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EC88-422 Household Cleaning and Laundry Products : Which One for the Job?

Kathleen Parrott

University of Nebraska-Lincoln, homes@vt.edu

Shirley Niemeyer

Rose Marie Tondl

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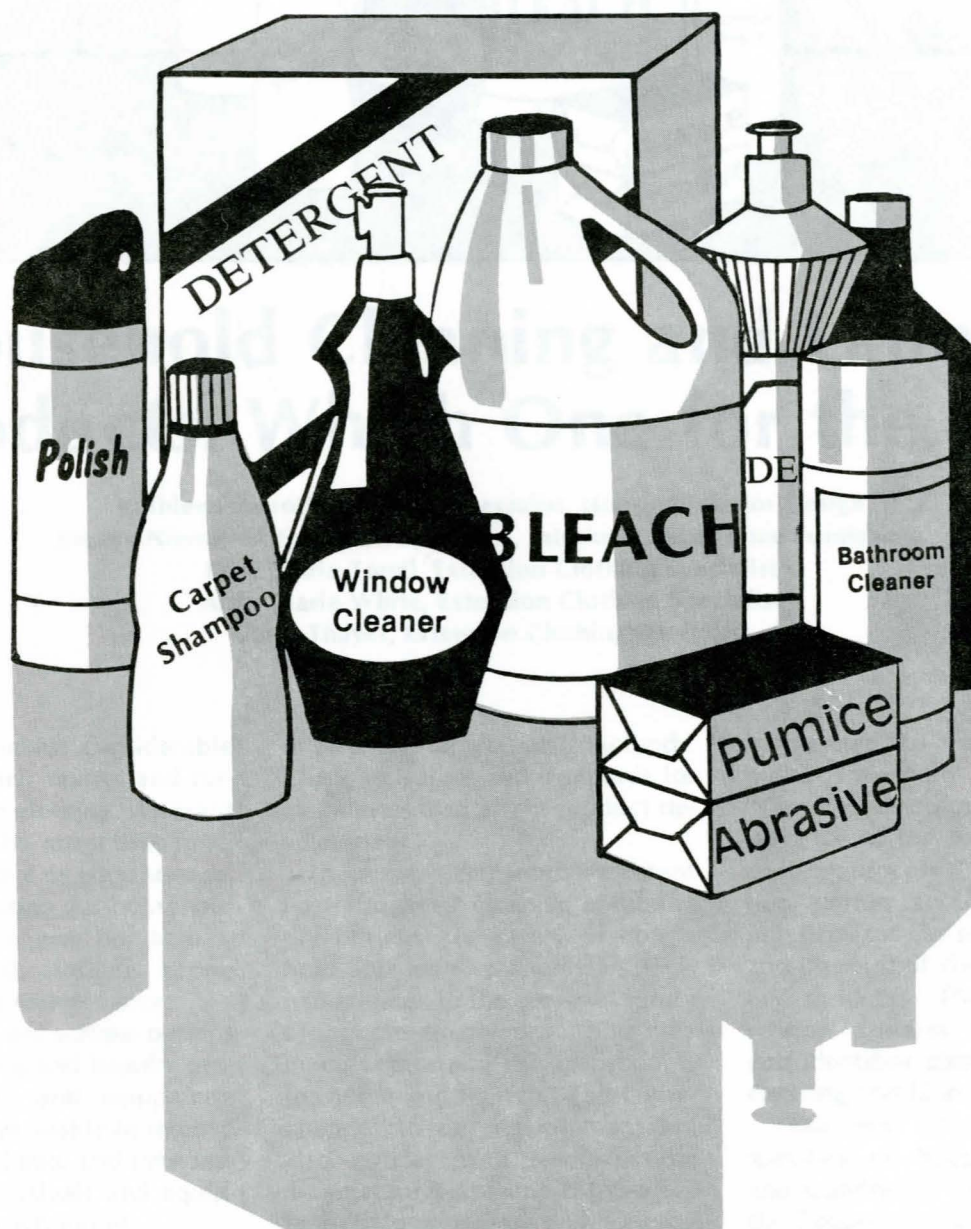
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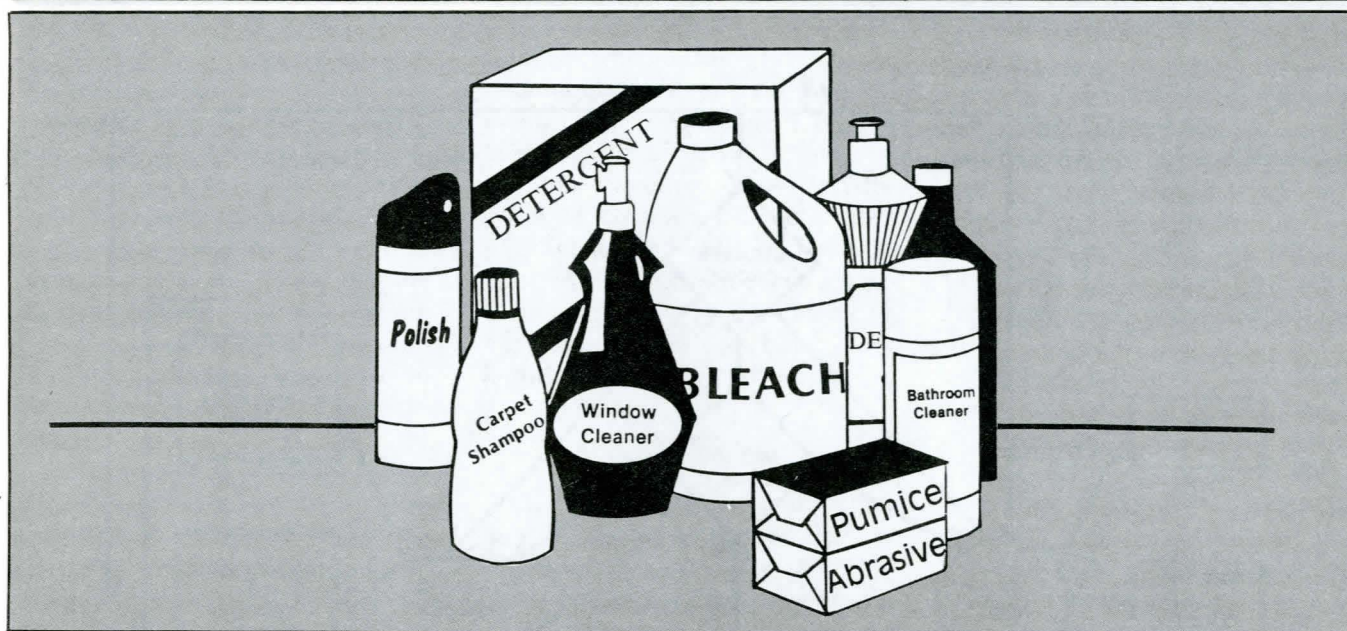
Household Cleaning and Laundry Products: Which one for the Job?



