WAGES' EFC™ Product Screen

WAGES has developed an Eco-Friendly Cleaning (EFC™) Product Screen based on guidelines established by such leaders in the field as Debra Lynn Dadd, author of *Home Safe Home*, the Washington Toxics Coalition, and Green Seal. With the assistance of cooperative members of Emma's Eco-Clean and Eco-Care Professional Housecleaning, we tested it on products housecleaner's currently use. Each of WAGES' associated cooperatives has approved it for use in selecting new products in the future.

As you know, a screen is something that filters out what you don't want, from what you do, like a screen in a drain, or a filter for your coffee. The EFC™ Product Screen includes both **standards** (what you must do to pass the screen) and *recommendations* (what you might choose to do, or could do if you had more time, information, or resources).

Following is our recommended way to test housecleaning products for their impact on human health and the environment:

EFC™ Product Screen

Human Health Effects

Standard

- **Do not use products that are harmful to our clients or us.**

Environmental Effects

Standards

- **All products must be biodegradable, under aerobic aquatic conditions, such as a river, lake, or ocean.**
- **The products shall not contain disposable towelettes or other disposable wiping materials such as disposable mops, nor shall disposable products such as paper towels be used.**

Recommendations

- *Choose products that are effective in cold water.*
- *Phosphates and phosphonates shall not be present in the product.*
- *Product packaging shall be (in order of preference):*
  - *No packaging*
  - *Minimal packaging*
  - *Reusable packaging*
  - *Recycled or recyclable material*
- *Products shall not be toxic to aquatic life.*
- *Products shall be reviewed "cradle-to-grave" using lifecycle analysis.*

Product Performance

Standard

- **All products must clean effectively.**

Recommendations

- *Choose concentrated products over more diluted products.*
- *Choose multi-purpose products over single-purpose products.*

Animal Ingredients and Testing

Recommendation

- *Products should not be tested on animals or contain animal ingredients.*

EFC™ Product Screen Check List

Required standards are in **boldface** type, others are optional recommendations in *italics* that you may wish to do, or can only do in the future, because of time, information or resource limitations.

All shaded boxes must be checked √ in order to pass the EFC™ Product Screen.

PRODUCT NAME _____

PASS		COMMENTS
	Human Health Effects	
	Do not use products that are harmful to our clients or us.	
	Environmental Effects	
	All products must be biodegradable, under aerobic aquatic conditions, such as a river, lake, or ocean.	
	The products shall not contain disposable towelettes or other disposable wiping materials such as disposable mops, nor shall disposable products such as paper towels be used.	
	Choose products that are effective in cold water.	
	Phosphates and phosphonates shall not be present in the product.	
	Product packaging shall be (in order of preference): *No packaging, minimal packaging, reusable packaging, or packaging made of recycled or recyclable material.*	
	Products shall not be toxic to aquatic life.	
	Product shall be reviewed "cradle to grave" using lifecycle analysis.	
	Product Performance	
	All products must clean effectively.	
	Choose multi-purpose products over single purpose products.	
	Choose concentrated products over more diluted products.	
	Animal Ingredients and Testing	
	Products should not be tested on animals or contain animal ingredients.	

Human Health Effects

EFC™ STANDARD: Do not use products that contain ingredients that are harmful for our clients or us.

In order to determine if the product contains ingredients that are harmful to human health, follow these steps.

Step One

→ Read the warning label on the product.
If the warning label says "danger", or "poison" do not use the product.
If the warning label says "warning" or "caution" it is possibly acceptable.

ABOUT WARNING LABELS ON CLEANING PRODUCTS

Cleaning products are regulated by the Consumer Product Safety Commission under the 1960 Federal Hazardous Substances Labeling Act. This act requires by law that cleaning products with adverse health effects must carry warnings on their labels. If a cleaning product contains a chemical that is hazardous, it must by law specify the hazard. There are four signal words used on labels:

DANGER (or POISON)	most harmful
WARNING	
CAUTION	less harmful

EFC™ is accepting products labeled "warning" and "caution" because in general these dangers are minimal and can be eliminated by using protective gear. Our research has shown that these words are used inconsistently as indicators of degree of possible harm, so each product should be evaluated carefully.

