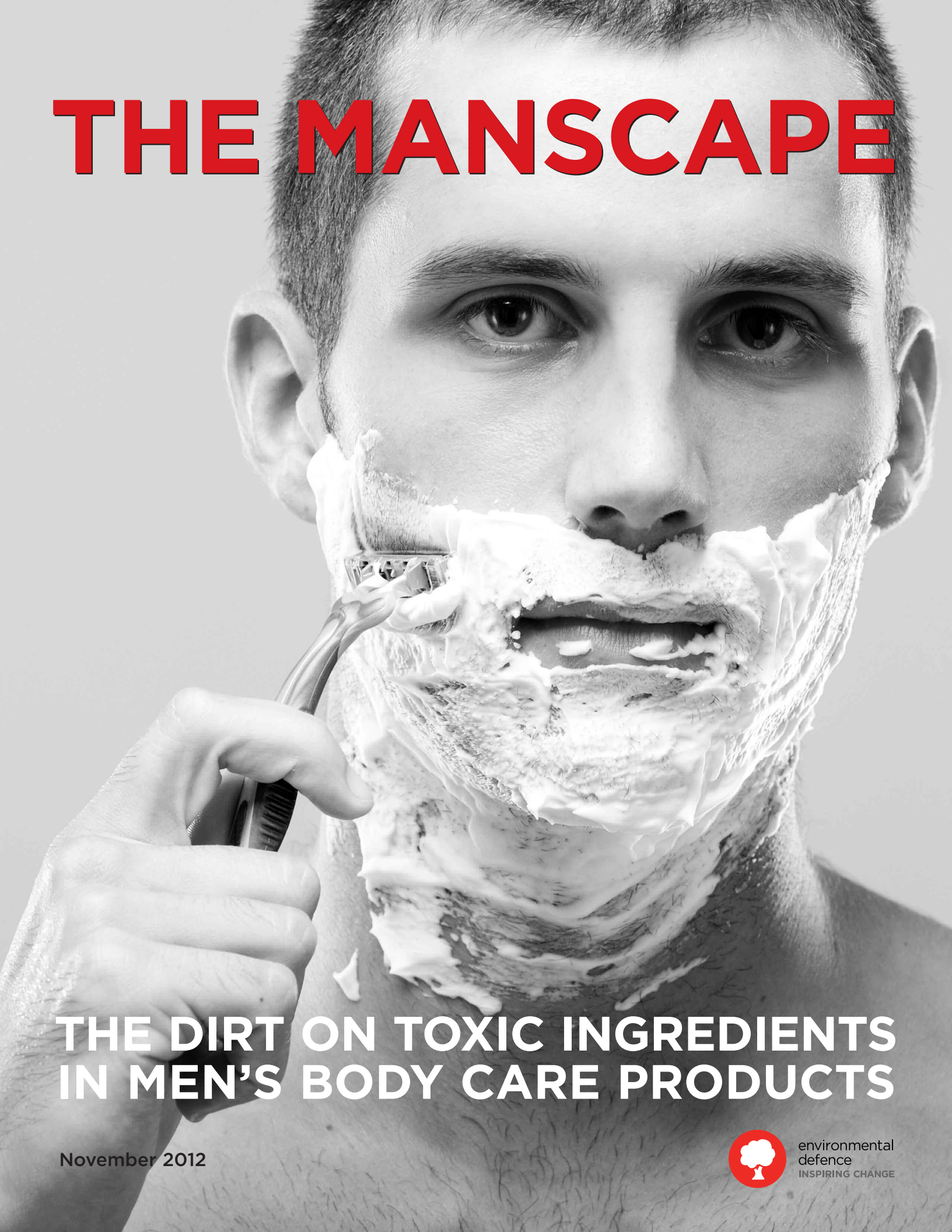

# THE MANSCAPE

## THE DIRT ON TOXIC INGREDIENTS IN MEN'S BODY CARE PRODUCTS

November 2012

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# ACKNOWLEDGEMENTS

**THE MANSCAPE:**
**The Dirt on Toxic Ingredients in Men's Body Care Products**

By ENVIRONMENTAL DEFENCE

ENVIRONMENTAL DEFENCE gratefully acknowledges the generous support of our donors, the Catherine Donnelly Foundation, the J.W. McConnell Family Foundation and the *Just Beautiful* Campaign Cabinet for making this report possible, as well as the Canadian men who volunteered information about the products they use for the purpose of creating this report. Any errors or omissions in this report are the responsibility of ENVIRONMENTAL DEFENCE.

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## ABOUT **ENVIRONMENTAL DEFENCE**

**ENVIRONMENTAL DEFENCE is Canada's most effective environmental action organization. We challenge, and inspire change in government, business and people to ensure a greener, healthier and prosperous life for all.**

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Visit **www.environmentaldefence.ca** for more information.

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# EXECUTIVE SUMMARY

Since 2005, ENVIRONMENTAL DEFENCE has worked to protect people and our environment from toxic pollution. We've educated people about the cancer-causing and hormone-disrupting toxins in everyday products—including our work which focuses on personal care products like shampoo, soap and makeup and the harm that the secret ingredients in them can do. We also successfully advocated the banning of BPA in baby bottles and phthalates in toys.

The personal care products industry is changing. Over the last decade, we have seen more skin and body products for men and the male share of the industry is growing faster than the industry itself. In Canada alone, it's worth more than $690 million, and is growing by an average of two per cent every year.[1] With dedicated product lines for male skin, body and hair needs, and dedicated male grooming aisles in drug stores, ENVIRONMENTAL DEFENCE thought it was time for a dedicated report on what male skin and body products contain.

So we used a certified laboratory to test 17 common men's grooming products that were recommended to us by five guys from across Canada. These included aftershave, shampoo, body wash, shaving cream and deodorant.

We found:

- **FOUR products contained probable human carcinogens;**
- **FIVE products contained chemicals known to harm male reproductive health;**
- **TEN products had artificial musks, some of which are shown to disrupt hormones in animals.**

What's particularly worrisome is that some of the chemicals we found are linked to cancer, birth defects, sperm damage, obesity, asthma and other chronic health problems. Phthalates, a group of chemicals found in most fragranced products as well as poly-vinyl chloride (PVC), vinyl flooring and car parts, are particularly harmful to male reproductive health. They have also been linked to risk factors for testicular cancer— the most common cancer among young men between 15-29 years old.[2]

And when these chemicals get into the environment, they do damage there, too, particularly to waterways and the species that call them home.

