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Chemical Spots, Stains and Discoloration of Home Furnishings

by Shirley Niemeyer, Extension Specialist, Home Environment

We live in a world of chemicals. Unfortunately, some of the characteristics that make household chemical products the most useful are the same qualities that lead to trouble when these products are carelessly handled. A chemical stain or spot is a serious kind of stain that is appearing with increasing frequency and is different from ordinary stains. This type of discoloration or color loss is caused by a variety of chemical ingredients contained in dozens of common household products.

Basically, there are two types of spots that can appear on home furnishings textile materials. The first type of spot is the common stain which occurs when food is spilled or ordinary dirt or oily substance is tracked in. These spots are usually apparent immediately and action can be taken to remove them without damage to the carpet or upholstery fabric.

The second type of stain or discoloration of carpets and home furnishings fabrics is the chemical stain. The chemical stain is caused by the introduction of foreign substances to the surface of the textile product, which actually changes or destroys the dye. The time between contact and appearance of the stain could be days or months. Generally, nothing can be done to restore the dye to its original color.

Some of the more common chemical products known to cause problems include medications, certain cosmetics, household bleaches, disinfectants, furniture polish, certain plant foods, fertilizers and insecticides. One fiber manufacturer has estimated the number of household products which can cause stains or spots on home furnishings products to be in excess of 50.

The mechanism by which these spots appears varies with different types of chemicals, environmental conditions and the particular textile product involved.

For example, spots can appear suddenly with no apparent history of contact with a known injurious substance. The chemical can lie dormant until a change in humidity, temperature, moisture or sunlight occurs to activate the chemical reaction. This delayed action causes the spots to seem to appear spontaneously.

Relatively high humidity is necessary for bleaching action to begin. Similarly, many chemical agents require wetness to trigger reaction. This means that discoloration could result shortly after a textile product is cleaned. Frequently the professional cleaner is falsely suspected of being the cause.

You may ask why carpet manufacturers do not use better dyes, ones that will resist all chemical reaction. There are few known dyes which are resistant to chemical degradation. Such dyes have limited application and a restricted choice of colors.

Since there are few known dyes which will resist all chemical attack, and manufacturers cannot prevent their products from coming into contact with these substances, chemical spots and stains are not covered under most manufacturers' warranties. However, dyes have improved.

Prevention of Chemical Spots and Stains

From the consumer's point of view, the only real solution to prevention of chemical spots and stains is careful use of the offending chemical products. By identifying the particular product, one can take precautions to prevent further contamination.

This is not always easy because a list of ingredients in many of these products is not always available. The advantage in knowing what is in the product is questionable because the concentration of the products used, or the combination of the chemicals within the product, can affect what it will do to a carpet or other household textile products.

It is most important that the consumer carefully read and comply with directions. Special attention should be given to precautions or warnings supplied by the manufacturer of household chemical products.

Potential Sources of Chemical Spots and Stains

The list of generic products published here is not a complete list nor is this report intended to be a criticism of any product. The purpose is to enable consumers to identify

products which can cause damage to textile products if they are spilled or allowed to come in contact with them.

Acne Medications and Skin Creams

Many consumer products have been introduced over the last few years which contain benzoyl peroxide as an active ingredient. These products include acne medications, fade or age creams, some foot care preparations and some pet shampoos.

Benzoyl peroxide is a strong oxidizing and/or bleaching agent which is capable of destroying most dyes used in carpet and upholstery fabrics. Other textiles such as pillowcases, sheets, towels and clothing may be affected also. Manufacturers have estimated that a high percentage of unidentifiable spots on carpets can be attributed to this chemical.

Spots caused by benzoyl peroxide may appear hours, days or months after the contamination, depending on temperature and humidity. This means that the original source of the spill could have been forgotten by the time the spot appears.

An additional problem with this chemical is that compounds containing benzoyl peroxide are not water soluble. They are difficult to wash off the hands or face. The user may believe the substance has been washed off when it really has not.

Most benzoyl peroxide spots begin as orange or dark yellow depending on the dyestuff used. As time and the oxidation process progress the yellow stain will get lighter in color. On blue carpets, however these spots may appear slightly pinkish or white. In some cases the spot may appear to be yellow with an orange halo around it, moving toward yellow as the spot grows.

The consumer must know that benzoyl peroxide is present on the textile item in order to attempt to save it before the reaction takes place and destroys the dyestuff. Carpet cleaners recommend the consumer not attempt to remove the spill. Contact a professional carpet cleaner and restorer skilled in removal of benzoyl peroxide.