Step Two

→ Look for the word "nontoxic" on the label.

ABOUT "NONTOXIC"

The word "nontoxic" is used on cleaning products to indicate that the product is safe to use. However, there are no laws regulating the use of this word, so there is no generally accepted definition.

Finding the word "nontoxic" on the label can be a good first clue that the product is safe, however, still check the ingredients and the MSDS (see below), as there still may be toxic ingredients, but diluted down to pass toxicity tests.

Step Three

→ Check the label for product ingredients. They may not be listed, as law does not require them. Often, however, the safer, more natural products do list their ingredients. If there are no ingredients listed, contact the manufacturer to see if they will give you an ingredient list.

Step Four

→ Obtain the Material Safety Data Sheet (MSDS) for the product. Because we are concerned with eco-friendly cleaning, we use MSDS sheets to find out what toxic chemicals are present in the cleaning products we are evaluating.

ABOUT MATERIAL SAFETY DATA SHEETS

A Material Safety Data Sheet (MSDS) is designed to provide both workers and emergency personnel with the proper procedures for handling or working with that substance. It is required by the U.S. Occupational Safety and Health Administration (OSHA), a federal government agency in the U.S. Department of Labor, whose primary goals are to save lives, prevent injuries and protect the health of America's workers.

What an MSDS contains

- physical data (melting point, boiling point, flash point [the point at which the substance catches on fire] etc.)
- toxicity
- health effects
- first aid
- reactivity
- storage
- disposal
- protective equipment

How to obtain an MSDS
There are two easy ways to get a MSDS for cleaning products.

If you have access to the Internet, there are over 85 free sites where you can get product-specific MSDS's online (see Resources). If you don't have your own computer, most public libraries now offer free Internet access.

You can also get MSDS sheets from the manufacturer. They are required by law to give you one. Call their customer service department to request an MSDS. The manufacturer's city is always on the label—you can call Information and get their phone number. Sometimes a toll-free number is given on the label for consumer questions.

Limitations of MSDS
MSDS sheets are useful for evaluating which products are toxic, but not very good for evaluating which products are safe. This is because manufacturers are not required to list toxic ingredients that are present in concentrations less than 1% of the product, and they are not required to list ingredients that we might consider to be toxic, but which are not on official government lists of toxic ingredients. So use a MSDS to root out hazardous products, but don't rely on them to verify that a product is safe.

→ Read the MSDS.
How to read a MSDS
MSDS sheets are unfortunately often very difficult to read, partly because their formats tend to vary. They may also contain errors. Nonetheless, they usually convey the same basic kinds of information.

MSDS sheets are designed for workers who use these toxic chemicals on a regular basis, and therefore contain a lot of safety information you might find useful should you ever need to use the product. Because your purpose in reading this document is to find the information on the health effects, that is what we will focus on here. You can find a sample of the full MSDS for 409 All Purpose Cleaner in Appendix A.

Most importantly, look for the following sections on the MSDS that will help you decide if the product is safe for you to use (they may not be numbered and the information may be in a slightly different format).

Chemical Product And Company Identification
Here you will find the contact information for the manufacturer, the name of the chemical or product, other names and trade names for the substance, and what type of chemical it is.

Hazards Identification
This is one of the most important sections for you, because it contains the information on the health effects associated with using this product.

The major health hazards are given and the potential health effects, which include the effects of short term exposure through inhalation, skin contact, eye contact, and ingestion, the effects of long term exposure, and the capacity for the substance to cause cancer.

Even though some products may be less toxic than others, it is still important to know that many are eye or skin irritants and it is good to be aware of first aid measures and safety precautions.

First Aid Measures
This section tells what to do in case you are exposed to this substance. Even if you are following less-toxic cleaning procedures, reading the first aid measures will give you an idea of the toxicity of the product.

Accidental Release Measures
Like the section on first aid measures, reading about the measures will give you an idea of how toxic the product is.

Handling and Storage
Again, even if you are using less-toxic cleaning methods, reading about safe handling and storage procedures will give you an idea of the toxicity of the product.