What's also concerning is that thousands of synthetic chemicals react with each other and affect our bodies in ways that scientists haven't even fully mapped out. Given the numerous possible interactions between chemicals, the environment and individual genetics, it is nearly impossible to know all of the possible effects of chemicals on humans.[3] This is commonly referred to as the 'cocktail effect'.

Given the numerous possible interactions between chemicals, the environment and individual genetics, it is nearly impossible to know all of the possible effects of chemicals on humans.[3] This is commonly referred to as the 'cocktail effect'.

For these reasons, ENVIRONMENTAL DEFENCE has recommendations to consumers, the industry and to the federal government. Because the fact is, people can take steps to avoid the worst chemicals; industry doesn't need to use nearly as many; and jurisdictions around the world are taking steps to beef up regulations to get harmful chemicals out of products altogether.

Whether you're a man or a woman, we encourage you to learn more about the worst chemicals by downloading our "Toxic Ten" list at **www.environmentaldefence.ca/toxicten**.

## RECOMMENDATIONS —

**TO INDUSTRY:** Disclose all ingredients, including those in fragrance, and stop using the "Toxic Ten" in products.

**TO CONSUMERS:** Download our pocket shopping guide at **environmentaldefence.ca/toxicten** to help you in choosing safer products, and sign our petition for safer products at **environmentaldefence.ca/take-action**

**TO GOVERNMENT:** Strengthen cosmetics regulations to ban toxic substances from personal care products, including the "Toxic Ten", and ingredients banned from products in the E.U., and require companies to disclose all ingredients in products.

# INTRODUCTION

Shaving kit, dopp kit, man bag, toiletry case, or "bathroom purse": men have many creative names for the case where their grooming products are stored. But what's inside? Whatever you call male toiletries, more men are using them. Few of them, however, know the full range of chemicals hidden in their body wash, moisturizer, shampoo, shaving cream, aftershave and more.

According to the U.S. *Campaign for Safe Cosmetics*, the average American man uses six personal care products a day containing more than 80 different chemicals. Many of these are absorbed into the skin, inhaled or ingested, and the vast majority of cosmetic chemicals have not been tested for safety.[4] According to the market research company Global Trade, men between 20 and 30 years old spend an average of $113 (U.S.) per month on personal care products.[5]

ENVIRONMENTAL DEFENCE has been educating people about the toxic chemicals in cosmetics (under Canadian law, male grooming products are considered cosmetics) to reduce pollution of people and our environment. Most of our work to date has focused on women, who still use the majority of cosmetics, and includes the reports *Not So Sexy* (2010), about perfume; *Heavy Metal Hazard* (2011), about the health risks of heavy metals found in face makeup; and *The Trouble with Triclosan* (2012), about this hormone-disrupting chemical.

To help consumers avoid common toxins, ENVIRONMENTAL DEFENCE has published the "Toxic Ten" pocket shopping guide. We're also working with the cosmetics industry to get harmful toxins out of products and have them listed as ingredients so people know what they're buying. This report is our latest effort to educate people about what's in the body and skin care products they use.

What better way to start than to ask five men from four provinces what products they use the most? In all, there were 17 separate products that were sent to an accredited laboratory for testing.

Despite the well-documented health risks associated with many of the chemicals found in personal care products, they're not all on *Canada's Cosmetic Ingredient Hotlist,* which lists things prohibited for use in cosmetics. In some cases, chemicals may be prohibited as intentional ingredients—what the manufacturer purposefully uses in the product—but show up in trace amounts as impurities. One of these, 1,4-dioxane, is the by-product of a chemical reaction in the manufacture of cosmetics and is classified as a probable human carcinogen by the International Agency for Research on Cancer (IARC).[6]

It's for reasons like this that ENVIRONMENTAL DEFENCE has tested women's products before, and with the male market growing rapidly, is testing men's products now.

## Our Testing: Five Guys, Seventeen Products

ENVIRONMENTAL DEFENCE asked five guys from four provinces to open up their shaving kits, and let us know what grooming products they use, including:

- **Soap and/or body wash**
- **Shampoo**
- **Shaving cream or lotion**
- **Aftershave, cologne, or body spray**
- **Antiperspirant or deodorant**

We then bought the sealed items at Canadian stores, and checked the ingredients on the product labels for the following "Toxic Ten" substances:

- **Parabens:** estrogen-mimicking chemicals found in breast cancer tissue
- **Phthalates:** chemicals that disrupt male hormones, affect fertility, and are also linked to testicular cancer
- **Triclosan:** an anti-bacterial chemical that breaks down into chloroform and dioxins, which are carcinogens
- **Petrolatum or Mineral Oil:** often contaminated with human carcinogens polyaromatic hydrocarbons (PAHs)
- **Fragrance or Parfum:** unlisted ingredients, many of which are hormone-disrupters and sensitizers. A sensitizer is a chemical that causes normal tissue to develop an allergic reaction after repeated exposure
- **Sodium Laureth Sulfate and Sodium Lauryl Sulfate:** skin irritants
- **Cyclomethicone, Cyclotetrasiloxane, Cyclopentasiloxane, or Cyclohexasiloxane:** hormone-disrupting chemicals present in hair products
- **Formaldehyde-Releasing Agents*:** formaldehyde is linked to leukemia and other cancers
- **Coal Tar-Derived Colours:** para phenylenediamine (PPD) is a sensitizer, and suspected carcinogen
- **Butylated Hydroxyanisole (BHA) and Butylated Hydroxytoluene (BHT):** hormone-disrupting chemicals used as preservatives

We then sent the products to the accredited Analytical Sciences Laboratories in California to be tested for some common toxic ingredients that don't appear on labels: phthalates (while some are on the label, additional phthalates are hidden in fragrance), 1,4-dioxane, and artificial musks.

** DMDM hydantoin, diazolidinyl urea, imidazolidinyl urea, methenamine, quarternium-15, and sodium hydroxymethylglycinate*

## THE GUYS

### JOHN POWER

**Paradise, Newfoundland & Labrador**

John Power, 30, lives in Paradise and is a social work student at Memorial University in St. John's. He is a percussionist, an uncle, and currently works at a national cancer organization.

