TABLE 1. Values of K for Different Sets of Coaxial Cylinders

System	Spectrum	$\bar{E}_l \approx 1/2 \bar{E}_\gamma$	Knockout electron spectrum allowed for	K_{expt}
Al—Zn—Mg	$\Phi_{\gamma 1}$	0,990	0,980	0,98
	$\Phi_{\gamma 2}$	0,988	0,976	—
	$\Phi_{\gamma 3}$	1,02	1,03	1,05
Al—Zr—Mg	$\Phi_{\gamma 1}$	0,940	0,888	0,93
	$\Phi_{\gamma 2}$	0,960	0,920	—
	$\Phi_{\gamma 3}$	0,997	0,983	1,00
Al—Sn—Mg	$\Phi_{\gamma 1}$	0,916	0,954	0,96
	$\Phi_{\gamma 2}$	0,932	0,951	—
	$\Phi_{\gamma 3}$	0,967	1,003	1,00
Al—Pb—Mg	$\Phi_{\gamma 1}$	0,878	0,874	0,91
	$\Phi_{\gamma 2}$	0,897	0,851	—
	$\Phi_{\gamma 3}$	0,929	0,872	0,94

$$G_m P_m = \sum_i P_{\gamma im} (1 - \sum_n F_{im} \varphi_{mn}) G_m + \sum_n \sum_i P_{\gamma in} \varphi_{nm} F_{in} G_n,$$

where $G_{m,n} P_{\gamma im,n}$ is the absorbed energy in the m-th and n-th elements from the i-th group of the γ -ray energy spectrum corresponding to the condition of electronic equilibrium in the system; $G_m P_m$ is absorbed energy in the m-th element corresponding to the final distribution; $G_{m,n}$ is the mass of the element at a height of 1 cm, the index n referring to elements of a system mixed with m elements; and $F_{m,n}$ is the fraction of absorbed energy P_γ removed from each of the system by electrons. The exposure factors φ_{mn} and φ_{nm} were used to calculate it [1].

One of the basic conditions for employing the technique presented above is that of reliably determining the mean electron energy $\bar{E}_e$ of electrons knocked out by γ rays with an energy of $\bar{E}_\gamma$.

Two series of calculations were made: using the approximate relation $\bar{E}_l \approx 1/2 \bar{E}_\gamma$ and using secondary-electron spectra calculated by the Monte Carlo technique for the initial γ -ray spectra. As a characteristic measure of the deviation from the condition of electronic equilibrium we chose the value $K = K_2/K_1$, where K_1 is the ratio of the power of the absorbed dose of γ rays for the middle and internal cylinders under conditions of electronic equilibrium, and K_2 is the analogous ratio with allowance for the redistribution of the γ -ray energy because of knock-out electrons (Table 1).

The γ -ray spectra are arranged in Table 1 in order of increasing hardness. The experimental verification was carried out with a calorimetric spectrometer [2]. For all systems, as the hardness of the γ -ray spectrum increases, the deviation from the condition of electronic equilibrium decreases. The greater the Z of the material of the middle cylinder, the greater the deviation from the condition of electronic equilibrium reaching 12%; this must be taken into account when evaluating the error of the radiation detectors and when transferring the dose from the detector to the irradiated object.

It has been established that the γ -ray energy is redistributed by the resulting energy transfer by electrons knocked out of the materials with a high atomic number to materials with a low atomic number. Photoelectrons make an overwhelming contribution to this transfer.

LITERATURE CITED

1. R. Richards and B. Rubin, *Nucleonics*, **6**, 42 (1950).
2. B. A. Briskman et al., *At. Energ.*, **41**, 325 (1976).

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ERRATA

In the paper by Yu. P. Abolmasov, "Tritium content in liquid media and in air of working locations of nuclear power stations," **41**, No. 3, 845 (1976), line 1 of Table 1 should read " $Q, \mu\text{Ci/liter}$."