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Household Cleaning and Laundry Products: Which One for the Job?

Kathleen Parrott, Extension Specialist, Housing/Interior Design
 Shirley Niemeyer, Extension Specialist, Interior Design/Home Furnishings
 Rose Marie Tondl, Extension Clothing Specialist
 Anna Marie White, Extension Clothing Specialist
 Carol Thayer, Extension Clothing Specialist

Nebraskans invest considerable resources in their homes and furnishings, and in clothing. We want these items to be attractive, functional, and to give us good service. A key to protecting our household investment is to give our homes, furnishings and clothing appropriate care and maintenance.

Today, there are various options in home cleaning and laundry products, methods and equipment. Chemicals are available to remove soil and stains. Labor and time saving products, methods and equipment make the job easier.

Part of the growth of cleaning and laundry products is a result of the development of new materials for homes, furnishings and clothing. Changing fashions and lifestyles create the need for new or

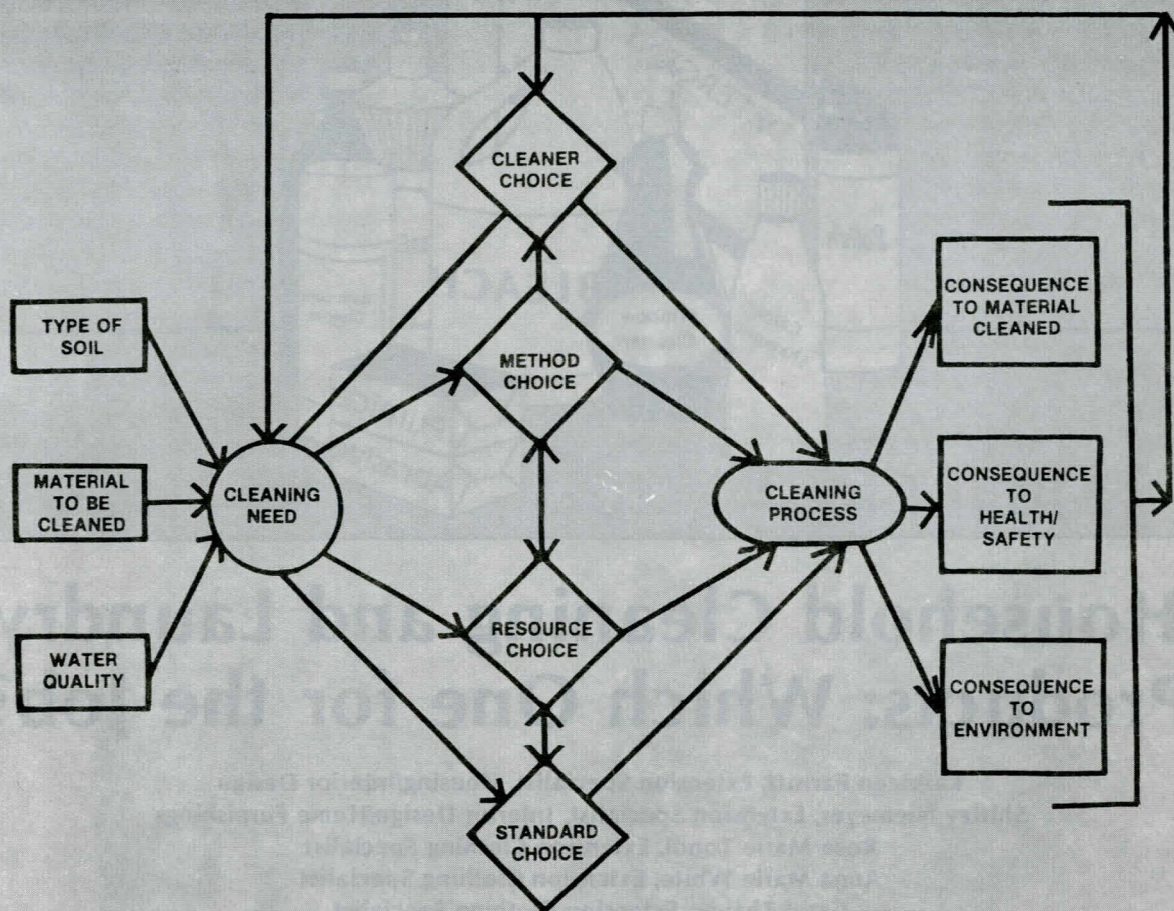
different products and methods. Changing values and standards for cleanliness also affect product development.

In recent years, another element has influenced cleaning and laundry options: the safety of household and laundry chemicals. This issue relates to the personal safety of people involved in both the manufacture and use of products for home and laundry. The consequences to our environment are also critical as a result of the manufacture, use and disposal of household cleaning and laundry products and their packaging.

Nebraskans can make the best decisions about care and maintenance of their homes, furnishings and clothing, by considering all the factors involved. This publication

is planned to help Nebraskans make informed choices. The "Cleaning Decision's Model" presents the factors to consider in the decision process. The "Safety" section advises about methods and practices for the safe use, storage and disposal of cleaning and laundry products. The "Definitions" section explains common terms and identifies chemicals found in cleaning and laundry products.

Additional information on the specifics of household cleaning and laundry are available through the Cooperative Extension Service Office serving your community. The staff of the Cooperative Extension Service can help you become informed about cleaning and laundry options and in making decisions to meet your needs.



Cleaning Decisions Model

Cleaning Decisions Model

The "Cleaning Decisions Model" is a way to visualize the decision process as you make choices in the care and maintenance of your home, furnishings and clothing. Many factors enter into your choice. Some care and maintenance decisions are simple; some are complex.

The "Cleaning Decisions Model" reads from left to right. First, consider the given factors in the cleaning situation.

Type of Soil: Different types of soils (such as greasy, oily, or particulate) have different cleaning requirements.

Material to be Cleaned: What

you are cleaning (such as the floor, wall, couch, or a shirt) and the material of which it is made (such as plastic, wood, rayon, or polyester) are important factors in the cleaning process.

Water Quality: The quantity and quality of the water available to you will affect your cleaning choices.

