



## Household Guide to Environmentally Safe Cleaning Products

### **Our Organization**

The Center for the Development of Recycling (CDR) is a university-based, non-profit, environmental research and service organization at San Jose State University (SJSU). Located in the Department of Environmental Studies and affiliated with the SJSU Research Foundation, faculty-managed students work on environment-related projects for businesses, government agencies, consultants, and non-profit organizations.

In 1991, CDR established a recycling hotline bridging personnel and equipment resources of SJSU with Santa Clara County and its 15 cities, providing recycling information services to County residents and businesses. RecycleStuff.org was added in 1999. Both the hotline and website are operated by faculty-managed student service-learning staff.

### **Risks Associated with Traditional Cleaners**

Common problems associated with household cleaning products are irritation to eye, nose, and throat; damage to the central nervous system and kidneys, and an increased risk of cancer (EPA, 2009). With 80% of pesticide exposure occurring indoors (EPA, 2009), reducing exposure to hazardous cleaning products can reduce risk.

Reducing exposure can also reduce risk to the environment. Pollutants in drainage water can lead to water contamination and wildlife death (Hughes, 2004). Secondary pollutants can be a problem if products are accidentally mixed and absorbed into the body (Nazaroff & Weschler, 2004).

Some common household products associated with hazardous waste are antifreeze, batteries, drain cleaners, electronic waste, glue and adhesives, household and oven cleaners, pesticides, and pool cleaners. If a product is labeled “danger,” “poison/toxic,” “corrosive/acid,” “reactive/explosive,” “flammable,” “environmental hazard,” or “caution/warning” – it is likely hazardous and poses a threat to environmental and human health.

### **Household Guide to Environmentally Safe Cleaning Products**

This guide is for those who strive to reduce exposure to toxic materials. It contains recipes for making home-made cleaners with alternative ingredients and information about environmentally safe household cleaners.

### Common Ingredient List:

- Borax
- Lemon (juice)
- White Vinegar
- Vodka
- Water
- Baking Soda
- Liquid Castile Soap (soap made from vegetable oil, not animal fat or synthetic substances).
- Salt
- Hydrogen
- Peroxide
- Club Soda

**Fragrance:** Essential plant oils can be added to cleaners to enhance the perception of cleanliness.

## House Cleaners

### All-Purpose Cleaner

Mix *1/4-cup vinegar, 1/8 cup baking soda (or 2 teaspoons borax), 1 liter of water.* Good for cleaning water deposit stains on shower stall panels, bathroom chrome fixtures, windows, bathroom mirrors, etc.

### Window Cleaner

Mix *1/4-1/2 teaspoon liquid detergent, 3 tablespoons vinegar, 2 cups water,* and pour into a spray bottle. Shake well.

Option 2:

Mix juice from *one fresh lemon, 2 cups water or club soda, 1/2 teaspoon peppermint essential oil* (optional), and *1 teaspoon cornstarch.* Shake well.

Option 3:

Mix *8 parts water and 1 part vinegar.* Scrub and wipe with newspaper.

### Bleach

Use *vinegar or baking soda* as a substitute for bleach. Be aware that this can cause color fading

### Dishwasher Detergent

Mix *2 tablespoons baking soda and 2 tablespoons borax* and put mixture in dishwasher.

### Oven Cleaner

Mix equal parts of *castille soap, borax and water.* Apply mixture and let set for 20 minutes. Scrub with mixture of *baking soda and salt.*

## Homemade Glues

Mix *4 tablespoons wheat flour, 6 tablespoons cold water, 1 1/2 cups boiling water.* Blend flour into enough cold water to make a smooth paste. Boil water and stir into flour mixture until mixture is translucent. Use when cold.

## Laundry Detergent

Mix *1 cup Ivory soap (or Fels Naptha soap), 1/2 cup washing soda, and 1/2 cup borax.* Use 1 tablespoon for light loads or 2 tablespoons for heavy loads.

- Option 2:

Mix *1/4 cup clay powder, 2-3 tablespoons essential oil of choice (optional), 13 cups borax, 12 cups baking soda, 4 cups sodium lauryl sulfate* with a mix of *clay powder and essential oil* in a 2-3 gallon pail. Use 1 cup of laundry powder per load.

## Carpets and Stains

Mix equal parts *white vinegar and water* in a spray bottle. Spray directly on stain, let sit for several minutes, and clean with a brush or sponge using *warm soapy water.* For a heavy-duty carpet cleaner, mix *1/4 cup each of salt, borax and vinegar.* Rub paste into carpet and leave for a few hours then vacuum.

