



**Workshop on Understanding and Evaluating Radioanalytical  
Measurement Uncertainty**

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**Uncertainty in Gamma Spectrometry.  
Exercise 5**

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Quantity	Value	Unit	Standard Uncertainty	Relative Standard Uncertainty (%)
Gross counts	102415		320	0.312
Background counts	8841		94	1.064
Net counts	93574		334	0.356
Counting Time	80000		160	0.200
Counting efficiency	1.310244		0.022326558	1.704

$A_x = \frac{C_{N_x}}{T_x I_\gamma \varepsilon}$			$A_x = \frac{C_{N_x} T A_c DF}{T_x C_N}$		
Expression	Value	Rel. Value	Expression	Value	Rel. Value
$u'(C_{N_x})$		0.356	$u'(C_{N_x})$		0.28
$u'(T)$		0.200	$u'(T)$		0.2
$u'(I_\gamma)$		-1.6438	$u'(A_c)$		0.25
$u'(\varepsilon)$		1.704	$u'(DF)$		0.14
-			$u'(T_x)$		0.200
-			$u'(C_N)$		0.356
		<b>2.403</b>			<b>0.606</b>
$\frac{1}{A_x^2} 2 \frac{\partial A_x}{\partial I_\gamma} \frac{\partial A_x}{\partial \varepsilon} \text{cov}(I_\gamma, \varepsilon) = -2u'(I_\gamma)^2$		<b>-0.000540416</b>			
		<b>0.607</b>			