The above factors come together to define the **cleaning need**. Your cleaning choices are based on the cleaning need and the possible consequences (discussed below). There is an interaction of choices and one choice will influence the others.

Cleaner Choice: Your choice of cleaning product is determined by

many factors including cleaning method, personal preference, product availability, the influence of advertising and cost.

Method Choice: The choice of cleaning method can be influenced by product choice, time available, personal preference and past experience.

Resource Choice: The resources you can put into the cleaning process include time to clean, personal energy, knowledge of the cleaning process, money to purchase cleaning products, cleaning equipment and skill in cleaning. You choose what resources to use and how extensively to use them.

Standards Choice: You use your personal value system to choose

the standards of cleanliness that you will maintain. These standards strongly influence the resources you apply to the cleaning process. A variety of consequences result from the **cleaning process**. These potential consequences also influence the choices made in the **cleaning process** and how we define the **cleaning need**. This relationship is shown by the arrows in the model that move from right to left.

Consequence to Material Cleaned: After cleaning, positive consequences could include disinfection, improved appearance, or increased usefulness. Other consequences could be negative - fading, abrasion, or decreased life expectancy.

Consequence to Health/Safety: Health/safety consequences include personal safety during both short- and long-term use of the cleaning product. This is affected by the method used, the length and frequency of cleaning, and the interaction of cleaning processes. Cleaning may also affect the safety of the material product cleaned,

such as reduced flame-retardancy.

Consequences to the Environment: These consequences include effects on the air, water and soil from the manufacture, use and disposal of cleaning products, their packaging and related by-products. These consequences are affected, not only by the chemicals and methods we use, but by our knowledge of safe and proper use and disposal.

Safety

The cleaning and laundry products available today can be very effective. However, the potential hazard to the user can be serious if appropriate safety precautions are not taken. When you purchase a cleaning or laundry product, **you are taking responsibility for the safe use, storage and disposal of the product and its packaging**. Take this responsibility seriously!

Safety Rule 1: Always read the product label carefully. Look for information about how to use, store and dispose of the product and its container. Note any particular warnings or hazards.

Safety Rule 2: Use a product only for its intended purpose. Follow label directions for safe methods of use and appropriate equipment. Note materials or surfaces for which the product is recommended. Look for precautions on ventilation and the need for protective clothing or equipment.

Safety Rule 3: Do not mix household chemicals. Toxic gases, heat or explosion may result. Mixing chemicals can also reduce or eliminate their effectiveness as cleaners.

Safety Rule 4: Store household cleaners and laundry products in their original containers with all label information. Keep out of reach of children and pets, and away from heat sources. Note label precautions about the temperatures and conditions recommended for storage.

Safety Rule 5: Dispose of leftover household chemicals and their containers properly. Follow label precautions, noting that some products require special treatment as hazardous waste.

Definitions

The definitions section is divided into three parts:

Part I: **General Terms** - relate to the cleaning process or are common to both household cleaning and laundry.

Part II: **Laundry Terms** - address care of clothing and textiles.

Part III: **Household Cleaning and Maintenance Terms** - concern care and maintenance of the home and its furnishings.

The terms are listed in alphabetical order within the three parts. A complete list of terms, including cross-references, is at the end of the publication.

PART I. GENERAL TERMS

ACID: An acid is a substance that releases hydrogen ions (H^+) when dissolved in water, and will react with alkalis to form salts. Acids are commonly used to dissolve mineral deposits caused by hard water, to remove rust, and to remove tarnish or discolorations from many metals. Acids are typically found in toilet bowl cleaners, rust removers, metal cleaners, and kitchen/bathroom cleaners that remove mineral deposits.

ALCOHOL: An alcohol is a class of organic compounds containing one or more hydroxyl (OH^*) groups. Alcohols are solvent cleaners.

"Denatured Alcohol" is ethyl alcohol that has a substance added to make it unfit for consumption.

"Ethyl Alcohol" (ethanol) is used in laundry detergents as a solvent for other ingredients, to resist freezing and to control viscosity.

"Isopropyl Alcohol" (rubbing alcohol) is used as a solvent and stain remover in cleaners.

"Methyl Alcohol" (Methanol) is used as a solvent in polishes, lacquers and varnishes, and to remove some stains.

