on the sample without carrier. Agreement was better in the case in which carrier was added at the later stage. It appears that carrier I may be lost during sample preparation, in greater proportion than organically bound I from the seaweed.