

LA-UR- 04 -0657

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Title: AIR MONITORING FOR HOMELAND SECURITY

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Submitted to: 37th HEALTH PHYSICS SOCIETY MIDYEAR TOPICAL
MEETING



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Form 836 (8/00)

AIR MONITORING FOR HOMELAND SECURITY

What are the operational characteristics of some of the commercially available personal alpha CAMs?

	CAM 'A'	CAM 'B'
Size	138 x 57 x 32 mm 250 cc volume (0.01 cubic foot)	178 x 152 x 127 mm 3,400 cc volume (0.12 cubic foot)
Weight	300 g	1.2 Kg
Operating Time	48 hr	8 hr
Air Sampling Rate	0.25 LPM	4 LPM
Detection Levels	<300 DAC-h Pu-239 in 1 min < 1 DAC-h Sr/Y-90 in 1 min	8 DAC-h Pu-239 < 7 min 100 DAC Pu-239 < 7 min no beta monitoring
Alarms	Visual	Visual and audible (voice)
False Alarm Rate	To be determined	

What are the operational characteristics of some of the commercially available portable alpha and beta CAMs?

	CAM 'C'	CAM 'D'
Size (not including size of air sampling pump)	535 x 245 x 170 mm 22,300 cc volume (0.8 cubic foot)	490 x 400 x 170 mm 33,300 cc volume (1.2 cubic feet)
Weight (not including weight of air sampling pump)	12 Kg	10 Kg
Operating Time	N/A	These CAMs are intended for AC operation.
Air Sampling Rate	up to 60 LPM typically 37 LPM	typically 37 LPM
Detection Levels	4 DAC-h Pu-239 in 5 min 0.25 DAC-h Sr/Y-90 in 5 min	1.3 DAC Pu-239
Alarms	These CAMs have audible, visual, and remote alarm indications.	
False Alarm Rate	<1 false alarm per year with alarm setpoint at 8 DAC-hr for Pu-239 and radon concentration ~ 5 pCi/L	

What are the IDEAL characteristics of the hypothetical personal and portable alpha and beta CAM?

Size	80 mm x 100 mm x 60 mm (480 cc volume = 0.017 cu ft)	
Weight	< 1 Kg	
Operating Time	8 continuous hours between battery charges	
Air Sampling Rate	> 20 LPM	
Detection Levels	DAC-h	8 DAC-h for Pu-239 < 2 minutes 8 DAC-h for Sr\Y-90 < 1 minute 200 DAC-h for Pu-239 < 10 seconds
	DAC	100 DAC for Pu-239 < 2 minutes 1 DAC for Sr\Y-90 < 1 second 1,000 DAC for Pu-239 < 1 second
Alarms	Audible, visual, and remote indication	
False Alarm Rate	\leq 1 false alarm per year (8,760 hours)	