ALKALI: An alkali is a substance that releases hydroxyl or hydroxide ions (OH^*) when dissolved in water and will react with acids to form salts. Alkaline chemicals can emulsify grease and oil, neutralize acids, suspend soil and help remove microorganisms. Alkaline chemicals are used to improve the cleaning performance of many household cleaning and laundry products. Ammonia, bleach, borax, and washing soda are examples of alkaline substances. Alkaline products include most detergents, soaps, all-purpose cleaners, oven cleaners and drain cleaners.

AMMONIA: Household ammonia is a 5 percent to 10 percent solution of the alkaline ammonia gas (NH^3). Ammonia is used to re-

move grease and dirt from hard surfaces, to strip water-base polishes and to remove some textile stains. Manufacturers add ammonia to other cleaning products to boost cleaning.

BIODEGRADABLE: A biodegradable product can be decomposed through biological processes. Biodegradable cleaning products are decomposed by bacteria in sewage treatment systems, septic tanks or the soil, and are less of a pollution threat to the environment.

BLEACH: A bleach is an alkaline cleaning product that removes stains by chemical reaction (oxidation).

"Chlorine bleach" (usually sodium hypochlorite) is a strong oxidizer that is used to remove stains, whiten or brighten, disinfect, or deodorize. Chlorine bleach can damage some textiles or hard surfaces and should be used with caution.

"Hydrogen Peroxide" is a mild bleach used for stain removal.

"Oxygen Bleach" (usually sodium perborate or potassium monopersulfate) is a milder bleach available in dry or liquid form or as a laundry product additive.

DEGREASER: A degreaser is a cleaning product that removes greasy or oily soils by dissolving or emulsifying the soil.

DEODORIZER: A deodorizer is a cleaning product that eliminates or controls odors, either by destroying microorganisms or masking the offensive odors.

DETERGENT: A detergent can be any cleaning agent used for loosening and removing soil, but the term is most commonly applied to synthetic cleaners containing surfactants. Detergents are available in liquid or powder.

"Heavy duty detergents" usually contain other ingredients; such as builders, and are most effective on oily, and greasy and particulate

soils.

"Light-duty detergents" are formulated for removing light soils and for use on delicate materials.

"Neutral detergents" are formulated for use on items that may be affected by other detergents or cleaners, and are close to 7 or neutral on the pH scale.

DISINFECTANT: A disinfectant kills bacteria that can cause infections or odors. A similar term is "sanitizer", which refers to a product that reduces the number of bacteria to an acceptable level. Disinfectant or sanitizer products include: chlorine bleach, phenolic compounds, pine oil, and quarternary ammonium compounds.

DRY CLEANING SOLVENT: A dry cleaning solvent is a solvent used for removing oil-based soils or stains without the use of water ("dry"). Commonly available dry cleaning solvents include perchloroethylene, 1,1,1 trichloroethane, trichloroethylene, or petroleum- or fluorocarbon-based products.

FUNGI: A fungus is a plant that obtains its food by dissolving organic matter. Fungi are spread by air-borne spores. Bacteria and mold are types of fungi. Mildew, a common household fungus, produces a fuzzy growth or discoloration, and grows well in damp or dark locations.

pH: The term "pH" is used to describe the logarithmic scale that measures the acidity or alkalinity of a solution. The pH scale runs from 0 to 14, with 7 being neutral. Values from 7 up to 14 represent increasing alkalinity and values from 7 down to 0 represent increasing acidity.

PHOSPHATES: Phosphates are phosphorus compounds used in cleaning products to soften the water, increase alkalinity and improve cleaning effectiveness. Phos-

phates are used in laundry detergents as builders. Phosphates are also found in automatic dishwasher detergents and hard surface cleaners.

SOAP: Soaps are cleaning products made from combining animal fat or vegetable oil with an alkali. Soaps are mildly alkaline and available in liquid, solid or granular form. In hard water, soap ties up the hard water minerals to form an insoluble curd which reduces cleaning effectiveness and can leave a dirty scum or deposit.

SOLVENT: A solvent is a substance that dissolves another substance. Solvents clean by dissolving the soil or stain.

WATER HARDNESS: Water is described as hard or soft, depending on the amount of minerals

(usually calcium and magnesium) dissolved in the water. Higher concentrations of calcium and magnesium interfere with the effectiveness of cleaning products. In addition, the minerals form hard deposits (lime scale) on fixtures and equipment, reducing their function and service life.

