



Prevention
Starts
Here

October 2016

Campaign for
Safe Cosmetics

Pretty Scary 2

Unmasking toxic chemicals in kids' makeup



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Introduction

Halloween. It's a rare holiday that is both beloved and chilling. Kids look forward to it all year long. So do parents, but they have the added pressure of trying to protect the safety and health of their trick-or-treating children.

For decades, families have been warned about checking the baskets and pillow cases stuffed with candy collected from strangers in the neighborhood.

But, did you know that protecting your children's health and well-being may also require careful inspection of the face paints sold in your local stores and at large retailers? Kids' face paints can be contaminated by heavy metals including lead and cadmium. Lead causes altered brain development and learning difficulties while cadmium disrupts the body's hormones.

But it's not just face paints that should give parents cause for concern. What about children's cosmetics in general? This report reveals the frightening ingredients we found in the toy aisles across America that sell everything from lip balm, to nail and makeup kits marketed to kids at various ages from 4-14.

What we found is the widespread presence of toxic chemicals in cosmetic products marketed to kids.

And that's a fact every parent must be made aware of so they can safeguard against children's cosmetics in their households that could do great harm to their children.

First, we looked at the labels and found ingredients of concern, like parabens and formaldehyde-releasing chemicals.

Next, through lab testing, we found heavy metals such as lead, a neurotoxicant, and cadmium, a hormone disruptor, in face paints. In lip balms, nail products and more we found volatile organic compounds (VOCs) linked to a wide variety of cancers.

Our net takeaway: the presence of these chemicals marketed to children is of serious concern, especially since children are highly vulnerable to the effects of toxic chemicals during critical windows of development.

Keep reading and we will break it all down for you.



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Summary

Here's what we did.

We read the labels of 187 products marketed to kids. Then we tested 51 of these products through third-party laboratories to see what toxic chemicals they contained.

LABEL READING RESULTS: Labels revealed a wide range of toxic chemicals in children's cosmetic and personal care products. Some chemicals of concern include "fragrance" (often a composite of dozens of undisclosed chemicals); and propylparaben in almost half of the products we examined.

LABORATORY TESTING RESULTS: We tested 48 Halloween face paints for the presence of heavy metals such as arsenic, cadmium, chromium, lead and mercury. Almost half of these—21 items—had trace amounts of at least one heavy metal. Some products contained as many as 4 metals.

Heavy metal concentrations were higher and more common in darkly pigmented paints.

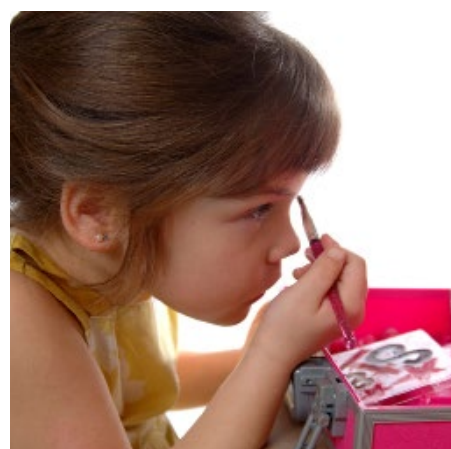
Food for thought come Halloween time.

PARTNER TESTING RESULTS: Working with 14 partners in 14 states we collected 39 makeup products marketed to children, including: lip balm, nail and makeup kits found in toy aisles, shampoos and lotions, and party favors.

All of these products listed either styrene-based chemicals or fragrance on the labels, leading us to suspect that both of these ingredients could lead to trace level of volatile organic compounds (VOCs).

Empirical lab testing confirmed our suspicions. We found 20% of products had at least one VOC.

Flavored lip balms were found to be most likely to contain VOCs. And therefore these products may pose some of the highest dangers to kids.



Seven different VOCs were found, four having the potential to lead to serious long-term health care effects:

- Toluene, a reproductive toxicant
- Styrene, a probable carcinogen and endocrine disruption compound
- Ethylbenzene, a possible carcinogen
- Vinyl acetate, another possible carcinogen

In summary our label reading and laboratory tests revealed the presence of toxic chemicals across the spectrum of Halloween products and cosmetics marketed to children. These products pose a real threat to children's health.

Here's what we found & what you need to be aware of.