### Carpet Deodorizer

Sprinkle *baking soda* several hours before vacuuming. \*Several pounds of baking soda are required for a ten-by-ten room.

### All-purpose Spot Remover

Dissolve *1/4 cup borax in 2 cups cold water.* Sponge it on and let it sit until dry. Wash with soap and water to completely remove spot. Works well on blood, chocolate, coffee, mildew, mud, and urine.

### Pet Stains

Soak stained area in warm *soapy water.* Sponge with equal parts of *water and white vinegar.* Blot dry.

## Air Freshener

Set *potpourri or fresh oranges (citrus works well) with cloves (cinnamon sticks are also an option)* in a dish.

- Option 2:

To absorb odors, place bowls of *vinegar, or baking soda* around the house. Be sure to keep them out of the reach of children and pets! To make the air more fragrant, use *essential oils* or place *herbs in boiling water.* Let the boiling herbs cool a little and put it out in a bowl. You can also add *salt* to discourage the growth of fungus.

- Option 3:

Set a sliced *onion* on a plate in center of room for 12 - 24 hours. This method can be used for deodorizing garages and basements.

## House Cleaners, Continued

### **Disinfectant**

Mix 2 teaspoons borax, 4 tablespoons vinegar and 3 cups hot water. For stronger cleaning power add 1/4-teaspoon liquid castile soap. Wipe on with dampened cloth or use non-aerosol spray bottle.

### **Marks on Walls and Painted Surfaces**

Most ink spots, pencil, crayon or marker spots can be cleaned from painted surfaces using baking soda applied to a damp sponge. Rub, wipe and rinse.

### **Wood**

Apply a thin coat of 1:1 vegetable oil and vinegar. Rub in well.

## Bathroom

### **Mold**

Mix 1 part hydrogen peroxide (3%) with 2 parts water in a spray bottle and spray on areas with mold. Wait at least one hour before rinsing.

- Option 2:

Add 2 teaspoons Tea Tree oil and 2 cups water to a spray bottle. Shake to blend and spray on problem areas. Do not rinse after.

### **Creamy Soft Scrubber**

Pour 1/2 cup of baking soda into a bowl and add enough liquid detergent to make a foamy texture. Scoop the mixture onto a sponge and wash it onto the surface.

\*Add 1 teaspoon of vegetable glycerin to the mixture and store in a sealed glass jar, to keep the product moist.

### **Toilet Bowl Cleaner**

Mix 1/4-cup baking soda and 1-cup vinegar, pour into basin, and let it set for a few minutes. Scrub with brush and rinse.

- Option 2

Mix 2 parts borax and 1 part lemon juice. Scrub with brush and rinse.

- Option 3

Mix 1/2 teaspoon sodium lauryl sulfate, 2 tablespoons baking soda, 2 tablespoons vinegar, 1 teaspoon orange essential oil or 1 teaspoon grapefruit essential oil (optional), 2 cups water. Vinegar and baking soda will foam when mixed. Let mixture stand for 10 minutes before pouring into a spray bottle.

### **Drain Cleaner/Opener**

Mix 1/4 cup vinegar and 1/4 cup baking soda. Pour mixture down drain. Let stand for a few minutes and rinse with boiling water. Repeat.

## **Soap Film/Mildew on Shower Doors and Curtains**

Pour full-strength vinegar on the shower curtain or shower door to remove soap film and mildew

## Kitchen

### **Chopping Block Cleaner**

Rub a slice of lemon across a chopping block to disinfect the surface. For tougher stains, squeeze some of the lemon juice onto the spot and let sit for 10 minutes, then wipe.

### **Coffee and Tea Stains**

Stains in cups can be removed by applying vinegar to a sponge and wiping. To clean a teakettle or coffee maker, add 2 cups water and 1/4 cup vinegar to a pot and bring to a boil. Let cool, wipe with a clean cloth, and rinse thoroughly with water.

### **Plastic Tupperware**

Soak Tupperware overnight in warm water and baking soda, then rinse.

## Metal

### **Aluminum**

Use a soft cloth and clean with a solution of cream of tartar and water.

### **Brass or Bronze**

Mix lemon and baking soda or vinegar and salt. Dip a soft cloth in the solution and polish.

### **Mold and Mildew**

Use white vinegar or lemon juice. Apply using a sponge or soft scrubber.

### **Silver Polish**

Put a sheet of aluminum foil into a plastic or glass bowl. Sprinkle the foil with salt and baking soda. Fill the bowl with warm water. Soak the silver in the bowl and the tarnish will transfer to the foil. Finally, dry and buff the silver.

## Car Care

### **Car Wash**

Use liquid castile soap as needed to a bucket of water for preferred "suds" consistency. Proceed normally.