Water hardness is measured in milligrams of calcium and/or magnesium per liter (mg/L), which is also expressed as parts per million (ppm). Hardness is also measured in grains per gallon (gpg), where $1 \text{ gpg} = 17.1 \text{ ppm}$. Water with 60 or less ppm (mg/L) hardness minerals, or 3.5 gpg, is generally considered soft. Water with 180 or more ppm (mg/L) of hardness minerals (10.6 gpg) is considered very hard.

WATER SOFTENERS: Water can

be softened or conditioned by removing the calcium and/or magnesium minerals. Water softening is accomplished through the use of ion-exchange water softening equipment or packaged (chemical) water softeners. Ion-exchange equipment is installed in the plumbing system and softens water by exchanging sodium ions for calcium and magnesium ions. Packaged water softeners are chemicals that soften by one of two methods: sequestering the calcium and magnesium to render the minerals ineffective (sometimes called non-precipitating softeners); or forming an insoluble compound or precipitate with the calcium and magnesium (precipitating softener). Many cleaning and laundry products contain chemical water softeners.

PART II. LAUNDRY TERMS

ANTI-REDEPOSITION AGENTS:

Anti-redeposition agents are used in laundry detergents to help prevent soil from redepositing on cleaned fabrics. A typical agent is carboxymethyl cellulose or CMC.

BOOSTERS: A booster is a product which reinforces and improves specific desired characteristics in the laundry process. Boosters can soften water, remove soils and stains, brighten/whiten clothes, and improve the efficiency of detergents.

BUILDERS: Builders are alkali products used to control water hardness and increase the efficiency of a detergent/soap solution.

"Carbonates" are alkaline builders that soften water by combining with hardness minerals to form an insoluble precipitate that makes the water appear cloudy and can deposit on fabrics.

"Phosphates" are alkaline builders that tie up (sequester) water hardness minerals and hold them in suspension so they can be removed at the end of the wash cycle.

COLORANTS: Coloring material or colorants are used to improve the aesthetics of a laundered fabric. For example, blue colorant provides bluing action on fabrics.

CORROSION INHIBITOR: Corrosion inhibitors protect washer parts from corrosive effects of water and the washing action.

ENZYME PRESOAKS: Enzymes are used in presoak products to increase removal of protein-based soils from fabric. Enzymes are also added to some laundry detergents.

FABRIC SOFTENERS: Fabric softeners are laundry additives that give fabrics a soft feel and smooth surface, and reduce static electricity and wrinkling.

FLUORESCENT WHITENING AGENTS: Fluorescent dyes, or fluorescent whitening agents, are used to make white fabrics appear whiter and colors brighter.

HYDROPHILIC: "Water loving", or hydrophilic, is a term applied to the part of the surfactant molecule that makes or tends to make it soluble in water.

HYDROPHOBIC: "Water hating," or hydrophobic, is a term applied to the part of the surfactant molecule that makes or tends to make it insoluble in water.

PERFUME: Perfumes are used in detergents and fabric softeners to cover the chemical odor of the product, the odor of soils in the washing solution and to give a "clean" fragrance to clothes after washing.

PREWASH AGENTS: Prewash

agents (prespotters) are cleaning agents that help to loosen and remove soil during laundering. Solvent-type prewash agents are used for removing oily or greasy stains. Surfactant-type prewash agents are used for removing non-oily stains.

SUDS CONTROL AGENTS: Suds control agents are included in a detergent to control the amount of suds. Suds stabilizers boost suds to keep them from decomposing. Suds suppressors inhibit sudsing or control it at a low level. The amount of suds is not necessarily related to cleaning effectiveness.

SURFACTANTS: Surfactants or surface active agents are chemicals to allow water to wet both the fabric and the soil quickly and thoroughly, to loosen and remove oil from the fabric, and to help suspend soil in the wash water to prevent redeposition.

"Anionic" surfactants are negatively-charged anions that are effective in removing particulate soils.

"Cationic" surfactants are positively-charged ionic groups that reduce static build-up and make fabrics feel soft.

"Non-ionic" surfactants contain neither positively nor negatively charged ions and are effective in removing oily soils from synthetic fabrics.

PART III. HOUSEHOLD CLEANING TERMS

ABRASIVES: Abrasive cleaners clean by mechanical action to wear off dirt and grime from a surface. The particles of abrasive cleaners vary in size from fine to coarse. Normally, the larger the particle, the harsher the cleaner and the more likely for surface damage to occur. Abrasive cleaners may be combined with liquids or gels to lubricate and reduce surface damage, or with chemical cleaners to increase cleaning effectiveness. Examples of abrasive cleaners include scouring powders, and cleansers.