Exposure Controls, Personal Protection
This is an important section for determining toxicity because it gives information on exposure limits and what kind of protection you may need while using the product.

Toxicological Information
Be sure to look at this section for health effects.

Ecological Information
This section explains how toxic the substance is to various species in the environment.

Disposal Considerations
This section shows toxicity by indicating if the substance needs to be disposed of in a special way.

Step Five

→ Compare the chemicals found on the ingredient list and the MSDS with the following "Top 20" list of toxic chemicals commonly found in cleaning products.

If the product contains any of these chemicals, do NOT use it.
Note: The health effects listed below do not account for exposure type, dose or frequency.

TOP 20 TOXIC INGREDIENTS IN CLEANING PRODUCTS

acrylonitrile — Suspected human carcinogen. Can also cause breathing difficulties, vomiting, diarrhea, nausea, weakness, headache, and fatigue.

alkylphenol ethoxylate (APE) surfactants (non-ionic) — A large group of chemicals which are endocrine disruptors and have potential links in animals to tumors, cancers, and deformities.*

ammonia (including ammonium chloride, ammonium hydroxide, benzalkonium chloride, and quaternary ammonium compounds) — These substances cause irritation of eyes and respiratory tract, conjunctivitis, laryngitis, tracheitis, pulmonary edema, pneumonitis, and skin burn.

benzene — Carcinogen. Can also cause drunk-like behavior, lightheadedness, disorientation, fatigue, and loss of appetite.

butoxyethanol – Suspected cardiovascular/blood, development, gastrointestinal/liver, kidney, neuro, respiratory skin/sensory organ toxicant.****

chlorine (including chlorine dioxide and sodium hypochlorite) — Pain and inflammation of the mouth, throat, and stomach: erosion of mucous membranes, vomiting, severe respiratory-tract irritation, pulmonary edema, and skin eruptions. Clinical observation by medical doctors has shown that reactions to chlorine also can occur from chlorine fumes rising from hot or cold running tap water, including such symptoms as red eyes, sneezing, skin rashes, and fainting or dizziness while taking a shower or washing dishes.

formaldehyde — Suspected human carcinogen. Has been related to birth defects and genetic changes in bacteriological studies. Symptoms from inhalation of vapors include coughing, swelling of the throat, watery eyes, respiratory problems, throat irritation, headaches, rashes, nausea, nosebleeds, bronchial constriction, and asthma attacks.

glycol ether – suspected cardiovascular/blood, developmental, gastrointestinal/liver, kidney, neuro, respiratory, skin/sensory organ toxicant.****

isopropanol – suspected cardiovascular/blood, developmental, gastrointestinal/liver, kidney, neuro, respiratory, skin/sensory organ toxicant.****

kerosene — Intoxication, ringing in the ears, burning sensation in chest, headaches, nausea, weakness, loss of coordination**.**

napthalene— Suspected human carcinogen. Can cause skin irritation, headache, confusion, nausea and vomiting, excessive sweating, and urinary irritation.

nitrobenzene— Bluish skin, shallow breathing, vomiting.

pentachlorophenol — Carcinogen. Can also cause central nervous system depression, lightheadedness, dizziness, sleepiness, nausea, tremor, and loss of appetite, disorientation, and liver damage.

perchloroethylene — Inhaling fumes can cause cancer, liver damage, depression of the central nervous system, lightheadedness, dizziness, sleepiness, nausea, loss of appetite, and disorientation.

petroleum distillates —not a single chemical, but rather thousands of chemicals of varying toxicity that are made by distilling petroleum. Some of them are suspected to be toxic to kidneys, nervous system, respiratory system, and skin.**

phenol — Suspected human carcinogen. Causes skin eruptions and peeling, swelling, pimples, hives, burning, gangrene, numbness, vomiting.

sodium hydroxide—An extremely corrosive material that can eat right through skin. Even a single dry crystal that falls on wet skin can cause damage. The exception is when sodium hydroxide is combined with fat in soap making. The chemical reaction neutralizes the sodium hydroxide, making the soap safe to use.

sodium lauryl sulfate (including sodium laureth sulfate, ammonium lauryl sulfate, sodium myreth sulfate, and others) — linked to harming children's eyes, contributes to hair loss or thinning. Suspected gastrointestinal/liver toxicant.***

trichloroethylene — Suspected human carcinogen. Also causes genetic mutations. Symptoms of exposure include gastrointestinal upset, central nervous system depression, heart and liver malfunctions, paralysis, nausea, dizziness, fatigue, and psychotic behavior.

xylene — Nausea, vomiting, excessive salivation, cough, hoarseness, feelings of euphoria, headaches, giddiness, vertigo, ringing in the ears, confusion.