PRODUCTS USED
- Pears Soap
- Pert Plus Shampoo and Conditioner
- TRESemmé Shampoo
- Old Spice Deodorant

**"I try to be a fairly healthy guy, eating right, enjoying the occasional treat, and doing fun exercise activities like walking or biking. It's crazy how something like shampoo can be filled with so many needless chemicals that can really affect people. More work needs to be done around preventing these harmful chemicals from entering our bodies."**

### JERRY ZABARTE

**Belleville, Ontario**

Jerry Zabarte, AKA JerryZ, currently works in Toronto as an outreach and youth coordinator at the Regent Park Focus Youth Media Arts Centre, where he works with youth to produce shows for Radio Regent. He also facilitates the Boys to Men mentorship program for youth ages 10 – 14. Lastly, JerryZ is a volunteer driver for the Canadian Cancer Society.

PRODUCTS USED
- Axe Hair Gel
- Head & Shoulders Shampoo
- Calvin Klein Aftershave
- Dove Men+ Care Soap
- L'Oreal Hair Dye
- Speed Stick Deodorant

**"I was shocked to find out how much stuff was detected in the Head & Shoulders shampoo, as I use it at least once or twice a week—especially in the winter when my scalp is dry. I am quite relieved, though, that it was not all that excessive if you limit the amount of these products that you use. Thank you for doing these tests and educating us."**

## EMMANUEL KEDINI

**Toronto, Ontario**

Emmanuel Kedini, 31, lives in Toronto, and works as a videographer in Regent Park. He is interested in sports, filmmaking, photography and politics.

PRODUCTS USED
- Aqua Velva Aftershave
- Rexall Shaving Cream

**"I haven't really paid much attention to the types of harmful chemicals in the personal care products I buy, until now. This whole process has been an eye-opener. It will make me think about what I'm really putting on my skin and how it will affect me. Thanks for including me to be part of this study—it actually made me think."**

## FARRAN LUMB

**Edmonton, Alberta**

Farran, 21, is a fifth year student in the co-op program in mechanical engineering at the University of Alberta. He enjoys playing hockey and soccer, as well as participating in many outdoor activities. Farran is also involved in coaching youth hockey and is a volunteer for the Heart and Stroke Foundation.

PRODUCTS USED
- Nivea for Men Sensitive Shave Gel
- Cetaphil Moisturizer

**"Overall, I am very pleased that certain manufacturers are removing harmful chemicals from consumer goods. The average consumer is unaware of the many chemicals present in many everyday items, and I think it is good that some companies are making an effort to protect the consumer—not because it will be necessarily profitable, but because it reflects the best interest of the consumer and fulfills the manufacturer's societal obligation."**

# ADAM HODGINS

**Gatineau, Quebec**

Adam Hodgins, 34, lives in Gatineau, Quebec and works across the river in Ottawa as an administrative assistant. He is active in his union and in the community. He is also a committed vegan and keeps busy cycling, going to the gym and practicing yoga.

PRODUCTS USED
- Proactiv Moisturizer
- Ivory Soap
- Gillette Shaving Cream

**"I think of myself as a health conscious person. I always read the labels when I buy food and I'm pretty strict about what I put into my body. I guess I need to start doing the same for other products as well. But how am I supposed to do that when there are hidden ingredients?"**

# SECTION 1: WHAT WE KNOW FROM THE LABEL

Health Canada requires that all ingredients of any cosmetic product be listed on the label, except for ingredients in fragrance, which are considered a trade secret. Below is a list of the products we tested, and what toxic ingredients we know they contain according to the product's label. An ingredient glossary is included in Appendix B of this report.

Table 1: **Toxic Substances Listed on Product Labels**

| | Toxic ingredients listed on the product label | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PRODUCT NAME | Triclosan | Phthalates | Parabens | Petrolatum or Mineral Oil | Fragrance / Parfum | SLS/SLES | Silicone Chemicals | **Formaldehyde Releasing Agents | Coal Tar-Derived Colours | BHA or BHT |
| **Proactiv Solution Oil Free Moisture SPF Moisturizer** | | | | | | | | | | |
| **Axe Hold & Touch Normal Hair Spiking Glue** | | | | | ● | | | ● | | |
| **Cetaphil Moisturizing Lotion** | | | | | | | | | | |
| **Calvin Klein Obsession for Men Aftershave** | | | | | ● | | | | | |
| **Rexall Moisturizing Foam Shave Cream** | | | | | ● | ● | | | | ● |
| **TREsemmé Naturals Nourishing Moisture Shampoo** | | | | | ● | | | ● | | |
| **Aqua Velva Ice Blue Cooling Aftershave** | | | | | ● | | | | | |
| **Pears Transparent Soap** | | | | | ● | ● | | | | ● |
| **Dove Men+Care Deep Clean Purifying Grains Body and Face Bar** | | | | | ● | | | | | |
| **Ivory Soap Bar** | | | | | ● | | | | | |
| **Head & Shoulders Dandruff Shampoo** | | | | | | | | | | |
| **Pert Plus 2-in-1 Shampoo & Conditioner, Happy Medium for Normal Hair** | | | | | ● | | | | | |
| **Gilette Foamy Regular Shave Foam** | | | | | ● | ● | | | | ● |
| ***Nivea for Men Sensitive Shave Gel** | | | | | | | | | | |
| **Speedstick Stainguard Deodorant / Fresh** | | | | | ● | | ● | | | ● |
| **Old Spice High Endurance Deodorant / Pure Sport** | | | | | ● | | | | | |
| **L'Oreal Superior Preference Hair Dye Ultimate Black** | | | ● | | ● | | | | ● | |

*NIVEA recently removed parabens, BHT and formaldehyde releasing agents from this product.

