



RP NOTE # 35

A Study of the Effect of Various Laundry Cycles Upon Film Badge Results

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Film badges are subject to various types of abuse. A common occurrence is the laundering and subsequent drying of these devices. In an attempt to observe the effect of various laundry cycles upon film badge results, a simple study was conducted.

Phase one of this study involved 20 "vistors" film badges which were not exposed to radiation. The badges were divided into four groups of five badges per group with each group subjected to a different set of laundering conditions (e.g. different water temperatures, with or without bleach, etc.) Both gas and electric driers were used with an average drying time of 45 minutes. See attached tabulated results. All badges in this phase read minimal.

Phase two of this study involve 20 "vistors" film badges which were taped to a radioactive septum (which read 20 mrem/hour on contact with an Elron) for a period of two hours. The badges were divided into four groups of five badges per group with each group (except one, a control) subjected to a different set of laundering conditions (as above). The Landauer dosimetry report for all badges except one was received. See the attached tabulated results. 68.4% of the 19 badges processed read the expected 40 mrem gamma. One badge (5.2%) read 50 mrem. Five badges (26.3%) read 30 mrem. There was no particular correlation between gamma results and laundering techniques, although 4 out of the five badges which read 30 mrem occurred in the group washed in warm water with soap. One such badge was also observed in the control group, however.

Conclusion

At minimal or comparatively low exposures at least, gamma film badge results appear relatively unaffected by any routine washing and drying that they might be subjected to in the home laundry.

Phase I (unexposed badges)

Group	Washing Procedure	Landauer Results (mrem)
Group 1	Washed in hot water with soap Dried at normal heat	
1-36603		M
2-36409		M
3-36408		M
4-36605		M
5-36759		M
Group 2	Washed in warm water with soap Dried at normal heat	
6-36354		M
7-36609		M
8-36554		M
9-36726		M
10-36559		M
Group 3	Washed in cold water with soap Dried at normal heat	
11-36761		M
12-36606		M
13-36707		M
14-36586		M
15-36430		M
Group 4	Washed in hot water with soap and bleach Dried at normal heat	
16-36805		M
17-36466		M
18-36598		M
19-36794		M
20-36556		M

Phase II (exposed badges)

Group	Control Group - No wash - No dry	Landauer Results (mrem)
Group 1		
1-40157		40
2-40326		40
3-40330		30
4-40319		40
5-40332		40
Group 2	Washed in cold water with soap Dried at normal heat	
6-40337		40
7-40254		-no results
8-40336		40
9-40324		40
10-40338		40
Group 3	Washed in warm water with soap Dried at normal heat	
11-40325		30
12-40327		40
13-40335		30
14-40321		30
15-40323		30
Group 4	Washed in hot water with soap Dried at normal heat	
16-40228		40
17-40158		40
18-40155		40
19-40150		40
20-40166		50