### **Window Cleaner**

Add full strength vinegar to a spray bottle. Spray the windows and let sit for a few minutes. Wipe clean with newspaper.

## Car Care, Continued

### **Tire Cleaner**

Mix *baking soda* and *water* together to form a paste. Work the paste into the tires with a scrub brush. Let it sit for a few minutes and rinse off. Also can be used to remove grease.

### **Chrome Cleaner**

Mix equal parts of *vinegar* and *water* into a spray bottle. Spray onto wheel. Work the solution in and clean with a sponge or rag.

\*Caution – vinegar should not be used on aluminum alloy.

### **Carpet and Upholstery Cleaner**

Mix *white vinegar* and *baking soda* into a paste like consistency. With a scrub brush, scrub the solution into the dirty carpet areas. Allow the solution to dry and vacuum up any remains. If the stain remains, proceed again.

### **Leather Wash**

Mix  $\frac{1}{4}$  cup of *vodka*,  $\frac{1}{4}$  cup *distilled vinegar*, and 3 to 4 drops of *jojoba olive oil* in a container. Shake to blend. Pour mixture onto a soft rag and rub into leather. Do not rinse.

### **Interior Cleaner**

Mix equal parts of *white vinegar* and *water* into a spray bottle. Spray onto vinyl, plastic, wood, or leather surfaces. Allow it to soak, then wipe dry with a clean rag.

### **Interior Protectant**

Mix 2 parts *olive oil* to 1 part *lemon juice* into a spray bottle or bowl. Soak mixture on to a clean cloth, then wipe into vinyl or plastic surfaces. Wipe off any excess.

\*Caution – oil is slippery; do not put it on the steering wheel, pedals, or anything else that has to be handled to properly drive the vehicle.

## Pests

### **Insect Repellent From Plants**

Finely chop 12 *garlic cloves* into four oz. of *mineral oil*. Allow it to soak for two days and strain. Then add 4 drops of *dishwasher fluid* and add  $\frac{1}{2}$  cup of *water* to a spray bottle.

- Option 2:

*Marigold* plants produce a scent that repels pests.

### **Ant Repellent**

Sprinkle *chili powder* or *sage* around problem area.

### **Mosquito Repellent**

*Mint* produces a scent that deters mosquitoes and aphids.

### **Snail Repellent**

Bury a bowl to ground level and fill with *beer*. The snails will be trapped in it and can then be disposed. Snails will not cross a copper barrier.

### **Body Insect Repellent**

Mix 2 *tablespoons* of *citronella*, *rosemary*, *geranium*, and *eucalyptus* essential oils with  $\frac{1}{2}$  cup of *olive oil*. Dab onto skin.

## Beauty Products

(Retrieved from LA County, 2003)

### **Hair Dye Alternatives**

-Lighten hair: Rinse hair with mixture of 1 *tablespoon lemon juice* and 1 *gallon warm water*

-Red tones: Rinse with strong tea of *rosehips* or *cloves*, or use *strong black coffee*.

-Cover gray:  $\frac{1}{2}$  cup *dried sage* and 2 *cups water*

Boil sage for thirty minutes, and then steep for several hours. Apply tea to hair after it cools. Allow to dry, then rinse and dry hair again. Apply weekly until you have the shade you want and then monthly to maintain color.

-Darken hair: Rinse hair with a *strong black tea* or *black coffee*.

### **Hair Shampoo Alternatives**

-For everyday shampoo, grate *castille bar soap* and mix it with *water* in a blender or food processor. Blend 1 cup of the castille solution with *olive oil*, *avocado* or *almond oil* and *distilled water*.

-Dandruff remedy: Wet hair and rub in a handful of dry *baking soda*, then rinse.

### **Hair Spray**

Place 1 *chopped lemon* and 2 *cups of hot water* in a pot, and boil until only half remains. Cool and strain. Place in a fine spray bottle and test on hair. If too sticky, add more water. Store in the refrigerator, or add 1 *ounce vodka* per cup of hair spray as a preservative (with vodka, hair spray may be stored unrefrigerated for up to two weeks).

### **Skin Freshener/Soother**

Add *pulp-free aloe vera juice* to *water* in a spray bottle and spritz arms, legs, back and face.

### **Deodorant**

Pat *baking soda* under arms after showering. Skin should be slightly damp, but not wet. If too abrasive, mix with *cornstarch* or *white clay*.

## How to Identify Environmentally Friendly Cleaning Products

### **Basic definitions:**

The meaning of words is very important. Here are some common terms and definitions.

