Autism and ADHD Prevention
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Toxic Beauty

Introduction

On a typical day most women use soap, shampoo, and conditioner in their shower. Then they might use a toner and one or two lotions on their face, followed often by makeup with foundation, blush, and mascara. Their body may also need another lotion, deodorant, and a touch of their special perfume. On average, women use 12 cosmetic products a day containing approximately 126 different chemicals! What is the safety of these chemicals for you and for your future child?

On average, women use 12 cosmetic products a day and approximately 126 different chemicals.

Just as you need to read the labels on your food, you need to read the ingredient labels on your cosmetics. Because the skin absorbs these ingredients into the body, each must be safe enough to eat. If the names of the ingredients sound like chemicals, you should not put them on your skin. While reading food ingredients can be difficult, cosmetic ingredients are even more confusing because there are so many more possible options.

Any product with chemicals applied to your skin can be absorbed into your body and cause health problems, just as any chemical you eat in your food. These chemicals can be stored in your body and then passed to your baby through the placenta or breast milk. Research studies have found multiple environmental chemicals in infant cord blood at birth. A newborn baby has not had a chance to use any soap or lotion, but already the baby has taken on stores of chemical byproducts. The only possible source of these chemicals is from their mother.

The questions then become, which chemicals need to be avoided, and what are good alternatives? Answers to these questions can be found in this chapter as well as two all-inclusive resource guides:

- *A Consumer's Dictionary of Cosmetic Ingredients* by Ruth Winter takes the guesswork out of deciphering chemicals in cosmetics and "cosmeticeuticals."
- The Environmental Working Group's Skin Deep Cosmetics Database is available free of charge at http://www.cosmeticsdatabase.com

This chapter describes categories of the worst offenders (what I like to call the "polluting P's"), with the hopes that you will read cosmetic labels and use these products cautiously.

For a description of what is in your cosmetics, check out:

http://www.cosmeticsdatabase.com

Cosmetic Safety Regulations

The U.S. Food and Drug Administration (FDA) regulates cosmetics just as it regulates our food supply. Unfortunately the FDA has less control over cosmetics and no authority to require cosmetic companies to do safety testing *before* the products are put on the market. Therefore companies can put any chemical in your lotion and sell it to you with minimal or no safety testing. If problems are noted *after* the lotion is on the market, then more safety research can be done.

The cosmetic industry itself has a self-regulatory panel called the Cosmetics Ingredients Review (CIR). The primary purpose of any industry is to make money, so their first priority is to themselves and not to the safety of the consumer. Since its inception more than 30 years ago, the CIR has only reviewed the safety of approximately 11% of the ingredients in cosmetics; just nine ingredients were banned as unsafe. Considering there are more than 10,000 chemical ingredients in personal care products, the CIR has barely touched the surface of ensuring our safety. This panel does not research combined multiple chemicals, yet on average, women are putting products on their skin with multiple ingredients. Unfortunately, research on toxins and their effects on women and subsequently baby's *in utero* and young children are lacking.

There are more than 10,000 different chemicals in personal care products.

The lax U.S. regulation is of more concern when you look at how other countries regulate this industry. Unlike the United States, which bans chemicals *after* they have been used, the European Union (comprising 25 countries) uses a more preventative approach. A cosmetics directive bans many chemicals deemed unsafe; if the chemical causes any harm, it does not belong in cosmetics. This European cosmetics directive has banned more than 1,000 products or approximately 10 times the number of similar products banned in the United States. Canada also has a much stricter policy and has banned multiple chemicals that are frequently used in U.S. products.

For example, the antibacterial triclosan is one chemical banned in these countries, but still used in the United States. Triclosan's chemical form is similar to that of pesticides, such as dioxin, yet it is found in the majority of our antibacterial soaps and instant hand sanitizers. However, when exposed to chlorine in water triclosan produces chloroform, a carcinogenic compound. In addition, triclosan may contribute to bacterial resistance. Although the FDA is investigating triclosan, the chemical is still being used every day by pregnant women and children.

Several states have tried to bypass the lenient federal regulation and set up their own rules. California has introduced laws increasing safety testing of cosmetic ingredients, and Washington State has banned phthalates or plastic stabilizers (see below). Both of these are valiant attempts to try to protect people from toxins.

