Pesticides and Protecting Clothing

by Marjorie A. Sohn, Associate professor, University of Ill. at Urbana-Champaign

Exposing your skin to some pesticides presents a health hazard and clothing provides a vital protective barrier against the exposure.

Pesticide applicators can purchase chemical-resistant apparel, but recent surveys indicate the majority of pesticide users wear traditional work clothing when mixing, handling, and applying pesticides. They prefer ordinary work clothing because it is more comfortable, less expensive and easily available. They also doubt the need for protective clothing.

A non-punchtured-type Tyvek is one of the disposable chemical-resistant garments on the market. It is made from spun-bonded olefin, a non-woven fabric that provides an effective barrier to many types of chemicals. Although you usually must dispose of non-woven garments after one use, Tyvek garments withstand up to four launderings. However, if your clothing is contaminated with a concentrated chemical, dispose of it rather than trying to clean it because of safety considerations.

Fabric studies

Testing is under way on Gore-Tex fabric to determine its ability to provide protection from pesticides. Gore-Tex is a microporous membrane that is laminated between a shell fabric and a fabric lining. As a result, Gore-Tex allows perspiration to pass through the fabric, but it keeps liquid from entering the outside of the garment and contacting the skin.

A North Central Region research project focused on the influence of the following characteristics in creating a protective barrier:

- Fiber content,
- Fabric construction,
- Functional finishes, and
- Laundering methods.

Choosing clothing

Absorbency and wicking are important considerations in determining chemical resistance. Tests conducted on cotton, polyester/cotton blends, polyester, nylon, acrylic and spun-bonded olefin fabrics yielded these results:

- Pure cotton fabric exhibits the highest rate of absorbency, which means it absorbs a large amount of pesticide solution. However, less pesticide solution travels to under-clothing or skin.
- Cotton/polyester blends exhibited moderate absorbency and wicking.
- Lightweight fabric (broadcloth) demonstrated lower absorbency than poplin or twill in tests, but it also exhibited very rapid wicking. Broadcloth's tight weave appears to transport pesticide solution more rapidly and in greater quantities to underclothing or skin.
- Synthetic fiber — acrylic, nylon and polyester — had low absorbency, but they had the highest wicking levels. Compared to other fabrics, the pesticide solution flowed rapidly from the garment to underclothing or skin.
- Spunbonded olefin fabric showed the lowest rate of absorbency and wicking of the fabrics tested. It provides an excellent barrier against pesticide penetration and it offers extra protection when you wear it over work clothes.
- Clothing with a consumer-applied flourocarbon soil-repellent finish give the same protection as spun-bonded olefin, but it is more comfortable to wear.