Bleaches

Most people are aware that misuse of household bleaches on colored fabric may remove the color as well as stubborn stains. Accidental spills on carpets and upholstery fabrics are equally damaging.

Chlorine bleaches (sodium hypochlorite) are the most universally used. The so-called "all-fabric" bleaches (oxygen bleach), although slower acting, can cause bleaching and dye bleeding. Swimming pool chemicals (calcium hypochlorite) tracked into the home can bleach carpets and rugs. Also, most mildew stoppers contain bleach which will affect textiles if used improperly.

Spots caused by chlorine products are generally yellow. However, chlorine will cause some red dyestuffs to turn green.

Acids and Alkalis

As little as 1 percent of hydrochloric acid in solution can cause pink or orange spots in carpets. Stomach acid is essentially 10 percent hydrochloric acid. This means that vomit can cause permanent spots on carpets and upholstery if not promptly removed and/or neutralized.

Some toilet bowl cleaners contain as much as 10 percent hydrochloric acid. Corn and callous removers contain phosphoric and glacial acetic acid. Tile cleaners also contain acid which can cause color changes as do certain foot preparations. Hydrochloric acid can cause some red dyestuffs to turn bright blue.

Strong alkaline substances are equally damaging when they come in contact with carpets and other textile products. The active ingredient in most drain cleaners is sodium hydroxide (lye). Oven cleaners may get their cleaning power from sodium hydroxide. Strong alkalis will destroy the fabric itself, as well as cause spots and stains.

Urine Stains

Urine from children and pets can cause permanent stains to some fabrics if not promptly removed. The characteristic ammonia-like odor will be replaced by a musty odor. Spots caused by urine may be a dull yellow or even red.

Plant Foods and Fertilizer

Spills of some liquid plant foods or leakage from house plants can cause color changes in carpet. Spots of this kind usually develop near the backing and progress upward through the pile to the surface. Stains of this type may not be apparent for months. Spots are usually dull yellow in color.

Insecticides

Some pesticides and insecticides can cause discoloration or color loss of carpet. Chemicals may cause fading around baseboards when spray is directed to the carpet instead of the baseboard, or when spray is applied to household plants. Follow label directions and spray only when necessary. Protect the carpet with drop cloths. A greater potential for color change exists with repeated applications.

Furniture Polish

Chemicals in furniture polish can act as a catalytic agent, destroying red carpet dyes and creating green or bluish discoloration. On carpet this usually occurs around the base of a piece of furniture and can remain hidden until the furniture is relocated.

Phenols

This class of chemicals is used in disinfectants and germicides. Bathroom cleaners, many of which come in concentrated liquid form, may contain this chemical. Some phenols have been known to cause carpet to fade.

How to Identify Chemical Spots and Stains

The following suggestions may be helpful in identifying the cause of chemical spots and stains on carpets and other textile products:

- **Where is the Spot Located in the House?** In teenagers' rooms, one would suspect acne medications containing benzoyl peroxide when stains appear on towels, bedsheets, and carpets. Discoloration or color loss along baseboards suggests insecticides. In the living or dining room where houseplants are kept, it could be leakage from pots containing plant food or from plant sprays. Stains around the base of furniture could be contamination from furniture polish. The important thing is to isolate the cause of the spot and take whatever steps are necessary to prevent future exposure.

- **Was the Chemical Substance Spilled or Tracked** onto the carpet from some other area? The pattern of the stain indicates how it happened. Spills often resemble explosions. They are generally larger in diameter near the backing than on the surface. Tracking commonly leaves a clearly defined shape like a handprint or footprint. Tracking stains are usually limited to the tips of the tufts. Where tracks come from could indicate the cause.

- **What Color are the Spots?** Different chemicals react differently to different colors and dyestuffs. As we have noted, they also react differently under various climatic conditions. In general, red spots on tan or beige carpet may suggest strong acids. Yellow stains indicate reactions caused by strong oxidizers or bleaches. Green or blue stains may indicate sunlight combined with a catalyst.

Treatment

In general, once a textile product has been chemically stained, there is little that can be done by the individual to restore the material to its original color and condition. If a stain has occurred, the source of contamination should be identified and steps taken to prevent further contamination from the same cause. The homeowner can prevent spots from occurring in the first place by showing proper respect for household chemicals and treating them with due caution. Consult a professional cleaner.

“Plugging” the carpet with a patch can be done to remove the damaged area.

Source: American Textile Manufacturers Institute, 1101 Connecticut Avenue, NW, Washington, DC 20036

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