

A COMPACT LIQUID SCINTILLATION COUNTER FOR BENCHTOP AND FIELD USE

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A simple single sample liquid scintillation counter has been developed for use at the laboratory bench and, with battery power, in the field. The unit uses a single photomultiplier tube detection system and achieves ^3H and ^{14}C detection efficiencies greater than 20% and 70%, respectively, for unquenched samples. Higher energy emitters, including alpha particles, can also be counted.

Samples have been run with several isotopes to check the linearity of the system up to count rates in excess of 4×10^6 cpm. Background measurements have also been made using a variety of LSC "cocktails" and vials to investigate the effects of chemiluminescence and fluorescence. For ^3H counting, results range from a low of about 100 cpm to a high of 1,000 cpm for some "cocktail" and vial combinations. Fluorescent room lights have also been shown to increase background by producing both long term and short term fluorescence in the vials and "cocktails." Results from a number of these tests will be presented.