The "Polluting P's"

Just as there are several "polluting P's" in our food (think pesticides) and our environment (think plastics), there are also many "polluting P's" in our products.

The Polluting P's:

phthalates, parabens, petroleum,

polyethylene glycol, pesticides, and plastics

Phthalates. Chemicals in the group called phthalates are used to soften plastics and to give beauty products the textures we like in nail polish and hairspray and the fragrances in perfume. Unfortunately phthalates have also been used in baby care products and plastic toys, including ones that babies put in their mouths. Medical devices, such as intravenous bags, vinyl floors, and the fragrance that people call "the new car smell," are all from phthalate chemicals.

Why the concern? Phthalates are endocrine disruptors; they affect the hormones in your body, such as estrogen, and have an adverse effect on the reproductive system. Several studies have shown that male babies of woman exposed to phthalates during pregnancy are more likely to have abnormal development of the genitals. Adult males receiving normal environmental exposure to phthalates were also found to have sperm damage. We have increasing rates of infertility and that may be part of the reason. Obviously both men and women considering having children should avoid these substances.

***Relationship to Autism*.** A relationship between phthalates and autism and other neurodevelopmental disorders has recently been raised by research studies. The higher a woman's exposure to phthalates during pregnancy, the higher her child's incidence of attention deficit hyperactivity disorder (ADHD) and behavior and learning issues. A second study found that infants and toddlers living in homes with vinyl floors which emit phthalates are twice as likely to have autism five years later. Findings from this last study were surprising because the researchers were not looking for environmental risk factors associated with autism.

Although the health risks of phthalates were beginning to be identified early in the 1990's, the FDA's initial response was that exposure to these chemicals was limited. However, the Environmental Working Group released a study in 2002 showing 70% of cosmetics contained phthalates. This prompted the Campaign for Safe Cosmetics, designed to raise awareness of the potential harm caused by phthalates. The next year, the European Union banned cosmetics containing phthalates. Women of child-bearing years appear to have much higher concentrations of phthalates than other consumer groups, and the risk to these women and their children is too great to not ban these chemicals.

In the meantime, what can you do? Unfortunately phthalates are not listed directly on the label of many products. The term "fragrance" is often used and should make you wary. Other phthalates are listed as abbreviations of their chemical names such as DEP (diethyl phthalate), DBP (dibutyl phthalate), DEHP (di[2-ethylhexyl] phthalate), BzBP (benzyl piperazine a

chemical related to pthalates, DINP (diisononyl phthalate), and DMP (dimethyl phthalate). Again if you can't easily identify what an ingredient is, and you wouldn't want to consume it, I wouldn't put it on your skin.

Parabens. Derived from petroleum, parabens are very common ingredients in many cosmetics and in some food products. Up to 90% of personal care products contain some form of parabens. Used as preservatives, they prolong the shelf-life of many products by preventing the overgrowth of bacteria. When people were tested for paraben exposure, more than 90% tested positive, and women, starting as early as adolescence, had some of the highest exposure.

Parabens are another group of chemicals that, like phthalates, are endocrine disruptors. Again concern has been raised by studies about parabens' effects on the reproductive system; they act like estrogen and can hurt male development and function. Estrogenic effects in women are also a concern because of breast cancer promotion. Many deodorants have parabens (and antiperspirants have aluminum, detailed below). These chemicals are placed under the arms, near the breast cells' lymph drainage. This area is where the majority of breast cancers begin. To compound the problem, many women shave under their arms and then put deodorants or antiperspirants on every morning. Cut hair follicles, like cut skin, may well increase the absorption of these toxins.

Animal studies of parabens have shown negative effects on the development of the brain and nervous system. No studies have shown any effects on human development. There are no negative studies, just not enough research. We need to know more about the effects of parabens on the nervous system, just as we need to know more about the adverse effects of phthalates. In the mean time, I wouldn't expose my future child to a class of chemicals that affects hormones and body development.

Parabens are easier to identify on labels because most of them have the word parabens in their title (methylparaben, ethylparaben, and butylparaben). Any ingredient that has p-hydroxybenzoic acid or parahydroxybenzoic acid also contains parabens. More natural cosmetic companies are developing preservatives to be used instead of parabens, so options exist. Again Europe is ahead of us and has banned at least one type of paraben. Just keep reading those labels.

