

TABLE 9.2
Site Variation and Decontamination Time for
Parathion

Skin Residence Time Before Soap and Water Wash ^a	Parathion Dose Absorbed (%) ^a		
	Arm	Forehead	Palm
1 min	2.8	8.4	
5 min			6.2
15 min	6.7	7.1	13.6
30 min		12.2	13.3
1 hr	8.4	10.5	11.7
4 hr	8.0	27.7	7.7
24 hr	8.6	36.3	11.8

^a Each time is a mean for four volunteers. The fact that there were different volunteers at each time point accounts for some of the variability with time for each skin site.

study. First, regional variation was confirmed with the different chemicals; note that parathion and malathion are chemically related to some chemical warfare agents. Second, those skin areas that would be exposed to the pesticides, the head and face, were of the higher-absorbing sites. The body areas most exposed to environmental contaminants are the areas with the higher skin absorption.

Table 9.2 gives site variability for parathion skin absorption with time. Soap and water wash in the first few minutes after exposure is not a perfect decontaminant. Site variation is apparent early in skin exposure (3).

Van Rooy et al. (4) applied coal tar ointment to various skin areas of volunteers and determined absorption of polycyclic aromatic hydrocarbons (PAH) by surface disappearance of PAH and the excretion of urinary I-OH pyrene. Using PAH disappearance, skin ranking (highest to lowest) was shoulder > forearm > forehead > groin > hand (palmar) > ankle. Using I-OH pyrene excretion, skin ranking (highest to lowest) was neck > calf > forearm > trunk > hand. Table 9.3 compares their results with Guy and Maibach (5).

TABLE 9.3
Absorption Indices of Hydrocortisone and Pesticides
(Parathion/Malathion) Calculated by Guy and Maibach (5)
Compared with Absorption of Pyrene and Polycyclic Aromatic
Hydrocarbons (PAH) for Different Anatomical Sites by Van
Rooy et al. (4)

Anatomical Site	Absorption			
	Hydrocortisone	Pesticides	Pyrene	PAH
Genitals	40	12	—	—
Arms	1	1	1	1
Hand	1	1	0.8	0.5
Leg/ankle	0.5	1	1.2	0.8/0.5
Trunk/shoulder	2.5	3	1.1	/2.0
Head/neck	5	4	/1.3	1.0