

^{239,240}Pu isotope measurements from soils around Maralinga

S.G. Tims,¹ D. Tsifakis,¹ M. Srncik,¹ and L.K. Fifield¹

¹*Department of Nuclear Physics, The Australian National University, ACT 0200, Australia*

The isotopes ²³⁹Pu and ²⁴⁰Pu are present in surface soils as a result of global fallout from nuclear weapons tests carried out in the 1950's and 1960's. These isotopes constitute artificial tracers of recent soil erosion and sediment movement. In practice the high throughput capabilities and high sensitivity of the AMS technique makes the study of Australia's geographically large areas viable.

As part of its weapons development program the United Kingdom carried out a series of atmospheric and surface nuclear weapons tests at Maralinga, South Australia in 1956 and 1957. The contribution from the Maralinga tests to the Pu isotopic abundances present in the region around Maralinga is largely unknown. In global fallout, for example, the ²⁴⁰Pu/²³⁹Pu ratio is typically in the range 0.17 - 0.19, but the influence of the regional tests could lead to values outside this range. This would impact on the assessment techniques used in the soil and sediment tracer studies. We report recent measurements on soil samples collected from across the Maralinga Test site.