Petroleum. When I think about petroleum, my first thought is not to put it on my skin so it can be absorbed into my body. Petroleum is crude oil used to make gasoline to fuel our cars. Yet petroleum products are common in cosmetics as well as in pesticides, plastics, and pharmaceutical drugs (more "polluting P's").

Concern about petroleum comes from research showing it to be a potential cancer promoter and a respiratory toxin. The European Union cosmetic directive has banned its use. If another country with a precautionary chemical approach has banned a product, is there any reason to use it here in the United States? Look for the words petroleum distillates, petrolatum (Vaseline petroleum jelly), mineral oils (used in 'baby" oils), and paraffin.

Polyethylene Glycol or "Eth" Ingredients. Polyethylene glycol or PEG is a petroleum-based product. The primary concern with this chemical, along with any chemical with "eth" in the name, such as sodium laur**eth** sulfate, is the contaminant 1,4-dioxane. This contaminant appears in bath products. It can be removed during manufacturing, but it often is not. Because 1,4-dioxane is a contaminant, it is often not listed on the label; you have to look for "PEG" or "eth" in the ingredient list.

The chemical 1,4-dioxane is a cancer promoter; it irritates the lungs and the skin. There is also strong concern about toxicity to the kidneys and the nervous system. When a baby is developing, especially *in utero*, it is critical to avoid all neurotoxins or even potential neurotoxins. Unfortunately 1,4-dioxane was found in a lot of baby care and kids' bath products in lab testing done in 2007. The chemical is even found on California's list of chemicals known to cause cancer or birth defects.

Other Toxic Ingredients

The list of chemicals to watch out for in cosmetics doesn't end with the P chemicals. Unfortunately there are some other serious offenders. Most of the toxic chemicals cause harm by disrupting hormones or promoting cancer or both. Many of these chemicals also cause damage to the nervous system which is especially damaging for developing children.

Antibacterial Products. As mentioned earlier, triclosan is an antibacterial compound used in soaps. It is also used in many consumer products including toys. Along with the problem of tricolsan combining with chlorine to form chloroform, it's affects on hormones are a major concern for women considering pregnancy and having children. Triclosan appears to decrease the amount of thyroid hormone, our master regulating hormone, produced by the body. In other animal studies, tricolsan has also been shown to affect the hormones estrogen and testosterone.

Coal Tar and Dyes. Neither the words *coal* nor *tar* beckon you to place them on your skin, yet they are used in several cosmetic products. Interestingly enough, they are used in products for skin conditions such as psoriasis and hair conditions such as dandruff. Yet these products can cause multiple skin reactions and sensitivities. Wonderful natural treatments exist for these medical conditions, many including fragrant essential oils, so avoiding coal tar should be easy.

Coal tar can also be used to make dyes for products. Although I automatically thought all coal tar dyes would show up as black pigment, they can also be transformed to shades of blue and green, colors that are then used in oral care products such as toothpaste and mouthwash. Technically you are not supposed to swallow these products, but the mucus membranes are wonderful at absorbing chemicals, which is why sublingual medicines are very effective. Any color that doesn't look like a color naturally found in nature probably isn't and shouldn't be ingested.

Ethanolamines: DEA (Diethanolamine) and TEA (Triethanolamine). The ethanolamines in cosmetics are used as foaming agents and emulsifiers. Adjusting the pH of products is another one of their uses. Several concerns have been raised by research, however. Ethanolamines may be carcinogenic, and they also cause skin sensitivity, which isn't helpful in a skincare product.

My primary concern is that ethanolamines deplete choline in the body. Choline is needed for brain development and is a critical component of the neurotransmitter acetylcholine. Ethanolamines also deplete metabolites of choline, which are critical for the detoxification pathway called methylation. This pathway often does not work well in children with autism.

Formaldehyde. When I think of formaldehyde, the first thing I think of as a doctor is that horrible smell associated with anatomy lab as a first-year medical student. Formaldehyde is a powerful preservative used to maintain cadavers. It is also used in many construction materials such as plywood, paint, and paper. Because formaldehyde is a vapor, it becomes part of the air and a source of pollution.

When I discovered that this preservative was used in cosmetics and vaccines, I knew that something this strong didn't belong on my face or injected into my child. Now investigating the multiple health risks of formaldehyde, I found out that my concerns were justified. Research has shown that formaldehyde promotes cancer in animals by damaging DNA and inhibiting its repair. Inhalation of this chemical often causes damage to the lungs, and contact with the skin causes irritation. It doesn't make sense to me that formaldehyde is used in cosmetics, which are applied to the skin.