LEAD AND CADMIUM. The CDC has made it clear that there is no safe level of lead. Yet, we found lead in nearly 20% of the Halloween face paints tested. Cadmium in nearly 30%. Lead is strongly associated with learning disabilities and developmental problems. Cadmium is linked to breast, kidney, lung and prostate cancer.

TOLUENE. Toluene, a hormonally active, development and reproductive toxicant was found in nearly 11% of products tested.

PARABENS. At least one paraben, an endocrine disrupting compound, was found in 34% of products. Two or three parabens were found in 3% of the products.

FORMALDEHYDE. We found formaldehyde-releasing preservatives in 3% of the products. Formaldehyde is a known human carcinogen.

ETHOXYLATED INGREDIENTS. We found 28% of products contained ethoxylated ingredients just from reading the labels. This manufacturing process can result in two toxic contaminants linked to breast cancer and other cancers: ethylene oxide and 1,4- dioxane.

There are real dangers in these children's products designed for play or daily use. We have long known that the federal laws governing the safety used in personal care products are inadequate. The results of this study clearly indicate the need for strong, health protective, federal cosmetic safety reform to reduce children's exposure to chemicals from products that on the surface seem playful, but upon scientific analysis, pose a dangerous threat to children's health and well-being.



Heavy metal concentrations were higher and more common in darkly pigmented paints.

Background

Many people assume the U.S. Food and Drug Administration (FDA) regulates cosmetics and personal care products in the same way it does food and drugs to assure safety. In fact, cosmetics are one of the least regulated consumer products on the market today. The Federal Food, Drug and Cosmetics Act (FFDCA) includes 112 pages of standards for food and drugs, but just 2 pages are dedicated to cosmetic safety. Existing cosmetic safety law is over 75 years old and provides the FDA with virtually no statutory power to perform even the most rudimentary functions to ensure the safety of an estimated \$71 billion cosmetic industry. For example, under existing law:

- Companies can use virtually any raw material in a finished cosmetic product—including chemicals linked to long-term adverse health effects like cancer, birth defects, hormone disruption, learning disabilities, and more—without FDA pre-market safety testing or review.
- The ingredients in cosmetic products sold via the internet—a primary source of shopping for tweens, teenagers and their busy parents—don't have to be labeled.
- The secret, often toxic, ingredients in fragrance don't have to be labeled—a serious problem, because 40% of the cosmetics and personal care products on the market today contain fragrance. And, although it's just one little word on the ingredient label, "fragrance" can contain dozens, even hundreds, of chemicals—including known carcinogens, hormone-disruptors and other toxic offenders.
- Unlike food and drugs, the FDA cannot require recalls of cosmetic products that are harming consumers—even kids—without going to court to argue the need to remove those products from the market.
- And, the FDA cannot require manufacturers to register their cosmetic establishments, file data on ingredients or report cosmetic-related injuries. Instead, FDA relies on voluntary reporting of ingredients, injuries and establishments.



Companies can use virtually any raw material in a finished cosmetic product, even those linked to cancer, birth defects or learning difficulties.

Then versus now

Much has changed since our nation's cosmetic safety law was enacted more than 75 years ago. Back then, the average home cost \$545 to buy, gas cost 10 cents a gallon and a movie cost a quarter. One of the biggest differences between then and now is younger and younger kids are using makeup. Kids have become an important demographic for the cosmetic industry in terms of sales and future brand loyalty. Creative marketing frequently lures kids in with products and packaging that feature their favorite Hollywood characters and Disney princesses.

This is a problem that affects us all

Americans use an average of 10 personal care products each day, resulting in exposure to more than 126 unique chemicals.¹ People are exposed to unsafe chemicals from the minute they wake up in the morning to when they go to bed at night. Toxic chemicals can be found in household and industrial cleaning products, baby bottles, the lining of canned foods, kids pajamas, couches, building material, even playground equipment. Toxic exposures from personal care products add to our daily dose of hazardous chemicals from air, water, food and other consumer products, and cosmetics chemicals have been found in our bodies,² breast milk³ and even the umbilical cord blood of newborn babies.⁴

This is a problem that affects all of us, but clearly some populations are more vulnerable and/or are being disproportionately impacted by toxic chemicals—like the developing fetus, infants, children and teenagers. Why?