Source: Dadd, Debra Lynn, *Home Safe Home* (Tarcher/Putnam, 1997) **except**

* Washington Toxic Coalitionhttp://watoxics.org/

** http://www.scorecard.org/chemical-profiles

*** RTECS

**** Aguilar, Azalea, "*Clean House, Clean Air…*" (WAGES 2001)

OTHER SUGGESTED INGREDIENTS TO AVOID

Though these ingredients are not as toxic as the Top 20, they are commonly found in cleaning products and can have health effects, particularly to those who are sensitive. While you may not find these ingredients listed on the label or on the MSDS, you can clearly identify color and scent simply by looking at and smelling the product.

Aerosol propellants — Heart problems, birth defects, lung cancer, headaches, nausea, dizziness, shortness of breath, eye and throat irritation, skin rashes, burns, lung inflammation, and liver damage.

Color (artificial) — No laws exist regulating the type of dye that may be used to color cleaning products, so it is unknown exactly what dyes are used. Many of the colors that can be used in foods, drugs, and cosmetic products (FD&C) colors are known to be carcinogenic.

Detergents — Detergents are responsible for more household poisonings than any other substance. Exposure causes skin problems, flu like and asthmatic conditions, severe eye damage, and severe upper digestive tract damage if ingested.

Fragrance (artificial) — "Fragrance" on a label can indicate the presence of up to four thousand separate ingredients that are not listed at all. Symptoms reported to the FDA include headaches, dizziness, rashes, skin discoloration, violent coughing and vomiting, and allergic skin irritation. Clinical observation by medical doctors has shown that exposure to fragrances can affect the central nervous system, causing depression, hyperactivity, irritability, inability to cope, and other behavioral changes.

Source: Dadd, Debra Lynn, *Home Safe Home* (Tarcher/Putnam, 1997)

If you find an ingredient on the MSDS that is not in the Top 20, you can look for health effect information on other parts of the MSDS. For more information on health effects go to http://www.scorecard.org/chemical-profiles/, and enter the CAS# of the ingredient to find the health effects.

ABOUT CAS

The CAS (Chemical Abstracts Service) Registry Number is an identifier that defines a unique substance, regardless of its name. It can show, for example, that acetone and dimethyl ketone are actually the same substance, because they both have the same number.

The CAS# is given right after the name of the chemical in the Hazards Identification section. If you want to know the health effects of ingredients on the ingredient list that are not on the MSDS, and you don't have the CAS#, you can go to the same site, http://www.scorecard.org/chemical-profiles/, and enter the name of the ingredient.

Step Six

You will need to decide for yourself if you consider the product to be safe enough. If you have found that the product has potential toxic dangers, then you need to decide if the product might be toxic for you.

Whether or not a particular substance creates a toxic effect in you depends on:

- the quantity of the substance you are exposed to;
- the strength of the substance (a small amount of one substance might be much more harmful than a large amount of another);
- the method of exposure (ingestion, inhalation, or skin absorption) — some substances are safe to get on your skin, but not to inhale. Others are dangerous regardless of how you are exposed;
- the frequency of exposure—many substances have a cumulative effect in the body and do not cause harm until a certain concentration is reached through repeated exposure; and
- your own individual tolerance for a substance.

It may be fine to use a product with known hazards if you

- use a small amount
- use it diluted
- use it only in the manner in which exposure is safe
- use it only occasionally
- use it with appropriate protective gear—gloves, goggles, and respiratory mask

While these precautions may protect your health, the manufacture and disposal of the product may still have environment effects.

