It pays to know a little about 'green' science

Ingredients, terms, packaging all play a role

By Jennifer Roolf Laster, San Antonio Express-News
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I don't know about you, but I didn't do so hot in high school chemistry.

But I care about the environment and the cleanliness of my house, so when I push my cart down the cleaning products aisle at the supermarket, I get what my husband, the businessman, calls upsold. If a label screams "organic" or "green," I'm sooo buying it.

Companies know this, and they target me – and folks like me – accordingly. A host of earth-friendly products has started crowding the old stand-bys on the shelves, and it's hard to know if paying more for a bottle of hand soap is really making a difference to anything except the dwindling balance in my checking account.

Consider the ingredients (exactly as they read on the labels) in two "green" glass/surface cleaners:

- Seventh Generation Natural Glass and Surface Cleaner: Natural cleaning agent (vegetable-based surfactant), Preservative (less than 0.05 percent), Water
- OdoBan Earth Choice Glass Control Glass & Surface Cleanser: Water (CAS No. 7732-18-5), Ethyl Alcohol (CAS No. 64-175), Propylene glycol n-butyl ether (CAS No. 5131-66-8)

Yeah, I didn't know what that meant either. So I asked a scientist, Dave Wasmund, a professor of chemistry and chairman of the chemistry department at Texan Luthern University to help me figure it out.

His educated opinion? Chemically speaking, "it's all basically the same."

Now consider the H-E-B brand glass cleaner, which is not marketed as being green. Again, these ingredients read just as it says on the label:

- Hill Country Fare All-Purpose Glass & Surface Cleaner: Water Surfactant, Glycol Ether Solvent, quality control agents and dye.

Wasmund again: "If you looked at the Hill Country Fare glass cleaner and the other two, they have essentially the same things in it. But if you want to pay 50 cents more and feel good about it, well, we all want to feel good." The dye, he says, is likely so miniscule an amount as to be negligible.

So are so-called green cleaning products just hype? Not so fast.

Just because the chemicals are similar, it doesn't mean the ingredients were derived in the same way. It also doesn't take into account packaging, the way the product is made in the factory or the corporate responsibility of the makers.

Understand that a product's ingredients don't tell the whole story.
John J. Stankus, an assistant professor of chemistry at the University of the Incarnate Word, outlines three big considerations in the "what's green" decision:

- How long does the compound remain in the environment before it reacts or decomposes into something totally benign, and what are the effects on the environment of the compound and it's decomposition products?

- Is it toxic to fish, fowl, flora, fauna? And where in the food chain does it have the most effect? Does is unbalance the ecosystem? Fertilizer can be a good thing, but too much may cause one species to grow out of control and deplete nutrients for other species.
- How sound is the manufacturing process in terms of feedstock chemicals? Though the compound may be derived from plant sources, does it need to be extracted with some solvents that may have other impacts around the vicinity of the plant?

Look for reputable endorsements of the company's formulas.
Anyone can stick a leaf logo on its squirt bottle, so be savvy. OdoBan's Earth Choice line was formulated in partnership with the EPA Design for the Environment Program, and it bears a logo indicating this. This means the line "contains only those ingredients that pose the least concern among chemicals in their class." Its ingredients biodegrade to non-polluting substances at a quicker rate than traditional cleansers.

That can make a difference in water quality down the road, says Philip Crocker, an environmental scientist with the EPA. "You certainly want to favor these products that break down easily, products that are not going to be persistent in the environment."

Make decisions about where to allocate your cleaning dollar.
If you don't think a "green" glass cleaner is worth the money, consider other products. Take Seventh Generation's Natural Toilet Bowl Cleaner. The label reads: organic salt cleansing agent (modified amine surfactant), natural thickener (xanthane gum), dye (for visibility), natural fragrance (mint oil) and water. This one fibe you the karma of a mint-smelling toilet, and the chemistry guy's approval, if not his blessing.

"This would be less hazardous than many regular cleaners," Wasmund says.

Eco-conscious consumers might want to spend the money on green products such as laundry detergent and shower, toilet, and floor cleaners. "If you're looking for eco-friendly sorts of things, look for floor cleaners and things like that, "Crocker says. "What you're pouring down the drain will affect water quality in varying degrees."

Understand that "organic" in cleansing doesn't mean what it means in food.
In the toilet cleaner, for example, "They are using the scientific term 'organic' (which basically means the compound contains carbon) and making it sound like it is 'organic' meaning all-natural," Wasmund says.

That's a sticking point for chemists, Stankus says. "There's a big issue with calling something organic because in chemistry 'organic' has meant the study of chemicals that contain carbon. So when they say 'Well, it's organic,' that means a different thing to me than to someone at Central Market." Carbon-based "organics" aren't bad; just understand that it doesn't mean what you might think.

Don't forget the importance of packaging.
Look for refillable containers (Seventh Generation diaper wipe refills, for example, use 90 percent less packaging than a traditional container), packaging that is partially or wholly recycled and concentrates you can dilute (Holy Cow degreaser or method laundry detergent), which uses less packaging over the long haul.

Use concentrates as directed. "With the new concentrated soaps, you only need a little bit," Stankus says. "If you put too much in, it ups your footprint on the environment."

Pull out your dictionary.

A surfactant is a substance that reduces the tension of water, allowing oil and water to mix. It's what helps the cleanser emulsify the dirt so you can wash it away.

Cleansers may contain surfactants derived from petroleum, vegetable products or animal products. None of these substances is inherently toxic in itself, though consumers may make a choice based on their own lifestyle. Vegetarians, for example, won't want to use surfactants derived from animal fat. But if you're washing down the counters before cutting a slab of steak, an animal-based surfactant in your cleanser won't cause a blip on your environmental radar.

Petroleum-based products aren't evil (and pretty much everyone is a petroleum consumer already), but the get processed differently than vegetable- or animal-based products in sewage plants. "Anything oil-based is not going to be treated very well," Crocker says.

Check out a product's MSDS.
It's a Material Safety Data Sheet and offers a breakdown of a product's ingredients. You can generally do a Web search for a product's MSDS and arm yourself with a bit more information. You can also learn more about products online through the National Library of Medicine's Household Products Database (http://householdproducts.nlm.nih.gov)