Because, most importantly, kids aren't just "little adults." Children are especially vulnerable to the effects of chemicals, and preventing early-life exposures to harmful chemicals can help prevent health problems throughout their lives. For instance, a series of studies on the pesticide DDT revealed that early life exposures to DDT may increase breast cancer risk. The first study found that girls who were younger when DDT use was the highest had an increased risk of breast cancer.⁵ The second study was a 54-year follow-up of 9300 women. Higher maternal DDT levels were associated with an almost four-fold increase in occurrence of breast cancer in their daughters.⁶

Despite the cosmetics industry's claim to the contrary, small exposures can add up to harm and a growing body of scientific evidence shows that even tiny doses of some chemicals, such as endocrine disrupting chemicals, can be harmful.⁷ And it's not just the size of the exposure that matters, but also



the timing of the exposure and the body weight of the person exposed to the chemical. Exposures during particular developmental stages, such as those that occur during puberty, may increase an individual's later-life risk of disease.^{8,9}

Despite these concerns, children's cosmetic products—like the ones we tested—contain carcinogens and hormone disrupting chemicals. Furthermore, many personal care products contain multiple chemicals of concern. The industry has not studied the health effects of these repeated, chronic exposures to multiple toxicants despite the reality that we are exposed to chemicals from personal care products as mixtures, not to one chemical at a time.

Finally, kids are being exposed to the same toxic chemical from a range of sources. For example, a child may be exposed to formaldehyde from her toy make-up kit; her bubble bath, shampoo, body wash and body lotion; as well as from the cabinets, carpeting, and other products in the home.

Hope comes in the form of a recent study conducted at UC Berkeley where biomonitoring of a dozen Central Valley California teens showed a big drop in the chemical body burdens of girls who switched up their beauty regime. The girls saw reductions of 25 to 40 percent in 4 endocrine disrupting chemicals—phthalates, parabens, triclosan, oxybenzone—after only 3 days of switching from products that contained these harmful chemicals to products that did not.¹⁰ This study shows that if you take toxic chemicals out of cosmetics you can take them out of people in just a few days. This study argues parents can take proactive steps to reduce their kids exposure to unsafe chemicals via the make-up, facepaints and other cosmetics and personal care products they use each day.





Parents are seeking safer food and food packaging, less toxic paints, cleaning products and toys. Not surprisingly, consumers are also seeking safer personal care products without chemicals linked to cancer and other toxic chemicals.

Fortunately, an increasing number of companies are already making safer products without chemicals linked to cancer, hormone disruption, or other health problems. This proves that the shift to safer production is possible. However, the market can't fix these problems alone. As long as the toxicity of products is hidden or unknown, parents cannot make safe and informed purchases for themselves or their families and are playing a dangerous game of Russian Roulette with the health of their loved ones.

The existing
cosmetic safety
law is over 75 years
old and provides
the FDA virtually
no power to
perform even the
most rudimentary
functions to ensure
consumer safety.

What labels CAN tell us

We began this project by reviewing cosmetic products marketed to children. These included lip balms, body sprays, color cosmetics, nail products, and hair products. Products were found in the toy aisles of Target, Toys R Us, and at Claire’s and Justice stores that focus primarily on tweens. We also reviewed products from Family Dollar, Dollar Tree, and Dollar General for inclusion in our product testing.

Table 1. Products evaluated

Category	Number of products or kits	Number of unique ingredient lists	Total items tested (including duplicates)
Halloween Face Paint	14	22	48
Kids’ Makeup Products tested for VOC’s	51	39	65
Label Reading	93	126	n/a
TOTAL	158	187	113

Our team documented over 120 individual products from 93 cosmetic kits. In addition, we read labels for 22 Halloween products that were later tested for heavy metals (see page 21) and 39 individual products that were later tested for VOC levels (see page 26). Several products were found in kits that contained multiple items, such as several colors of lip balm, a mix of scented shower products, or a kit with multiple kinds of products. The labels revealed chemicals of concern in products marketed to children, including endocrine disrupting compounds, chemical linked to organ toxicity and neurological damage, and ingredients that can be contaminated with carcinogens. These chemicals of concern were prolific in products sold at all of the retailers we visited. Table 2 denotes the frequency of ingredients on the label with health hazards from our label-reading and laboratory tests. The health hazards associated with each ingredient are described on pages 16-19.