Most cleaning products are designed for occasional use, by one person cleaning one home. The toxicity rating of most cleaning products, and their approval, is based on occasional exposure by one person cleaning one home. Remember, that housecleaners are exposed to cleaning products all day long, five days a week.

Environmental Effects

Environmental effects are difficult to determine because there are many aspects to consider, and much of the information you would need to make a complete assessment is not available. However, WAGES has developed the following based on information you can find.

- **EFC™ STANDARD: All products must be biodegradable under aerobic (having oxygen) aquatic conditions, such as a river, lake, or ocean or have the ability to reincorporate harmlessly into the ecosystem.**

Look first to see if the word “biodegradable” is on the label. If not, you can contact the manufacturer and ask them. If possible, obtain their response in writing. Any cleaning product that is soap-based is biodegradable. Any product that is made from natural plant or animal ingredients (such as vinegar) is biodegradable. Any product that is made from natural minerals (such as baking soda or borax) is not biodegradable, but these minerals are elements of the earth that reincorporate harmlessly into the ecosystem. All cleaning products certified by Green Seal have been certified biodegradable.

ABOUT "BIODEGRADABLE"

A "biodegradable" product has the ability to break down, safely and relatively quickly, by biological means, into the raw materials of nature.

Nature biodegrades everything it makes back into basic building blocks. By the time many resources are turned into products, however, they have been altered by industry in such a way that they are unrecognizable to the microorganisms and enzymes that return natural materials to their basic building blocks. Crude oil, for example, will biodegrade in its natural state, but once it is turned into detergent, it may not break down. Instead of returning to the cycle of life, these products simply pollute.

There are four basic questions about biodegradability:

1. The inherent biodegradability of the material. Any material that comes from nature will return to nature, as long as it is still in a relatively natural form. Therefore any plant-based, animal-based, or natural mineral-based product has the capability to rapidly biodegrade, but products made from human-made petrochemical compounds may not.

2. How long it takes for the material to actually break down. In nature, different materials biodegrade at different rates. A leaf takes approximately a year to become part of the forest floor while a large tree can take decades to completely break down. Even some natural things that do biodegrade do so slowly. When use is higher than the degradable rate, in such cases as natural phosphates like baking soda and borax, there is a problem, as more are dumped into the water than can be absorbed. The proper rate is that which is appropriate to the ecosystem.

3. What the product breaks down into. As a substance breaks down, toxic substances may be formed along the way or as the end result. In his book *The Closing Circle*, ecologist Barry Commoner gives the example of the benzene unit in synthetic detergents being converted as they biodegrade into phenol (carbolic acid), a substance toxic to fish. To be truly biodegradable, a substance or material should break down into carbon dioxide (a nutrient for plants), water, and naturally occurring minerals that do not cause harm to the ecosystem (salt or baking soda, for example, are already in their natural mineral state and do not need to biodegrade).

4. The characteristics of the environment. The type of environment a substance is in can also affect its ability to biodegrade. Detergents, for example, might break down in a natural freshwater "aerobic" (having oxygen) environment, but not in an "anaerobic" (lacking oxygen) environment such as swamps, flooded soils, or surface water sediments.

- **EFC™ STANDARD: The products shall not contain disposable towelettes or other disposable wiping materials such as disposable mops, nor shall disposable products such as paper towels be used.**

Examine the product to find out if it has any disposable applicators or parts, such as towelettes or mops. All cleaning products certified by Green Seal do not have disposable components.

ABOUT "DISPOSABLE"

"Disposable" means that something is designed to be used once or twice and then thrown away. It is better to use products that can be reused multiple times, such as cotton cleaning rags instead of paper towels, reusable mops instead of disposable mops, etc. This practice reduces the amount of products that need to be manufactured and the resources used to manufacture them, and reduces the amount of waste.

- *EFC™ RECOMMENDATION: Choose products that are effective in cold water.*

Products that are effective in cold water save the environmental cost of the energy used and pollution created to heat the water.

- *EFC™ RECOMMENDATION: Phosphates and phosphonates shall not be present in the product.*

This only applies to detergents. Usually the label states, "no phosphates". Phosphorus, a chemical element found in many minerals, is one of the key nutritional elements required by the cells of all living things. It is so vital to life that plant growth is limited by the amount of phosphorus available. It is a chemical element found in many minerals; the bones, the brain, and the nerves. When phosphorus is combined with oxygen, phosphate is produced.