ABSORPTIVES: Absorptive cleaners are dry materials that clean by absorbing or soaking up fatty, greasy or oily soils. Absorptive cleaners are frequently used on materials that are harmed by water. Some absorptive cleaners contain a fat solvent to increase their cleaning effectiveness. Examples of absorptive cleaners include some carpet and wall paper cleaners.

ACETONE: Acetone is a volatile, flammable solvent cleaner, used for stain removal. Use acetone with care as it can damage or destroy some textiles and surfaces. Acetone is the main ingredient in fingernail polish remover.

ADSORPTION: The process of adsorption occurs when thin layers of gas or liquid cling to the surface of solids. A common adsorptive cleaner is activated charcoal. The pieces of charcoal have many surfaces and are particularly effective in adsorbing odor molecules.

ALL-PURPOSE CLEANER: An all-purpose cleaner is a detergent cleaner used for washable hard surfaces in the home. All-purpose cleaners are alkaline and may contain soaps, ammonia, water softeners, solvents, builders or disinfectants. The cleaners may be in powder or liquid form. Powdered all-purpose cleaners may be used as a non-abrasive scouring powder.

AMYL ACETATE: Amyl acetate, also known as banana oil due to its distinctive odor, is a combustible, solvent stain remover used as an alternative to acetone. Amyl acetate can damage some materials.

AUTOMATIC DISHWASHER DETERGENT: Automatic dishwasher detergent is an alkaline detergent in powder or liquid form designed for use in automatic dishwashers. It is low sudsing, contains water softeners, and is effective on greasy or oily soil. Automatic dishwasher detergent is also an effective cleaner on washable hard surfaces where a highly alkaline, non-abrasive cleaner is needed.

BAKING SODA: Baking soda, or sodium bicarbonate, is a mildly alkaline, non-abrasive cleaner. It can be used dissolved in water, as a non-abrasive scouring powder, or as an adsorbent cleaner or deodorizer.

BOILED LINSEED OIL: Boiled linseed oil is used as a lubricant in some solvent cleaners, especially those designed for wood surfaces. Over time, boiled linseed oil will darken woods.

BORAX: Borax is a mildly alkaline cleaner. It is usually added to cleaning products to increase cleaning effectiveness and aid in odor control.

DUSTING PRODUCTS: Dusting products are used to pick up and retain light dust and soil. Ingredients may include hydrocarbon oil, solvents for the removal of oil-based stains, or water for the removal of water-based stains.

FLAMMABLE PRODUCTS: Flammable products are those chemicals that will burn. Assume that most solvents are flammable. The Federal Hazardous Substance Act established three categories for labeling flammable products:

"Combustible" fluids will burn if directly ignited.

"Flammable" liquids produce vapors that will burn at high tem-

peratures.

"Extremely flammable" liquids produce ignitable vapors at room temperature or colder.

FULLER'S EARTH: Fuller's earth is a fine powder used as an absorbent cleaner on non-washable surfaces such as wallpaper. Fuller's earth may be mixed with a solvent to increase cleaning effectiveness on oily or greasy stains.

HAZARDOUS SUBSTANCE: A hazardous substance is defined by the Federal Hazardous Substance Act, and labeled according to the specifications of the Consumer Product Safety Commission. Hazardous substances are those that are: toxic, corrosive, irritating, flammable, combustible, able to generate pressure through decomposition or heat, or able to cause substantial injury. Many household chemicals are hazardous substances and are labeled according to the degree of hazard.

"Caution" is usually used to indicate a slight hazard.

"Warning" is typically used for products that are moderately hazardous.

"Danger" is used on products that are corrosive, extremely flammable or highly toxic.

HYDROCHLORIC ACID: Hydrochloric acid is used in metal cleaners and products designed for the removal of hard water mineral deposits. Muriatic acid is a form of hydrochloric acid. Hydrochloric acid is caustic and must be used with care as it will damage some surfaces and fibers.

LYE: Lye, or sodium hydroxide (caustic soda), is a highly alkaline product used in drain cleaners and oven cleaners to dissolve grease and fats. Lye is very caustic and must be used with care.

MINERAL OIL: Mineral oil is a petroleum-based product used as a lubricant with fine abrasives for cleaning or polishing woods or metals.