Many of the products reviewed in this phase informed the products purchased for laboratory testing (see Part 3), and we read the labels of all products we tested as well, bringing the total number of labels reviewed to 187.



Table 2: Chemicals of concern found on kids' product labels

Ingredient	Halloween Products 22	VOC Testing Products 39	Label Reading Products 126	TOTAL Products 187
Benzophenones (BP-1, BP-4)	0	1	1	1%
BHT	2	4	19	13%
Epoxy resin	0	0	4	2%
Ethoxylated ingredients	13	15	25	28%
Formaldehyde releasers				
DMDM hydantoin	0	1	3	2%
Diazolydinal urea	0	1	0	.5%
Imidiazolydinal urea	1	0	0	.5%
Fragrance	2	32	60	50%
Mineral oil	16	11	48	40%
Parabens				
Butylparaben	4	0	2	3%
Ethylparaben	4	0	3	4%
Propylparaben	16	6	40	33%
Petrolatum	7	2	15	13%
Polymethyl methacrylate	0	1	1	1%
Silica	1	7	17	13%
Styrene compounds				
Styrene acrylates copolymer	0	5	10	8%
Styrene copolymer	0	1	0	.5%
Styrene resin	0	0	1	.5%
Talc	15	2	16	18%

Health concerns of ingredients found by label-reading

Benzophenones (BP-1, BP-4)

Benzophenone is used in personal care products such as lip balm and nail polish to protect the products from UV light. It can also be found in foundations, baby sunscreens, fragrance, shampoo, conditioner, hair spray and moisturizers. Benzophenone-1 is linked to endocrine disruption.¹¹ The FDA restricts the concentration of benzophenones that can be used in cosmetics in the United States.¹²

Butylated hydroxytoluene (BHT)

BHT is a toluene-base ingredient that is used as a preservative in both food and personal care products.¹³ A safety assessment of BHT reported that BHT applied to the skin of rats was associated with toxic effects in lung tissue, but the Cosmetic Ingredient Review Panel judged that the low concentrations used in cosmetics were safe.¹⁴

Epoxy resin

Epoxy resin is most commonly made with bisphenol A (BPA). This can result in some residual BPA contaminating the product but not being listed on the label. BPA is a synthetic estrogen that is recognized as an endocrine-disrupting chemical because of its effects on hormone systems. Studies raise concerns that exposure to even low doses of the chemical can cause adverse health effects. These include abnormalities in breast development that can increase the risk of developing breast cancer, and harmful effects on reproductive development, prostate weight, testis weight, puberty onset, body weight, metabolic and immune system functions, and gender-related behaviors including aggression and some social behaviors.^{15,16,17,18,19,20,21,22,23}



Ethoxylated ingredients

Several of the ingredients we noted are concerns due to potential contamination. For instance, ethoxylated ingredients, which show up on product labels as ingredients ending in -eth (e.g., laureth, steareth, cetareth), PPG or PEG, or polysorbate generally have low hazard profiles on their own. However, the process of ethoxylation, where ethylene oxide, a known breast carcinogen,²⁴ is reacted with ingredients to make them less harsh, creates small amounts of 1,4 dioxane—an NTP reasonably anticipated human carcinogen²⁵—and can leave trace amounts of residual ethylene oxide in the product.

Formaldehyde releasing compounds

DMDM HYDANTOIN. DMDM hydantoin is a formaldehyde-releasing preservative (FRP) used to prevent microbes from growing in water-based products. It can be found in many personal care products.²⁶ It works by releasing formaldehyde, which has a number of concerning health effects. Formaldehyde is classified as a known human carcinogen by NTP and IARC^{27,28} and can irritate the skin and eyes. It was listed as the 2015 American Contact Dermatitis Society Contact Allergen of the Year.²⁹ DMDM hydantoin is found in personal care products such as lotion, sunscreen and make-up remover and is one of the least sensitizing of the formaldehyde-releasing preservatives.³⁰

IMIDIAZOLDINAL UREA AND DIAZOLYDINAL UREA. Imidiazoldinal urea and Diazolydinal urea are found in personal care products such as shampoo, conditioner, blush, eye shadow, and lotion and all are known human allergens.³¹ Diazolydinal urea releases the most formaldehyde of any formaldehyde-releasing preservative.³² Imidiazoldinal urea is one of the most common antimicrobial agents used in personal care products and is often combined with parabens.³³ These preservatives release small amounts of formaldehyde over time.