Although phosphorus is necessary for plant growth, too much can destroy aquatic systems. When there are unattached or "free" particles of phosphate, in the form of inorganic phosphates, these particles are rapidly taken up by the algae and other aquatic plants. Since algae normally require such a small amount of phosphorus any excess phosphorus causes an over extensive algal bloom and accelerated growth of other plants, resulting in depleted oxygen levels. Lack of oxygen in the water causes the death of fish and other aquatic organisms. In the past, phosphorus levels in water rose to such high levels from detergent in runoff, that many waterways were threatened. Since phosphates have been removed from detergents, the situation has improved. It is likely that today's commercial products do not contain phosphates, but check for this on the label.

- *EFC™ RECOMMENDATION: Product packaging shall be (in order of preference):*

1. No packaging
2. Minimal packaging
3. Reusable packaging
4. Packaging made of recycled or recyclable material

ABOUT PACKAGING

The environmental effects of the products and package should be considered as a whole because that is how they are purchased. We are looking at them separately because sometimes less-toxic products come in environmentally damaging packaging and, conversely, toxic products are often advertised as "environmental" because their packages may, for example, contain recycled material. Because our primary focus is on the direct health and safety of housecleaners and their clients, and there are so few less-toxic products available, we don't want to exclude a less-toxic product that might need better packaging.

Packaging is not generally made by the product manufacturer, but is shipped in from a different factory. Each layer of packaging is really a separate product itself, and needs to be evaluated through the same complete life cycle as the product. When there are several parts to a package (say, a plastic holder for the product, with printed instructions, in a box, with a plastic outer wrap), each part of the package needs a separate life cycle assessment.

A lot of attention has been placed on packaging lately because of our garbage crisis. Fifty percent (by volume) of all our trash is packaging.

Our recommendation is adopted from model legislation by The Coalition of Northeastern Governors (CONEG), developed to dramatically reduce the amount of packaging entering the solid waste stream. Designed to promote efficient solid waste reduction reuse and recycling programs, the packaging waste reduction model established the hierarchy of preferred packaging guidelines that we recommend.

The best packaging materials are glass, paper and paperboard, steel, aluminum, wood and packages made of two or more of these components.

Most cleaning products come in either plastic bottles that can be recycled, or paperboard boxes that are made with recycled material.

- *EFC™ RECOMMENDATION: Products shall not be toxic to aquatic life.*

Determine if the product is toxic to aquatic life. This will not be on the label. All cleaning products certified by Green Seal have been certified safe for aquatic life.

ECOTOXICITY TEST FOR AQUATIC LIFE

While we cannot test each product for ecotoxicity, the following chart can give us a good idea of the kinds of products that are particularly harmful to aquatic life. California Department of Fish and Game (Region 3) tested the toxicity of common consumer products that end up in our waterways using a test called the LC^{50} (Lethal Concentration 50). This test reveals the concentration in water of any substance that would kill half the aquatic organisms in ninety-six hours (this is actually a theoretical number—they find the concentration at which all die and at which none die, then calculate the concentration at which half die). Following are the results of some of the products they've tested, listed from most toxic to least toxic. Note that laundry detergents are much more toxic to fish than soap. It's not surprising that household bleach was the most toxic thing they tested since this is the same chlorine used to kill all the bacteria in our municipal water supplies. Hydrogen peroxide, though it can have some health effects on humans, is less toxic than detergent, because it breaks down in water to simple hydrogen and oxygen, the very elements from which water is made.

PRODUCT	LC^{50} (most toxic)
Household Bleach	4 ppm
"Natural Solvent" Cleaners and Degreasers	31 ppm
Nokomis All Purpose Cleaner Concentrate	35 ppm
All Laundry Detergents	44 ppm
Sunlight Dish Detergent	49 ppm
Amway L.O.C. (Liquid Organic Cleaner)	315 ppm
Hydrogen Peroxide (3% solution)	1,675 ppm
Tone Bar Soap	10,000 ppm (least toxic)

ppm= parts per million

EFC™ RECOMMENDATION: Products shall be reviewed "cradle-to-grave" using lifecycle analysis.

