

## LOW BACKGROUND LIQUID SCINTILLATION COUNTERS

by

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### Abstract

Counting low level radioactive samples with a liquid scintillation counter requires optimized calibration for low background response, high counting efficiency and maximum counter stability. Instrument background count rate can be reduced by almost an order of magnitude without loss in counting efficiency through the use of special sample counting vials and selective choice of minimum sample-cocktail volume. Counter stability can be enhanced by operating the counter in a balance point mode of counting. Electronic background noise can be diminished through the use of faster coincidence timing and selection of matched low dark current noise photomultiplier tubes. Background caused from external radiation can be lowered through the use of an anticoincidence guard and additional massive shielding. The purpose of this paper is to discuss these means and the results of their application to optimizing liquid scintillation counters for low level counting.

... Dr. Noakes presented similar information to that he gave on low background counters at the symposium on liquid scintillation counting held in Bath, England in 1975. The proceedings of this symposium which will include Dr. Noake's presentation are to be published in 1976 by Heyden\*. The reader is directed to these proceedings for a fuller account of Dr. Noake's work in this field.

\*Crook, M.A. and Johnson, P. Liquid Scintillation Counting volume IV, Heyden, London.