Fragrance

The constituent ingredients in fragrance are not listed on product labels or disclosed to consumers by companies and manufacturers. The International Fragrance Association (IFRA) lists almost 3,000 chemicals that have been used in fragrance.³⁴ Ingredients like acetaldehyde, benzophenone, dichloromethane, styrene and titanium dioxide are suspected or known carcinogens.^{35,36,37} Chemicals like benzyl salicylate, diethyl phthalate, and propyl paraben are endocrine disruptors.^{38,39,40} Others are allergens, skin irritants, and toxic to the liver, lungs, and kidneys, among other organs.⁴¹



Mineral oil

Mineral oils are used in personal care products as skin conditioners, hair conditioners, and solvents.⁴² Mineral oils are derived from crude oil, and mildly refined mineral oils always contain significant amounts of PAHs.⁴³ Untreated and mildly treated mineral oils are classified as known carcinogens by IARC and the NTP.^{44,45}

Parabens

PROPYLPARABEN. Parabens are potential endocrine disruptors due to their ability to mimic estrogen.⁴⁶ In cell studies, parabens have been found to weakly bind to estrogen receptors.⁴⁷ Studies demonstrate that at sufficient concentrations, parabens can increase cell proliferation in human breast cancer MCF-7 cells, which are often used as a sensitive measure of estrogenic activity.⁴⁸ Propyl paraben is also a reproductive toxin as it affects the male reproduction system and reduces sperm production and testosterone levels.^{49,50,51,52}

BUTYLPARABEN & ETHYLPARABEN. Butylparaben and ethylparaben are often found in shampoos, conditioners, lotions, facial and shower cleansers and scrubs that generally contain a significant amount of water to discourage the growth of microbes.⁵³ Parabens are not water-soluble and can penetrate the skin. As a result, repeated application of a product or multiple products containing parabens could mean almost continuous exposure.⁵⁴ The chance of parabens being in one or more of an individual's personal care products makes this a reasonable scenario. Butylparaben, specifically, appears to disrupt the male reproductive system and affect reproductive organs.^{55,56}

Petrolatum

Petrolatum, or petroleum jelly, derived from petroleum, is often used in personal care products as a moisturizing agent. When properly refined, petrolatum has no known health concerns. However, improperly refined petrolatum can be contaminated with polycyclic aromatic carbons (PAHs), which are likely carcinogenic.⁵⁷ The NTP considers PAHs as a class to contain reasonably anticipated carcinogens⁵⁸; IARC lists 14 PAHs as probable or possible carcinogens and one PAH as a known carcinogen.⁵⁹ A study on Long Island, NY, found that those women with high levels of PAH-DNA adducts had a 50 percent greater risk of breast cancer.⁶⁰ The formation of PAH-DNA adducts, an indicator of PAH exposure, is linked to cancer development.⁶¹



Polymethylmethacrylate

Polymethylmethacrylate is added to cosmetic products as a film former. In nail products, it allows sculptured artificial nails to mold and adhere to the natural nail plate.⁶² The monomer, methylmetacrylate has been linked to cancer, organ toxicity, reproductive toxicity, neurological damage, asthma and contact dermatitis.^{63,64,65,66,67,68}

Silica

Silica may be used as an absorbent, nonsurfactant, and thickener in personal care products.⁶⁹ It may be toxic to the liver, respiratory system, and kidneys.⁷⁰

Styrene

Styrene is one of almost 3,000 chemicals listed by the International Fragrance Association (IFRA) as being used in fragrance.⁷¹ These products are often in an aerosol or spray form, allowing for inhalation.⁷² It may also serve as a film-forming agent.⁷³ Styrene acrylates copolymer is a chain of polymers consisting of styrene and acrylate which is added to cosmetics for color.⁷⁴ Residual styrene may also be found as a contaminant in cosmetics.