Look at "cradle-to-grave" impact of the product, from resource extraction to final disposal. You will not find this information on the label, and you will probably not be able to get it from the manufacturer at this time. An example of the lifecycle analysis of

baking soda is in Appendix C. It is our intention for all EFC™' recommended products to be reviewed with full lifecycle analysis as this becomes practical.

THE LIFE CYCLE OF A PRODUCT

While to document every little detail that goes into the making of a product is incredibly complex, the basic structure of a product life cycle analysis (LCA) is fairly simple to chart. (See Appendix B)

There are two simple concepts at work. The first is to measure the inputs and outputs that go into a product system. For example, if you were baking a cake, you would input eggs, milk, sugar, and other ingredients into a bowl, use energy through the electric mixer to process the ingredients and energy in the oven to bake the cake, and output a cake and some dirty dishes (that require hot water, electricity and soap to clean!). Manufacturing a product is a very similar but more complex process.

The other factor is the different stages a product goes through starting with the extraction of the raw materials from the earth and ending with the disposal of the product after use. Each of these steps has inputs and outputs, and each must analyzed for its environmental effects:

- Raw materials acquisition
- Manufacturing
- Processing of raw materials into ingredients
- Manufacture of ingredients into products (including energy use & wastes)
- Packaging
- Transportation
- Use and maintenance of the product by the purchaser
- Disposal

By putting these two concepts together, LCA becomes nothing more than measuring and analyzing the environmental effects of the inputs and out puts at each stage of the product life cycle.

To determine the real environmental effect of a product, each and every one of these steps must be evaluated, and for each step there are many sub questions. Right now there are few, if any products that are completely, 100 percent environmentally safe in every way, and that 100 percent environmental safety may never be achieved. However, what can be achieved are products that are significantly safer for the environment— products that are taking steps in the right direction, products that are doing more good than destruction.

Product performance

- **EFC™ STANDARD: All products must clean effectively.**

Test the product yourself to see if it works. Consider how much of the product needs to be used to be effective—try starting with the least amount.

- *EFC™ RECOMMENDATION: Choose multi-purpose products over single-purpose products.*

It is more efficient to clean with two bottles, for example, than twenty.

- *EFC™ RECOMMENDATION: Choose concentrated products over more diluted products.*

The only difference between the concentrated and the more diluted product is that the more diluted is sold in a bigger bottle and contains mostly water. You will save costs by buying concentrated products.

Animal Ingredients and Testing

- *EFC™ RECOMMENDATION: Products should not be tested on animals nor contain animal ingredients.*

The issue of animal rights is a sensitive one, and for many people it is a factor in choosing products. Whether or not it is the personal preference of the housecleaner, it is possible that some clients that are interested in the health and environmental aspects of eco-friendly cleaning will also be concerned about animal rights. Such clients may inquire as to whether or not the products have been tested on animals or contain animal ingredients, so it would be worthwhile to know the answer to this question, even if the cleaner chooses to use products that have been tested on animals or contain animal ingredients.

The term "cruelty-free" is frequently used to indicate products that have not been tested on animals, but in practice the use of this term is inconsistent and can be misleading. There are products, for example, which call themselves "cruelty-free," yet they contain FD&C dyes from coal tar that in the past have been tested on animals and found to be carcinogenic. Upon inquiry, manufacturers have stated that the products themselves hadn't been tested on animals, but that the ingredients used in the products might have been tested on animals at some time in the past. In fact, virtually all ingredients have been tested on animals at some time or another.

Many companies that care enough about health and environmental concerns to make less-toxic products also care about animal issues, so it is likely that many of the products that pass the EFC™ Product Screen for health and environmental effects will also not be

tested on animals and not contain animal ingredients. Look on the label for the words “No animal testing” and “No animal ingredients” and a seal of approval from an independent animal rights organization.

Are no-animal products better? They are no less toxic, and no better for the environment. Their sole benefit is that they protect animals from the pain of animal testing, and no animals are killed to make the product. If this is a concern for the housecleaner, or the client, then the no-animal product is better.