- **Biodegradable:** the ability for a solid or liquid substance to break down into its fundamental parts by exposure to microorganisms, sunlight, and water. Therefore, the product will not accumulate since it breaks down. If a substance does not biodegrade, it will become more concentrated, leading to potentially toxic levels – a safe chemical can be harmless, but as it becomes more concentrated or mixes with other chemicals it can become toxic and unsafe.
- **Compostable:** mainly synonymous with biodegradable except compostable refers to solids rather than liquids.
- **Natural:** an item occurring without human interaction or modification – generally implies positive action.
- **Naturally derived:** a substance that requires minimal processing to be used.
- **Environmentally Friendly:** minimal or no harm to the health of the environment or organisms/ecological processes within the environment.

### **How to be sure a product is environmentally friendly**

Phrases stating that a product is “green” or “environmentally friendly” should be verified by a third party – this helps to insure a non-biased assessment of how “friendly” a product truly is. Here are some third party certifiers/verifiers:

Green Good Housekeeping Seal (GGHS) studies a wide range of factors that impact environmental and human health.

<http://www.goodhousekeeping.com/product-testing/history/introducing-green-good-housekeeping-seal>

Green Seal has been operating since 1989 and uses scientific data to rate products

<http://www.green Seal.org>

Ecologo addresses the entire life cycle of products

<http://www.environmentalchoice.com/>

Design for the Environment DFE (Environmental Protection Agency) attaches a label to products that follow environmentally and human health friendly methods.

<http://www.epa.gov/dfe/>

Greenstar Certified endorses products, businesses, and even cities that are leaders in energy conservation, recycling, and environmental friendly actions.

<http://www.usenergycouncil.com/dyncat.cfm?catid=1181>

Greenguard studies emission standards and certifies low emitting products.

<http://www.greenguard.org/index.aspx>

Greenblue is focused on redesigning industry to sustainable practice, with practicality in mind.

<http://www.greenblue.org/>

Hospitals for a Healthy Environment provide information about health and sustainability.

<http://www.h2e-online.org/library.cfm>

The Healthy Schools Campaign promotes healthy school food

<http://www.healthyschoolscampaign.org/>

### **Some ingredients to consider avoiding**

- Animal ingredients
- Artificial colorants
- Flavorings and scents
- Artificial preservatives (EDTA, formaldehyde, parabens, etc.)
- Ethylene glycol
- Gluten
- Peroxides
- Phthalates

## How to spot environmentally friendly products

- Products should be made from plant and mineral based ingredients, not petroleum and synthetic materials.
- The most efficient methods of water use in the manufacturing of the products should be incorporated.
- Products should be manufactured as energy efficiently as possible – renewable energy sources like wind and solar.
- Packaging should be reduced as much as possible – this helps eliminate resource use for shipping and storing.
- Products should not be tested on animals.
- Resources used for the product in question should be derived via sustainable methods (recycled, reused, and certified ingredients/packaging).
- Ingredients should be clearly labeled on the product containers and safety of the product should be noted.

## Some “environmentally friendly” cleaning products manufacturers

Seventh Generation:	<a href="http://www.seventhgeneration.com">www.seventhgeneration.com</a>
Greener Choice OxiBrite:	<a href="http://www.agreenercanada.ca/">www.agreenercanada.ca/</a>
Ecover:	<a href="http://www.ecover.com/us/en/">www.ecover.com/us/en/</a>
Mrs. Meyer’s Clean Day:	<a href="http://www.mrsmeyers.com/">www.mrsmeyers.com/</a>
J.R. Watkins:	<a href="http://www.jrwatkins.com/">www.jrwatkins.com/</a>
Nature Clean:	<a href="http://www.naturecleanliving.com/">www.naturecleanliving.com/</a>
Method:	<a href="http://www.methodhome.com/">www.methodhome.com/</a>
Simple Green Naturals:	<a href="http://www.simplegreen.com/products_naturals_family.php">www.simplegreen.com/products_naturals_family.php</a>
Shaklee:	<a href="http://www.shaklee.com/">www.shaklee.com/</a>
ECOS – Earth Friendly Products:	<a href="http://www.ecos.com/">www.ecos.com/</a>

These companies offer a wide range of soaps, cleaners, polishes, disinfectants, baby products, scrubs, degreasers, sealers, car care products and a variety of other choices.

### Local Suppliers:

Clorox “Green Works” is a common product available at these retailers:

Safeway, Target, Riteaid, Lucky, Savemart, Walgreens, FoodMaxx, CVS, Nob Hill, and Lowes.

While the locally available choices may not have a broad range of environmentally friendly products, the cleaners offered are enough to do basic household chores.

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