**Formaldehyde Releasing Agents could be labelled as quaternium-15

## SECTION 2: **WHAT OUR TESTING FOUND**

Out of the products and chemicals we tested for, the following had the most toxic ingredients:

- **L'Oreal Preference Ultimate Black Hair Dye:** five ingredients of concern including 1,4-dioxane and p-phenylenediamine
- **Pert Plus 2-in-1 Shampoo and Conditioner Medium Hair:** four ingredients of concern, including phthalates and 1,4-dioxane
- **Gillette Foamy Regular Shave Foam:** four ingredients of concern, including artificial musks and sodium lauryl sulfate
- **Calvin Klein "Obsession" Aftershave:** four ingredients of concern, including phthalates and artificial musks
- **Old Spice High Endurance Deodorant/Pure Sport:** three ingredients of concern, including phthalates and artificial musks
- **Speed Stick Stain Guard Deodorant/Fresh:** three ingredients of concern, including artificial musk

## RESULTS AT A GLANCE

| | | | |
|---|---|---|---|
| **FIVE** |  | = | **sperm damage, obesity, birth defects, risk factors for testicular cancer** |
| **FOUR** |  | = | **likely human carcinogen** |
| **TEN** |  | = | **some are shown to disrupt hormones in animals** |

Though personal care product manufacturers are required by Canadian cosmetic regulations to list all ingredients on the label, there are a few exemptions:

- Although fragrance mixtures can contain up to 3,000 ingredients, they are considered an industry trade secret, and so are listed on product labels as a single ingredient: “fragrance/ parfum”.

- Impurities are unintentional ingredients that get into products when other ingredients have been contaminated through processing. Although found in trace amounts, cumulative exposure impacts are unknown. There are steps that manufacturers can take to lower these impurities.

- If the product makes a health claim, it is governed under the Food and Drugs Act, and is not subject to the same labeling laws as cosmetic products. For example, Head &Shoulders shampoo, because it claims to treat dandruff, does not have to list its ingredients like other shampoos.

Factor in that phthalates don’t have to be listed on ingredient lists, there are many reasons why lab testing is needed. So we asked the lab to test for the presence of phthalates (linked to men’s health problems such as sperm damage and testicular cancer), 1,4-dioxane (carcinogens found in cosmetics), and artificial musks (hormone-disrupting chemicals found in fragrance). *(see Table 2).*

Table 2: **Unlabelled Toxic Substances Found via Laboratory Testing**

**— : "non detectable"**
**Mg/kg : milligrams per kilogram**
**µg/kg : micrograms per kilogram**

| PRODUCT TYPE | PRODUCT NAME | Toxic substances NOT listed on the product label (µg/g) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Phthalates | 1,4-Dioxane | Galaxolide | Tonalide | Musk Xylene | Musk Ketone | Cashmeran | Traseolide |
| after-shave | Aqua Velva Aftershave | 680 mg/kg (DEP) | — | 76 mg/kg | — | — | — | — | — |
| | Calvin Klein "Obsession" Aftershave | 12,000 mg/kg (DEP) | — | 2300 mg/kg | 1100 mg/kg | — | — | 180 mg/kg | — |
| shaving cream/gel | Rexall Shaving Cream | — | — | — | — | — | — | — | — |
| | Gillette Shaving Cream | — | — | 1.6 mg/kg | 1.7 mg/kg | — | — | — | — |
| | Nivea for Men Shave Gel | — | — | — | — | — | — | — | — |
| deodorant/ anti-perspirant | Speed Stick Stain Guard Deodorant | — | — | 12,000 mg/kg | — | — | — | — | — |
| | Old Spice Deodorant | 490 ppm (DEP) | — | 1500 mg/kg | 750 mg/kg | — | — | — | — |
| shampoo | Pert Plus 2-in-1 Shampoo & Conditioner | 14 ppm (DEHP) | 13,000 µg/kg | 210 mg/kg | 110 mg/kg | — | — | — | — |
| | TRESemmé Shampoo | — | 8500 µg/kg | — | — | — | — | — | — |
| | **Head & Shoulders Dandruff Shampoo | — | 10,000 µg/kg | 98 mg/kg | 5.7 mg/kg | — | — | — | — |
| misc. hair products | Axe Hair Gel | — | — | — | — | — | — | 6.8 mg/kg | — |
| | L'Oreal Preference Hair Dye: Black | — | 17,000 µg/kg | 60 mg/kg | — | — | — | — | 35 mg/kg |
| moist-urizer | Cetaphil Moisturizer | — | — | — | — | — | — | — | — |
| | Proactiv Moisturizer: Oil Free | 13 mg/kg (DMP) | — | — | — | — | — | — | — |
| soap | Dove Men+Care Soap | — | — | — | — | — | — | — | — |
| | Ivory Soap Bar | — | — | .79 mg/kg | .77 mg/kg | — | — | — | — |
| | Pears Soap | — | — | — | — | — | — | — | — |

[1] DEHP is short for di-2-ethyl-hexyl-phthalate.

[2] DEP is short for diethyl phthalate.

*Recently, PERT PLUS began marketing "Classic Clean" for this hair type, phasing out "Happy Medium." However, an Innovative Brands LLC customer service representative confirmed that the formula has not changed.

** HEAD & SHOULDERS is not required to list non-"active ingredients" because it makes a therapeutic claim.

## SECTION 3:
## WHAT DO THE RESULTS MEAN?

Don't panic. Yes, these results are cause for concern, but the problem is long-term exposure. Unless a user has a particular sensitivity to an ingredient, immediate ill effects are unlikely. The thing to keep in mind is that trace exposures add up. So the question becomes, ultimately, why are these chemicals in grooming products in the first place? Their alleged benefits, like a longer shelf life or greater staying power for a fragrance, come with a larger downside: poisoning of humans and the environment.

Trace amounts of harmful chemicals in our personal care products are worrying for several reasons. Throughout the course of the day, Canadians are exposed to phthalates and other harmful chemicals in many ways, not only through personal care products. For example, phthalates are also common in PVC, vinyl flooring and are responsible for that "new car smell". Phthalates in fragrance are yet one more source of exposure. So getting phthalates out of just one kind of product really helps to reduce someone's total exposure.

Think back to elementary school. Separately, baking soda and vinegar are harmless, but put them together, add some paper maché and you have a mini volcano.

The long-term effects of phthalates and other hormone-disrupting chemicals have not been adequately studied. And Canadians, use several personal care products each and every morning. This all adds up, leading to constant low grade exposure.

In a comprehensive review conducted by the Endocrine Society, an expert panel of top scientists from the field of endocrinology, which is the study of hormones and glands, the authors stated that "effects of different classes of EDCs (Endocrine-Disrupting Chemicals) may be additive or even synergistic."[9] This means that mixtures of chemicals can have effects that are different than the effects researchers uncover when looking at exposures on a chemical by chemical basis. Think back to elementary school. Separately, baking soda and vinegar are harmless, but put them together, add some paper maché and you have a mini volcano.