The European Commission on Endocrine Disruption classifies styrene as a Category 1 endocrine disruptor.⁷⁵ Furthermore, the National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) classify it as a reasonably anticipated human carcinogen.^{76,77} If ingested, styrene can be toxic to red blood cells and the liver and if inhaled, it is toxic to the central nervous system.⁷⁸ Exposure to solvents including styrene can result in an increased risk of breast cancer.^{79,80,81}

Talc

Talc is a mineral used in cosmetics as an absorbent and to smooth and soften products.⁸² Talc may be contaminated with asbestos.^{83,84} Contaminated talc has been classified as carcinogenic by IARC.⁸⁵ Inhalation of talc may cause respiratory distress,^{86,87,88} mesothelioma,⁸⁹ and inflammation.⁹⁰ Application of talc near the pelvic area can lead to irritation, infection, inflammation, and an increased risk of endometrial cancer in women who have undergone menopause.^{91,92,93} Talc may also be associated with ovarian cancer.^{94,95}



Labels revealed chemicals of concern in products marketed to children, including endocrine disrupting compounds, chemicals linked to organ toxicity and neurological damage, and ingredients that can be contaminated with carcinogens.

What labels don't tell us: Heavy metals in face paint

In 2009, the Campaign for Safe Cosmetics released a report, *Pretty Scary: A Report on Heavy Metals in Face Paints*. For that report, we tested a total of 10 Halloween face paint kits for heavy metals, and found lead in 100% of the products, ranging from 54 parts per billion to 650 parts per billion (.054 to .65 parts per million).

For this follow-up report, we wanted to find out if lead is still a common contaminant of face paints, and also test products for four other heavy metals linked to adverse health effects: arsenic, cadmium, chromium and mercury.

We ordered 14 kits from an online Halloween store, and sent these to Weck Laboratories in City of Industry, California. Because many of the kits included multiple items, we had the lab test 48 individual colors from the 14 kits.

The lab tested for heavy metal contamination using methods validated by the US Environmental Protection Agency (EPA). The tests were able to detect heavy metals that were present at levels around .5 to 1 ppm depending on the test (see Appendix 2 for reporting limits). Results are noted in Table 3.

Heavy metals and health

We tested the Halloween products for the following heavy metal contaminants: arsenic, cadmium, chromium, lead, and mercury. Colorant ingredients and products mined from the earth can be contaminated.



ARSENIC is classified as a known human carcinogen by both the NTP and the IARC.^{96,97}

CADMIUM is also classified as a known human carcinogen by both NTP and IARC.^{98,99} Cadmium has also been linked to breast cancer specifically. When exposed to breast cancer cells, cadmium acts similarly to estrogen.¹⁰⁰ This may contribute to early puberty, which increases the risk of developing breast cancer.^{101,102} Higher amounts of cadmium have been found in cancerous breast tissue than non-cancerous tissue.^{103,104,105,106} High levels of cadmium in the blood or urine has been associated with an increased breast cancer risk.^{107,108,109} Cadmium may also change DNA processes leading to the promotion of cancer.¹¹⁰

CHROMIUM is used as a colorant and can be toxic to non-reproductive organ systems.^{111,112} A specific type of chromium (hexavalent chromium, also known as chromium-6) is classified as a known human carcinogen by both NTP and IARC.^{113,114} It can also mimic the effects of estrogen leading to early onset of puberty, a risk factor for breast cancer.¹¹⁵

LEAD is also an impurity in products containing added colors. Lead exposures during prenatal development, infancy and childhood can cause learning disabilities, attention deficits, hyperactivity, impulsive behavior, IQ deficits, reduced school performance, aggression and delinquent behavior.^{116,117,118} In addition to neurotoxic effects, lead has been classified as a reasonably anticipated human carcinogen by both NTP and IARC.^{119,120} Lead has estrogenic effects on breast cancer cells in culture.^{121,122,123} Higher levels of lead have also been found in women with breast cancer compared to healthy women.^{124,125,126,127} It has been linked to miscarriage, abnormal menstruation, delay of puberty, and reduced fertility.^{128,129,130}

MERCURY is toxic to organ systems such as the immune, respiratory, reproductive, and nervous systems.¹³¹ Exposure to high concentrations can cause mercury poisoning. Mercury poisoning can result in memory problems, changes in vision or hearing, tremors, or numbness.¹³²