From a perspective of having a healthy child, the neurotoxic effects frighten me the most. Animal research studies have shown that exposure to formaldehyde decreases the number of nerve cells in the hippocampus, changes neurotransmitters associated with behavior problems such as aggression, and even decreases fertility. Some adult animals developed neurologic disease many years after formaldehyde exposure during infancy.

Use of formaldehyde in cosmetics has been banned in Japan and several countries in Europe, and Canada has placed this compound on its hotlist to be investigated. Avoiding this chemical in cosmetics and in the home and workplace seems wise. I wonder if pregnant women working in labs with formaldehyde are warned of this danger.

Hair Dyes. Just looking around, it is apparent that many women and men today use hair dyes. I can honestly say that the only woman I know who has never used some sort of hair dye or bleach is my mother. Because she doesn't wear makeup either, maybe that is part of her good health in her 70's!

Just as nail polishes contain multiple chemical combinations, hair dyes are equally as concerning. Hair dyes contain ammonia, peroxide, p-phenylenediamine (PPD), coal tar dyes, DEA, polyethylene glycol, formaldehyde precursors, and lead, all toxins that cause health problems. Healthier options are coming on the market, but we still have a ways to go.

Nail Polish and Remover. The smell upon walking into a nail salon is enough for most people to realize the multitude of chemicals that exist in nail products. Most nail polish contains dyes, polish hardeners such as nitrocellulose, formaldehyde, solvents such as toluene, and plasticizers such as phthalates. Several of these chemicals are harmful when used alone, but when combined together, who knows how they interact with each other, what other toxins are formed, and how they affect us? Then to remove the polish, we need to use polish remover containing acetone, which can act as a narcotic and cause symptoms of drunkenness. The unfortunate salon workers who are exposed to these chemicals for hours a day have shown multiple health concerns from skin rashes and respiratory abnormalities to an increased risk of miscarriage.

Skin Lighteners. The primary ingredient in skin lighteners is hydroquinone, which decreases melanin production or the substance that causes darkening in the skin. Multiple studies have shown that hydroquinone may cause genetic damage, resulting in cancers ranging from leukemias to thyroid, liver, and kidney tumors. This substance has been banned in Europe.

Heavy Metal Madness in Makeup

As we have learned, heavy metals are potent neurotoxins and should be avoided as much as possible. They are damaging to all of us, but especially to young infants and children whose brains are developing. You would never think of heavy metals as typical ingredients in makeup, but aluminum, lead, and mercury are found in multiple products. Lead is found in lip gloss, and mercury is found in mascara!

Aluminum. Although aluminum is a heavy metal, it is prevalent in cosmetics, especially in antiperspirants. It is the ingredient that literally absorbs sweat. However, aluminum has been shown to absorb through the skin, and the absorption rate is increased if there are any open cuts or damaged skin, such as cut hair follicles. Now there are two dangerous compounds, aluminum and parabens, used on underarm skin over breast tissue.

Aluminum exposure is also common in our food supply and in vaccines. The chapter on Healthy Environment will discuss this in more detail and describe the inflammation and neurodevelopmental delays that can be caused by aluminum.

Sunscreens

The group of products called sunscreens needs their own category because there are many issues to consider. Multiple different ingredients are used each with individual safety concerns. Combining chemicals can alter their risks. Finally the mechanism of how these ingredients protect from the sun is different. Since it is recommended that sunscreen be used daily, you need to know what is going on your skin as you step outside.

The FDA began developing regulations for sunscreen safety in 1978 but never finalized these regulations. Another attempt was made in 1999, but that also wasn't completed. Apparently the U.S. trade organization once known as the Cosmetic, Toiletry and Fragrance Association and now called the Personal Care Products Organization, felt threatened by the potential enforcement of safety standards and filed a petition. Concern was also raised at that time about the lack of coverage for UVA radiation in the sunscreens. Currently the SPF (sun protection factor) listed on sunscreens is only for UVB radiation. Again in 2007, the FDA made some safety recommendations, which are still under discussion. Obviously at this point in time, it is up to each individual to fully understand the issues involved and protect themselves. The Environmental Working Group has a great online sunscreen guide to help us.