MINERAL SPIRITS: Mineral spirits is a solvent used in paint thinners, and to remove greasy soil or polishes from wood.

NAPTHA: Naptha is a volatile, highly flammable solvent, used for cleaning greasy, oily or fatty soils, and for stripping polishes from wood.

OXALIC ACID: Oxalic acid is used as a bleach and stain remover. It is effective as a rust remover on many surfaces and as a bleach for wood. Oxalic acid is caustic and must be used with care.

PHENOLIC COMPOUNDS: Phenolic compounds are added to all-purpose and specialty cleaners to provide disinfection or sanitization of washable surfaces.

PINE OIL: Pine oil is added to liquid all-purpose cleaners to provide disinfection or sanitization and to give a characteristic pine aroma.

POLISH: A polish is a product applied to a surface to give it shine or gloss, and to give a protective coating or wear layer.

"Oil polishes" are usually tung oil-, vegetable oil- or petroleum-based and may be lemon-scented.

"Polymeric resins" are synthetic ingredients used in polishes, especially for floor care products. Vinyl, acrylic, and urethane are common polymeric resins.

"Silicone polishes" are furniture polishes with silicone to contribute shine, reduce smearing and deliver a uniform surface. Silicone residue may complicate the process if the furniture needs refinishing.

"Solvent-base polishes" have waxes or polymers suspended in solvent. These polishes are commonly used on surfaces such as wood, that are damaged by water.

"Water-base polishes" are polishes with waxes or polymer suspended in water and are for use on water-safe surfaces. Detergent-resistant, water-base floor polishes can be washed with detergent and require ammonia for stripping.

"Waxes" are either natural or synthetic substances made from fatty acids, to protect and polish. Carnauba, microcrystalline and beeswax are common waxes used in household products.

PUMICE: Pumice is an abrasive cleaner made from volcanic rock and is available in powder or solid form. The degree of abrasiveness will vary.

QUATERNARY AMMONIUM COMPOUNDS: Quaternary ammonium compounds are used in cleaners for hard surfaces in the home to disinfect, sanitize and deodorize.

ROTTENSTONE: Rottenstone is a fine abrasive powder used in

cleaning and polishing woods and metals. Rottenstone may be mixed with oil for lubrication.

SHAMPOOS: Shampoos for carpet and upholstery are formulated with surfactants to remove oil and greasy soils. Shampoos that foam trap soil in suspension and then dry to a solid residue which can be removed by a vacuum cleaner. Deodorizers may be included.

TURPENTINE: Volatile solvent for some varnishes, enamels and paints, and sometimes used to clean wood finishes.

TRISODIUM PHOSPHATE: Trisodium phosphate, also called TSP, is a strong alkaline cleaner for washable hard surfaces. TSP can also be used as a sequestering water softener.

WASHING SODA: Washing soda, or sodium carbonate, is a highly alkaline powdered cleaner for washable surfaces. It can be mixed with water or used dry as a non-abrasive scouring powder. Washing soda is also added to other cleaners to soften water and increase cleaning effectiveness. Sal soda is another term for washing soda.

WHITING: Whiting, or calcium carbonate, is sometimes called putty powder, and is a soft abrasive used for cleaning or polishing metals and some masonry.

INDEX

The following index is designed to help you locate items in the "Definitions" section of this publication. It also serves to cross-reference related terms.

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- Suds Control Agents (2)
- Suds Stabilizer - See Suds Control Agents (2)
- Suds Suppressor - See Suds Control Agents (2)
- Surfactants (2), See also Detergents (1)
- Toilet Bowl Cleaner - See Acid (1)
- Trichloroethane - See Dry Cleaning Solvent (1)
- Trichloroethylene - See Dry Cleaning Solvent (1)
- Trisodium Phosphate (3)
- TSP - See Trisodium Phosphate (3)
- Turpentine (3)
- Urethane - See Polish (3)
- Vinyl - See Polish (3)
- Wall Paper Cleaner - See (3), Fuller's Earth (3)
- Warning - See Hazardous Substance (3)
- Washing Soda (3)
- Water-base Polish - See Polish (3)
- Water Conditioner - See Water Softeners (1)
- Water Hardness (1)
- Water Softeners (1)
- Wax - See Polish (3)
- Whiting (3)
- Wood Bleach - See Oxalic Acid (3)

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