### HEAD & SHOULDERS: WHAT'S IN THE BOTTLE?

**Dandruff shampoo is classified as a drug due to its therapeutic claims and therefore is not subject to the same labelling rules as cosmetics in Canada. Only the active ingredient, zinc pyrithione, is listed on the product label. Proctor & Gamble (the product's parent company) provided ENVIRONMENTAL DEFENCE with a list of ingredients through their customer service department, confirming that the product contains sodium laurel sulfate and sodium laureth sulfate, which are ingredients included in the *Just Beautiful* "Toxic Ten".**

**These ingredients are skin irritants that are often contaminated with 1,4-dioxane. For this reason, it is unsurprising that our tests found Head & Shoulders contained 10,000 micrograms per kilogram of the carcinogen 1,4-dioxane.**

**For a dandruff treatment that doesn't contain irritants or the carcinogen 1,4 dioxane, *Ecoholic* author Adria Vasil recommends simple solutions you can try at home: natural tea tree oil or essential rosemary oil can be used along with gentle shampoo. Alternately, try applying a mixture of one part apple cider vinegar to three parts water on the scalp before shampooing.[8]**

While you're not going to erupt, something similar also happens when some kinds of chemicals mix. For example, in addition to the hormone-disrupting effects of one common synthetic fragrance ingredient, musk ketone,[10] exposure to this chemical has the added effect of making humans more susceptible to the hazardous effects of polyaromatic hydrocarbons, which are known carcinogens.[11]

## Hormone-Disrupting Chemicals: What They Mean for Men's Health

Hormone-disrupting chemicals, known by the technical term 'endocrine disruptors,' are chemicals that mimic or interfere with the body's natural hormones. Hormones act as the body's internal communications system. Some of the more well-known hormones, such as testosterone and estrogen, act as signals that guide puberty, reproduction and development. Common chemicals that mimic hormones include bisphenol A (BPA), polychlorinated biphenyls (PCBs), parabens, phthalates,[12] and some artificial musks found in fragrances.[13]

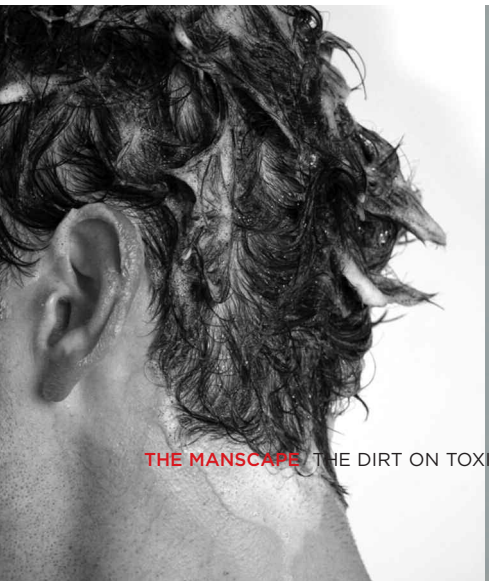
Men's health issues linked to hormone-disrupting chemicals include **obesity, sperm damage**,[14] **undescended testicle, reduced anogenital distance (AGD) (the distance between the anus and genitals),**[15] and **hypospadias (a deformity of the penis in which the urethra opening is not properly placed).**[16] **Prostate cancer** and **testicular cancer** and are also associated with hormone-disrupting chemicals. More detail on these risks is provided below. [17, 18]

## Phthalates: Hormone-Disrupting Chemicals Far too Common in Consumer Products

Phthalates are a type of endocrine-disrupting chemical that have come under a great deal of scrutiny in the past decade.

Canada has banned phthalates from children's toys, and DEHP (di-2-ethylhexyl phthalate) has been banned from being added to cosmetics intentionally, but may appear as an impurity. Our testing found DEHP in Pert Plus. Other phthalates are still common in cosmetics and polyvinyl chloride (PVC) products. Dibutyl phthalate (DBP) is commonly found in nail polish, and our tests found diethyl phthalate (DEP) in Old Spice High Endurance deodorant.

The main health effects linked to phthalates include: male hormone disruption, fertility problems and links to testicular cancer.



**Some phthalates have been banned from cosmetics in the EU since 2003,[19] but these chemicals are still found in other consumer products. In light of mounting health concerns, the EU has plans to review existing phthalate regulations. In September 2012, Denmark moved ahead of the EU review and placed additional bans on phthalates. Danish Environment Minister Ida Auken told the press, "The Danish Environment Ministry has enough documentation so we feel now is time for action."**[20]

## 1. Testicular and Prostate Cancer

Exposure to phthalates has been linked to disorders such as **reduced semen quality,**[21] **reduced anogenital distance (AGD)**[22], as well as **testicular cancer**.[23] Most recently, researchers have found an association between decreased anogenital distance, which has been linked to phthalate exposure, and prostate cancer.[24]

Testicular cancer is becoming more common in Europe and North America. While many researchers blame rising cancer rates on an aging population, testicular cancer is an illness that is common in younger men. Testicular germ cell tumors (TGCT) are the most common solid organ tumors in men aged 20-39.[25] The rate of testicular cancer in US males skyrocketed 44 per cent between 1973 and 1998.[26] Researchers have pointed out that environmental factors have likely played a role in this dramatic increase.[27]

Pre-natal exposure to endocrine-disrupting chemicals, phthalates among them, has been linked to the development of **testicular dysgenesis syndrome (TDS)**, which is a risk factor for **testicular cancer**. TDS is comprised of **cryptorchidism (undescended testicle), hypospadias,** and **low fertility**.[28] The rate of hypospadias in the U.S. doubled between 1968 and 1993. The use of phthalates in consumer products also increased during this period. It is no surprise then, that studies have linked this condition to phthalate exposure.[29]

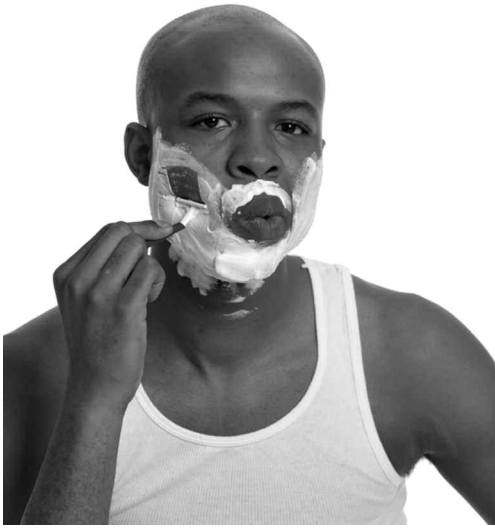
In a 2012 study, researchers measured the anogenital distance (AGD) of patients with prostate cancer, comparing the measurement to a control group without prostate cancer. The study, the first of its kind, found that a decreased AGD was associated with an increased risk of prostate cancer.[30] Decreased AGD is also associated with phthalate exposures in utero, meaning that the AGD of a male fetus can be affected by the mother's exposure to phthalates at key times in pregnancy.

