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MINIMUM COUNTING TIME CALCULATION

The lower limit of detection (LLD) for which the risks of false negative results and of false positive results are each 5% is defined as follows:

LLD = $4.66(SD_b)/Eff$

Where:

LLD = disintegrations in sample in time T = VL x Vol x T

4.66 = the product of the distribution parameters needed to establish the 5% error limits

SD_b = standard deviation of the background (distilled water) count

= $N_B^{0.5} = (R_b x T)^{0.5}$

N_b = total background counts in time T

R_b = background count rate, in cpm

Eff = detection efficiency, in counts/dis
(a nominal efficiency may be used for screening assays, whereas it should be determined experimentally for verification assays)

VL = verification level for elapsed interval since last bioassay, in dpm/ml

Vol = volume of urine in sample, in ml

T = minimum counting time required, in minutes

= $R_b(4.66/VL \times Vol \times Eff)^2$