Reviewed Products

Following is a list of products WAGES has reviewed according to the above-described screen and have been found acceptable. Note that the products listed do not have the same degree of safety; some are safer than others. The products are divided into the "A List" (least toxic), the "B List" (less toxic than other common cleaners), and the C list (better than commercial cleaners, but somewhat more hazardous than lists A and B). WAGES realizes cleaners may need to use all these products but they need to be aware that the products do vary from non- to less-toxic. Cleaners should take necessary safety precautions when using any of these products; including gloves, goggles and making sure they don't breathe in the dust or spray directly, and they should always be sure to have good ventilation.

Most of these products can be purchased at grocery or natural food stores, Trader Joe's and on-line (type specific product brands into Internet search engines, or search on "natural cleaning products" for sites that sell a variety of products, including www.realgoods.com)[1].

List A (least-toxic)

Product	**Where to Buy**
baking soda	grocery or natural food store
Bon Ami Cleanser	grocery or natural food store
Dr. Bronner's Castille Liquid Soap	natural food store
Lifeline	natural food store
white vinegar	grocery store

List B (less-toxic than other common cleaners)

Product	**Where to Buy**
Ecover Cream Scrub	natural food store
Ecover Natural Floor Soap	natural food store
Ecover Natural Non-chlorine Bleach	natural food store
Murphy's Oil Soap	grocery store
Seventh Generation Dish Soap	natural food store
Seventh Generation Ultra Laundry Detergent	natural food store

List C (better than other common cleaners, but use only if necessary)

Product	**Where to Buy**
Borax Laundry Booster	grocery store
Mineral Oil	pharmacy
ARM & HAMMER® Super Washing Soda	grocery or natural food store

[1] Product names are listed for information purposes only, and do not represent an endorsement of these products or their manufacturers. Other manufacturers or suppliers any offer similar or identical products.

Resources

CITY OF SANTA MONICA
http://www.accessone.com/~watoxics/po.htm
Website includes a link to City of Santa Monica's cleaning product criteria.

Clean and Green: The Complete Guide to Nontoxic and Environmentally Safe Housecleaning, by Annie Berthold-Bond (Ceres Press, 1990).
"485 Ways to Clean Disinfect, Deodorize…" focuses on do-it-yourself formulas for making cleaning solutions.

E.P.A. INDOOR AIR QUALITY
www.epa.gov/iaq/
1-800-438-4318 for detailed information on indoor air pollution. Spanish speakers call the National Hispanic Indoor Air Quality Hotline at 1-800-725-8312

E.P.A. JANITORIAL PRODUCTS POLLUTION PREVENTION PROJECT
http://www.westp2net.org/janitorial/jp4.htm
About EPA's collaboration with several California cities to create less-toxic janitorial programs. "Commentaries" button lists product-purchasing requirements established by a number of organizations.

GREEN SEAL
http://www.greenseal.org 202-588-8400
Product certification organization with standards for safer cleaning products and lists of certified products.

Home Safe Home: Protecting Yourself and Your Family from Everyday Toxics and Harmful Household Products, by Debra Lynn Dadd (Tarcher/Putnam 1997).
29-page chapter on cleaning products—health effects and safer alternatives, in addition to information on other toxic exposures in the home.

MATERIAL SAFETY DATA SHEETS ON THE INTERNET
http://www.ilpi.com/msds/index.html
A full service site listing over 85 free Internet sources of MSDS sheets, along with background information. Includes an MSDS "Demystifier" in which you can enter your MSDS and it provides links to definitions of words in the MSDS.

http://www.chemfinder.com
Type in a chemical name or CAS# and get a wealth of information, including links to MSDS sheets, health and other information.

WASHINGTON TOXICS COALITION
http://www.watoxics.org/ 206-632-1545
Excellent literature on cleaning product dangers and recommendations for specific safer products. See in particular their report "Troubling Bubbles", about alkylphenol ethoxylate surfactants.

WORLDWISE
http://www.worldwise.com/wiseguide.html
Contains much information on choosing safer cleaning and other household products, including details on terms found on product labels, written by Debra Lynn Dadd, author of *Home Safe Home*.