## 2. Bigger waistlines

Phthalate exposure is linked to a larger waist circumference in adult men, as well as insulin resistance. Phthalates break down quickly in the body, and exposure can be assessed by testing for phthalate metabolites (breakdown products) in urine. Researchers found higher levels of phthalate metabolites to be associated with greater waist circumference when testing the urine of male participants in the 1999-2002 National Health and Nutrition Examination Survey (NHANES).[31]

## 3. Asthma

Researchers at Columbia University have found evidence that phthalates may be an asthma trigger. In a study involving children aged 5-9 years old, a link was found between DEP (di-2-ethylhexyl phthalate) in urine and higher levels of fractional exhaled nitric oxide (FeNO), which indicates airway inflammation.[32] A Finnish study also found a correlation between DEHP (di-2-ethylhexyl phthalate) exposure and adult onset asthma.[33]



## Small doses, big problems

In the past, toxicologists assessed the safety of chemicals based on the notion that "the dose makes the poison." Starting with a high dose, a chemical would be administered at lower and lower doses until no immediate adverse effect could be seen, thus determining the term " No Observable Adverse Effect Level" or NOAEL.[34] But in recent decades, scientists have found evidence that hormonally active chemicals could be harmful at extremely low doses, and show markedly different effects at high and low doses.

Take the breast cancer drug Tamoxifen. At high doses, Tamoxifen, which mimics naturally occurring hormone estradiol, kills breast cancer cells. But when administered at a dose 10,000 times lower, it causes breast cancer cells to proliferate.[35] The 2008-2009 President's Cancer Panel chaired by Dr. Margaret Kripke of the M.D. Anderson Cancer Center and Dr. LaSalle Leffall Jr. of Howard University, listed endocrine-disrupting chemicals (EDCs), including phthalates, in their review of environmental causes of cancer. While further study is needed, the report recommends that "because of the long latency period of many cancers, the available evidence argues for a precautionary approach to these diverse chemicals, which include…polycyclic aromatic hydrocarbons [which frequently contaminate petroleum jelly products]… phthalates, [and] parabens…".[36]

## Smells like trouble: artificial musks and the environment

Artificial musks are one of the ingredients commonly hidden as "fragrance" or "parfum" on ingredient labels, so people often don't know they are there. While the long-term effects of exposure to them have not been adequately studied, they are already polluting the environment and our bodies. Galaxolide and tonalide, two of the chemicals we found in men's grooming products, have been found to pollute the Great Lakes region.[37]

Tonalide (also known as AHTN) has been found in Minnesota's drinking water and may affect hormonal systems in fish.[38] Artificial musk chemicals have been found to cause endocrine-disrupting effects in lab animals, and musk ketone increases human susceptibility to the effects of exposure to PAHs —cancer-causing chemicals that are common contaminants in petroleum jelly, and are also found in fuel exhaust, polluting populated areas.[39] The artificial musks galaxolide (also known as HHCB), musk tonalide, and musk ketone have been found in the blubber of whales off of South Korea, indicating how widespread environmental pollution by these chemicals has become.[40]

Artificial musks are one of the ingredients commonly hidden as "fragrance" or "parfum" on ingredient labels, so people often don't know they are there.

## SECTION 4: **WHAT SHOULD BE DONE?**

We've seen that toxic chemicals are in men's grooming products. Some are not intentionally added, while others are unlabelled on products. But the faster the men's body and skin care market grows, the more guys are unknowingly putting them on their chest, face and hair. The amounts applied each day might be small, but exposures can add up over time, something regulatory agencies often do not adequately consider.

Considering that in the U.S., the 2008-09 President's Cancer Panel Report found that of the 80,000 chemicals on the market, an astonishing 98 per cent are understudied and largely under-regulated, there is much to be concerned about. In Canada, the Chemicals Management Plan—jointly operated by Health and Environment Canada—is making strides. For example, it resulted in the banning of bisphenol A (BPA) from baby bottles and phthalates in children's toys. However, there remains much work to do. This is true for consumers, the industry and government.

### What male consumers can do...

Here's what you can do to protect yourself, your loved ones and future generations from unnecessary exposure to toxic chemicals in personal care products:

1) **CHOOSE SAFER PRODUCTS:** Visit our website, **www.environmentaldefence.ca/toxicten** and use our pocket shopping guide to learn about the "Toxic Ten". These chemicals are found in products for men and women and should be avoided.

2) **LESS IS BETTER.** If you just love your product but it contains chemicals from this report, consider using it less often or eliminating other products from your routine.

3) **DEMAND THAT MANUFACTURERS OF BODY CARE PRODUCTS FULLY DISCLOSE INGREDIENTS AND SUPPORT THOSE THAT DO.** Tell manufacturers that you want them to fully disclose the ingredients in the products they make—including impurities and "fragrance". You can find companies' toll-free customer hotlines on product packages and online, and calling them only takes a moment.

4) **HELP PASS SMARTER, HEALTH-PROTECTIVE LAWS.** Buying safer products is a great start, but we can't just shop our way out of this problem. For safer products to be widely available and affordable for everyone, we must pass laws that shift the entire industry to non-toxic ingredients and safer production. Canada needs better labelling laws and bans, like Europe has, of harmful chemicals. Sign our petition at **environmentaldefence.ca/take-action**.

## What the industry can do...

1) **TAKE OUT THE "TOXIC TEN".** These chemicals aren't needed in products.

2) **IF WOMEN IN PARIS AND MEN IN MILAN DON'T NEED IT, CANADIANS DON'T.** If a chemical is banned in Europe, don't use it in Canada. Many companies operate in both markets, and if a product makes someone more beautiful or handsome on one side of the Atlantic without a harmful chemical, it can work on the other side without it, too.