UVA Protection. There are two primary types of ultraviolet light from the sun: UVA and UVB rays. UVA are the **A**ging rays, and UVB are the **B**urning rays. Currently the majority of sunscreens in the United States only protect against UVB rays. Regulations are being developed for UVA rays. Europe has several products that protect against UVA rays (including mexoryl SX) and some in development (such as Tinosorb). Sunscreens manufactured in Europe are required to have UVA protection at least 1/3 as strong as sunburn or UVB protection. The United States does have avobenzone for UVA protection, although safety of this chemical is not confirmed. Luckily both zinc and titanium provide both UVA and UVB coverage.

Types of Sunscreens. Currently there are two classes of sunscreens, and they both carry health risks:

1. Physical sunblock contains zinc oxide and/or titanium oxide. Once placed on the skin, these chemicals block the sun's rays from reaching your skin.

2. Chemical sunblock works by being absorbed into the skin to stop the sun's rays from reaching the skin.

Health Concerns for Sunscreens

Nanoparticle Toxicity. With physical sunscreens, the primary concern is the small size of zinc and titanium particles (called nanoparticles). We all probably remember the complete white coat of zinc oxide cream on the skin of lifeguards. With the advent of nanoparticles, however, zinc oxide can now be rubbed into the skin and not seen. Manufacturers claim that nanoparticles provide a physical block, yet are not absorbed in the skin. But studies have shown absorption into both intact and damaged skin. In fact, nanoparticles are being studied as a delivery method for transdermal (on the skin) medications. If nanoparticles are not absorbed into the skin, it makes no sense for them to be used to help a medication get through the skin into the body!

Research has also shown toxicity inside of cells caused by nanoparticles of titanium in sunscreen. Any substance that has the potential to enter cells and change the structure inside the cell has the potential to disrupt DNA. Disrupted DNA definitely contributes to the development of cancer. I don't want my DNA or any potential child's DNA being disrupted.

Toxic Metal. Although both zinc and titanium are used in sunscreens, there is a difference between the two substances. Zinc is an essential mineral that is often low in diets and very low in children with autism. On the other hand, titanium is a toxic metal, and we don't know the long-term effects of titanium on the body. I have often seen elevated titanium levels in children with autism. Titanium is also a very allergenic metal, similar to nickel, that causes skin rashes.

Hormone Disrupters. The primary concern of chemical sunscreens is the chemicals that are hormone disrupters. Yes, another chemical that we put on our bodies and therefore into our bodies that causes hormone disruption! The primary culprit is oxybenzone, which is one of the most common active ingredients in sunscreen. Oxybenzone is well absorbed and has been found in 96% of Americans' urine and in European mother's milk; children are being exposed from very early on. Research has also shown potential exposure *in utero*, resulting in alterations in

birth weight based on the amount of exposure. Scientists have recommended that oxybenzone *not* be used in children due to these concerns. Evidence for hormone disruption has also been seen with other chemical sunscreens, several of which are waiting FDA approval including 4-methylbenzylidene camphor (4-MBC), 3-benzylidene camphor, octyl methoxycinnamate (OMC), and padimate O.

Free Radicals. Sunscreens stop UVB radiation, which stops sunburn, and this is where the skin protection factor (SPF) rating comes in. However, UV radiation from the sun also generates free radicals. Free radicals are an important part of protecting cells, but an excess of them can kill cells.

Sunscreen manufacturers know about the free radical formation, and they add antioxidants to their products to combat this problem. When people do not use sunscreens correctly, such as not reapplying the sunscreen correctly or not using enough, which commonly happens, the free radical protection is very low.

Although antioxidants are added to sunscreens, this can be harmful depending on the type of antioxidant. Often the manufacturers add vitamin A, which is found in up to 41% of sunscreen products. But topical vitamin A breaks down in the sun and actually generates free radicals itself! A recent FDA study showed that topical vitamin A in creams cause free radical damage and can increase the rate of skin cancer. We now have a product designed to decrease skin cancer that appears to be doing just the opposite. Look for retinyl palmitate or retinol on the label of sunscreens to check for vitamin A. (The above information should not be confused with internal use of vitamin A.)

