



FIGURE 23.7 Polychlorinated biphenyls (PCBs) can be removed with soap and water; however, skin absorption of PCBs is high, and the chance to remove them from skin decreases with time. PCBs were applied to skin in either trichlorobenzene (TCB) or mineral oil (MO) vehicle.

The preceding discussion shows (Table 23.1) that there are two factors with in vivo skin decontamination. The first is the “rubbing effect” that removed loose surface stratum corneum due to natural skin desquamation. The second is the “solvent effect,” which is related to chemical lipophilicity and was illustrated for glyphosate and alachlor.

23.2 IN VITRO DECONTAMINATION MODEL

In vitro skin mounted in diffusion cells can be decontaminated with solvents. A problem exists in that the mounted skin is fragile and cannot be rubbed, as naturally occurs with people washing their skin. Another in vitro technique that is easy to use for solvent efficiency in decontamination is with powdered human stratum corneum (PHSC). Figure 23.8 shows results when alachlor was added to PHSC and then partitioned against water only or against water with 10% and 50% soap. Alachlor stayed with the PHSC when partitioned against water-only; however, it readily partitioned to the solvents against 10% and 50% soap. These are the same confirming results shown in Figures 23.3, 23.5, and 23.6.

TABLE 23.1
In Vivo Skin Decontamination

1. *Rubbing effect*
Removes “loose” surface stratum corneum
“Loose” = natural desquamation
2. *Solvent effect*
Water only
Soap and water
Related to chemical lipophilicity