3) **BE PROACTIVE.** If a chemical is known or suspected to be carcinogenic, mutagenic, a reproductive or developmental toxicant, a neurotoxin or a hormone-disruptor, why is it in your products?

4) **DISCLOSE ALL INGREDIENTS.** Consumers have a right to know what they're putting on their body and all substances should be disclosed—no exceptions!—on the label and online.

5) **BETTER MANUFACTURING PROCESSES.** Get ethoxylation out of the manufacturing process, to stop products being contaminated with 1,4-dioxane, for example. It's a suspected carcinogen.

## What government can do...

Health Canada is taking strides to deal with this issue, but strengthened federal cosmetics regulations are still needed to give consumers peace of mind regarding the safety of personal care products. These improvements should include:

1) **A EUROPEAN-STYLE BAN ON HARMFUL AND RISKY SUBSTANCES. CANADA NEEDS TO FOLLOW EUROPE BY HAVING A MORE COMPREHENSIVE LIST OF PROHIBITED OR RESTRICTED SUBSTANCES.**

   Canada currently has a general ban on harmful substances in cosmetics and a cautious list of substances it has singled out as harmful. Europe, on the other hand, has banned more than 1,000 substances. These include many carcinogens, mutagens, and reproductive toxicants[41] not on *Canada's Cosmetics Ingredient Hotlist.*

   It's time to catch up, and perhaps even get ahead by including substances known or suspected to be carcinogenic, mutagenic, reproductive toxicants, developmental toxicants, neurotoxicants, and hormone-disruptors.

2) **COMPLETE AND PRIOR PUBLIC DISCLOSURE OF MATERIALS IN THE PRODUCTS.** Manufacturers should be required to disclose all substances, intentional ingredients (including fragrance substances) and unintentional ingredients (including impurities), in their products without exception, before they make it to stores. The proposed U.S. Safe Cosmetics Act of 2010 would require that all ingredients, unless protected as a trade secret by other laws, to be labelled on cosmetics. However, contaminants will not have to be labeled if present at levels below technically feasible detection limits.[42] We recommend that Canada take a similar approach.

## 1. THE "TOXIC TEN": HARMFUL CHEMICALS THAT APPEAR ON LABELS

**BHT and BHA**
BHT (Butylated Hydroxytoluene) and BHA (Butylated Hydroxyanisole) are used as preservatives and stabilizers in cosmetics. Two studies have linked BHT with adverse effects on the thyroid[43] and possible thyroid carcinogenesis.[44] BHA and BHT both have the potential to induce allergic reactions in the skin.[45]

**Coal Tar-Derived Colours**
The coal tar-derived colourant para phenylenediamine is a common ingredient in hair dye. It is a sensitizer, meaning it has the potential to trigger allergic reactions, and has been linked to bladder cancer in hair stylists and regular users of hair dye.[46]

**Formaldehyde Releasers**
Quaternium-15 is a preservative which releases formaldehyde into cosmetics to act as a preservative. It is often found in shampoo. Formaldehyde is a known human carcinogen, and has been linked to leukemia specifically.

**Artificial Musks Hidden in Fragrance**
While artificial musks do not appear on cosmetic labels, they are often found in the ingredients of "fragrance" or "parfum". The inclusion of fragrance on ingredient lists usually suggests a variety of hidden chemicals which do not have to be disclosed because they are considered trade secrets. Also hidden within these trade secrets are often high levels of phthalates. Phthalates are endocrine disrupting and have been linked to breast cancer and birth defects. Fragrance is also linked to allergies, immune system toxicity, headaches and dizziness.

**Parabens**
Parabens are used as a preservative in many products, including moisturizers, soaps and shampoos. They mimic the hormone estrogen, and have been found in breast cancer tumors.[47]

**Petrolatum/Petroleum Jelly**
Petroleum jelly is often found in hair products, lip balm, and products marketed for sensitive skin and babies. It is a by-product of the fuel-refining process, and the risk is that it is frequently contaminated with polyaromatic hydrocarbons (PAHs). PAHs are cancer-causing chemicals.[48]

**Siloxanes**
Siloxanes are silicone based chemicals, including cyclomethicone, cyclotetrasiloxane, cyclopentasiloxane, and cyclohexasiloxane. Siloxanes are an environmental pollutant, and have been shown to disrupt hormones in animal studies. They are also skin irritants.[49]

**Sodium Laurel Sulfate and Sodium Laureth Sulfate (SLS/SLES)**
These petroleum derived ingredients are added to shampoo and soap to make the products foam, but they are abrasive irritants with hormone-disrupting effects.[50] Petroleum by-products such as SLS/SLES and petroleum jelly are often contaminated with PAHs, which are carcinogenic.

**Phthalates**
Phthalates are a group of chemicals that appear in products as preservatives; in this case, they will be listed on the label of cosmetics. But additional phthalates may be hidden in the fragrance of a product (see section 2). DEHP (di-2-ethylhexyl phthalate) was listed as a probable human carcinogen by the International Agency for Research on Cancer (IARC) in 2011.[51] DEP has been linked to reproductive health problems in men. These phthalates and others have been linked to asthma and obesity as well.

**Triclosan**
Triclosan is a pervasive anti-bacterial chemical that was declared toxic to the environment in a draft assessment by Environment Canada. Studies have also linked triclosan to human health problems. It mimics thyroid hormones, and its breakdown products include the carcinogens chloroform and dioxins. It is found in soaps and some hand sanitizers. Studies have shown that it is no more effective at killing germs on hands than washing with regular soap and water.[52]

For more information on the "Toxic Ten", as well as a pocket shopping guide that you can download and take with you, visit **www.environmentaldefence.ca/toxicten**.