Vitamin D Blockers. Vitamin D is of critical importance to many, many functions of the body and there are vitamin D receptors on every cell in the body. It is necessary for bone growth, calcium absorption, immune function, cancer prevention, blood sugar control, gene regulation, and mood stabilization, to name just a few benefits. Our primary source of vitamin D is from the sun, not from food. Because sunscreens block our ability to make vitamin D in the skin, levels of this important vitamin have been decreasing in all populations studied including children and pregnant women. This is concerning, especially given vitamin D's significant health effects.

Proof of Effectiveness? After years of using sunscreen and being told of the dangers of skin cancer if we don't use it, most people are amazed to discover that there are no research studies that support absolute proof of cancer prevention. The FDA itself stated in 2007 that research does not exist to support using sunscreen alone as a skin cancer preventative. In fact, some research has shown that those people who use sunscreens may have an increased risk of melanoma, the deadliest form of skin cancer. Is this because sunscreen users stay out in the sun more and have overall more sun exposure? Or is it because of negative health effects from the sunscreens themselves? We definitely need more information!

Options for Sun Safety. Recommendations from key public health agencies emphasize coverage and timing as good first-line precautions from sun damage: coverage of the skin with protective clothing and under shade protection and timing outside exposure away from the strong midday sun. Sunscreen use is also recommended, but I only recommend products with zinc oxide. To ensure natural vitamin D production, I also recommend brief early morning sun exposure to as much of the body as possible for no more than 30 minutes, while covering the face with a hat.

Labeling

Labeling of cosmetics should be changed to avoid confusion from marketing terms such as "natural," "green," "organic," and "dermatologist-tested." These words are commonly used on packaging to make the products look healthy and entice consumers to buy them. However, these buzzwords do not guarantee that harmful chemicals are not present. Natural can include anything found in nature (petroleum) or metals (aluminum or lead). Green products are the current fad. While the word green is supposed to imply that a product is good for the environment, the term does not necessarily imply healthy. A product with a green label can mean this product is *better* than other products for the environment, although both may be toxic to an individual! Organic is another confusing term. Technically it means something that contains carbon, but concerning food and ingredients, organic means something not produced with pesticides. Chemicals are not usually produced with pesticides, but again, that doesn't mean they are healthy or should be anywhere close to someone's body. Be wary also of products that list fragrance, even natural

fragrance. “Dermatologist-tested” is another confusing term to imply safety. Many dermatologists recommend prescription medicines and products to their patients because they might clear up skin rashes. However, prescription products may contain chemicals that will cause internal health or long-term health problems.

Be aware of marketing labels such as green, organic, and natural.

They do not guarantee that a product is healthy.

Options

Less is more is what I always recommend. Less products and less ingredients, which often translate into less hassle and less time. A simple basic soap, such as an unscented glycerin soap, and a single oil or moisturizing lotion, such as sweet almond oil or shea butter, covers most needs. Choosing a deodorant without aluminum and preservatives is a big safety investment. Finally, buy cosmetics and personal care items from a company that lists both what they have and do not have in their products. If they can list what they do not have, they know the dangerous chemicals to exclude, and they are letting you know that they have done the research. Remember that toxicity adds up, the more toxic products you use.

Summary

From my research, I am convinced that the toxins from personal cosmetic produces are contributing to the higher rates of autism and ADHD. There are thousands of chemicals in personal care products and many have been found to harm the nervous system and disrupt hormones.

Do all you can to avoid these chemicals for the health of you and your baby. Read, Read, Read! All labels for all cosmetics and skin care products. Checkout the Cosmetics Database to

look up the products you are using to see if they are safe. Avoid any products that do not list the ingredients on the label. Be on the lookout for the "Polluting P's".

There is nothing more important than knowledge and education when it comes to your health. If you don't know what an ingredient is, do not eat it or put it on your skin. Healthy, nourishing products exist that are good for your skin. I live in Boulder, Colorado, so I am spoiled by all the wonderful natural soaps and lotions I can find. But with the internet and the expansion of awareness, new options are becoming more available all the time.

ACTION ITEMS

1. Read all labels.

2. Avoid the polluting P's: phthalates, parabens, petroleum, polyethylene glycol.

2. Check your products on the Environmental Working Group Skin Deep cosmetic data base: http://www.cosmeticsdatabase.com **.**

3. Less is more: fewer products, fewer ingredients.

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