## 2. TOXIC CHEMICALS THAT DO NOT APPEAR ON LABELS

**1,4-dioxane**
1,4-dioxane is a synthetic solvent that is prohibited from intentional use in cosmetics through *Canada's Cosmetics Ingredient Hotlist,* but, it often contaminates products, as demonstrated by our test results. This irritant and suspected carcinogen readily penetrates skin.[53] However, manufacturers can now reduce 1,4-dioxane levels before these chemicals are made into products used in the home.[54]

**Synthetic musks: galaxolide, tonalide, musk ketone, musk xylene, cashmeran**
Many artificial musks have not yet been tested in long-term studies that could specifically address effects on the endocrine system.[55] Significant data gaps and a lack of adequate animal or human studies make definitive characterization of endocrine toxicity a challenge. However, a substantial body of data from laboratory studies with cell culture models indicates that these chemicals can affect the function of the human estrogen receptor as well as receptors for other hormones such as androgen and progesterone and stimulate the growth of hormone-sensitive cancer cells *in vitro.*[56] Both galaxolide and tonalide musks contaminate people and the environment worldwide, and have been associated with toxicity to the endocrine system.[57] A recent Environmental Working Group (EWG) study found both in the cord blood of newborn babies.[58] Musk ketone makes humans more susceptible to the hazardous effects of exposure to PAHs.[59]

Phthalates
Some phthalates may be listed on the label of cosmetic products. However, additional phthalates may be hidden in "fragrance" or "parfum," the ingredients of which are protected under Canadian law as a trade secret. DEHP (di 2-ethyl hexyl phthalate) is prohibited by the Cosmetics Ingredient Hotlist, and has been classified as a probable human carcinogen by IARC (the International Agency for Research on Cancer), yet we found it in the popular shampoo and conditioner Pert Plus. DEP (diethyl phthalate) is a fragrance solvent that has been associated with adverse effects on the development of the reproductive system in epidemiological studies. Although research is not yet definitive on the mechanism of DEP toxicity, findings from human studies raise strong concerns about the safety of DEP exposures.[60]

## APPENDIX B: **RESEARCH METHODOLOGY**

ENVIRONMENTAL DEFENCE asked five guys from four provinces to open up their shaving kits and let us know what grooming products they use, including:

- **Soap and/or body wash**
- **Shampoo**
- **Shaving cream or lotion**
- **Aftershave, cologne, or body spray**
- **Antiperspirant or deodorant**

We then purchased the sealed items at Canadian stores, and checked the ingredients on the product labels for the following toxic substances:

- **Parabens**
- **Phthalates**
- **Triclosan**
- **Petrolatum or Mineral Oil**
- **Fragrance or Parfum**
- **Sodium Laureth Sulfate and Sodium Lauryl Sulfate**
- **Cyclomethicone, Cyclotetrasiloxane, Cyclopentasiloxane, or Cyclohexasiloxane**
- **Formaldehyde-Releasing Agents (DMDM hydantoin, diazolidinyl urea, imidazolidinyl urea, methenamine, quarternium-15, and sodium hydroxymethylglycinate)**
- **Coal Tar-Derived Colours**
- **BHA (butylated hydroxyanisole) & BHT (butylated hydroxytoluene)**

We then sent the products to the accredited facility Analytical Sciences Laboratories in California to be tested for some common toxic ingredients that don't appear on labels: phthalates, 1,4-dioxane, galaxolide, tonalide, cashmeran, taseolide, musk xylene, and musk ketone.

**1,4-Dioxane Analysis Protocol**

An accurately weighed amount of the sample was placed into an extraction vial. Exactly five millilitres of methylene chloride was added. The sample was sealed in the extraction vial, mixed well and sonicated for 30 minutes. Once cooled a specific amount of the methylene chloride sample extract was removed and placed into an injection vial. A specific amount of an internal standard (1,4-dioxane-d8) was added to the injection vial. Injection vials were sealed and placed into an autosampler connected to a gas chromatograph with a very sensitive mass spectrometer attached. The instrumental method utilizes very specific mass spectral ions unique to 1,4-dioxane and 1,4-dioxane-d8 to identify and quantify 1,4-dioxane. This mode of instrument operation is commonly referred to as "Selective Ion Monitoring" or "SIMS". This is the most sensitive means to look at a target compound with mass spectroscopy because only chemicals having one specific ion are detected and the mass spectrometer is 100 per cent focused on that one ion. The use of the SIMS mode typically increases the sensitivity of the instrument 100 fold or more for the targeted compound. Results for detected 1,4-dioxane are quantified using 1,4-dioxane standards run using the same gas chromatogram operating program.

**Phthalates Analysis Protocol**
An accurately weighed amount of the sample was placed into a glass extraction vessel to which five millilitres of hexane was added. The sample extraction vial was sealed, mixed using a vortexer and sonicated for 30 minutes. Once cool a 300 microlitre portion of the extract was removed and placed into an autosampler vial. Internal standards were added, mixed in the autosampler vial and the autosampler vial was sealed. The hexane extracts were placed into an autosampler connected to a gas chromatograph with a mass spectrometer detector. Each sample extract was injected into the gas chromatograph and the phthalates were separated on the chromatographic column. The mass spectrometer detected compounds as they emerged from the gas chromatographic column. The instrument was calibrated with specific phthalates which the instrument looked for in each of the samples. If a target phthalate was found by the mass spectrometer at the expected retention time it was quantified and reported.

**Synthetic Musk (GC/MS) Analysis Protocol**
An accurately weighed amount of the sample was placed into a teflon sealed extraction vessel to which a known volume of hexane was added. The vessel was sealed and mixed using a vortexer. After mixing the sealed extraction vessel was placed into a sonication bath for 30 minutes. The extraction vessels were removed from the sonication bath and allowed to cool. Three hundred microlitres of extraction solvent were withdrawn from the extraction vessel and placed into an autosampler vial. Six internal standard compounds were added at specific concentrations. The autosampler vial was sealed after mixing. After all autosampler vials were prepared they were loaded into the autosampler connected to a chromatograph equipped with a mass spectrometer detector (GC/MS). A specific amount of each sample extract was injected into the GC/MS. The instrument uses a temperature ramp program and separates the compounds in the sample extract as they pass through the column in the gas chromatograph. The instruments' mass spectrometer detects each compound as it emerges from the column. The instrument is calibrated for six synthetic musk compounds: Cashmeran, Traseolide, Galaxolide, Tonalide, Musk Xylene, and Musk Ketone. If a chromatographic peak is detected at the retention time corresponding to a synthetic musk compound and the mass spectrometer identifies the compound as a synthetic musk the compound is quantified and reported.

**ENVIRONMENTAL DEFENCE'S analysis of the potential health effects of cumulative exposure to these substances is based on existing literature on health problems associated with individual substances (see "References").**

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