Table 3: Heavy metals in face paints

Metal	Number	Percentage	Range of levels detected
Arsenic	4	8%	1.1-1.9 mg/kg
Cadmium	14	29%	.58-14 mg/kg
Chromium	13	27%	1.4-12 mg/kg
Lead	9	4.6%	1.2-3.9 mg/kg
Mercury	0	0	n/a

Arsenic was found in four items, ranging from 1.1-1.9 ppm. Cadmium was found in 14 items, with values ranging from .58 to 14 ppm. Chromium was found in 13 items, with a range of 1.4-12 ppm. Lead appeared in 9 items, with levels ranging from 1.2-3.9 ppm.

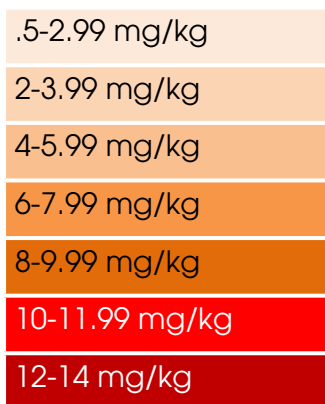
We tested for Mercury, but did not find it in any items at levels that could be detected by our tests (see Appendix 2 for methods and detection limits).

As illustrated in the heat map on the next page, heavy metals were found more often, and at higher levels, in black and other deeply pigmented face paints.

All of the products with detectable levels of lead had higher concentrations of lead than the levels allowed in drinking water (.015 ppm) and children's food (.5 ppm).¹³³ Our tests revealed that 19 percent (9 products) contained lead at levels above 1 ppm, the lower detection limit of our tests. In 2009, we only found lead at levels below 1 ppm (this was possible due to more specific and sensitive tests for lead). In other words, although we found lead in a higher percentage of products in 2009, the levels were actually lower than the levels we found in this year's batch of products.

The presence of both lead and cadmium in kids' products is particularly concerning. The strong association of lead with neurological and intellectual impairments has led the CDC to declare there is no safe blood level of lead.¹³⁴ Cadmium is of particular concern due to its capacity to mimic estrogen and research linking cadmium to breast cancer.

Heat map of heavy metal concentration in face paints



Product	Color	Arsenic	Cadmium	Chromium	Lead	Mercury
ABBEY BOMINABLE	BLACK					
BATMAN	BLACK					
FACE PAINT	BLACK					
HALLOWEEN PALETTE	BLACK					
HORROR VALUE	BLACK					
HOWLEEN WOLF	BLACK					
LIPS 'N LASHES	BLACK					
PAW PATROL	BLACK					
SCARY CLOWN	BLACK					
SPIRIT MAKEUP CRAYON	BLACK					
ZOMBIE	BLACK					
ZOMBIE BOYS	BLACK					
ZOMBIE KIDS	BLACK					
ABBEY BOMINABLE	BLUE					
BATMAN	BLUE					
FACE PAINT	BLUE					
FACE PAINT, CRAYON	BLUE					
HALLOWEEN PALETTE	BLUE					
HORROR VALUE, CRAYON	BLUE					
HORROR VALUE, CRAYON	BLUE					
SPIRIT CLOWN	BLUE					
SPIRIT MAKEUP CRAYON	BLUE					
PAW PATROL, BROWN	BROWN					
HALLOWEEN PALETTE	GREEN					
HORROR VALUE	GREEN					
HALLOWEEN PALETTE	ORANGE					
ABBEY BOMINABLE	PURPLE					
HALLOWEEN PALETTE	PURPLE					
HORROR VALUE	PURPLE					
HOWLEEN WOLF	PURPLE					
HOWLEEN WOLF	PURPLE					
ABBEY BOMINABLE	RED					
BATMAN	RED					
FACE PAINT, CRAYON	RED					
FACE PAINT	RED					
HORROR VALUE, BLOOD	RED					
HORROR VALUE, CRAYON	RED					
SCARY CLOWN	RED					
SCARY CLOWN, BLOOD	RED					
ZOMBIE	RED					
ZOMBIE BOYS	RED					
ZOMBIE, BLOOD	RED					
SPIRIT CLOWN, CREAM	WHITE					
ZOMBIE KIDS	WHITE					
BATMAN	YELLOW					
FACE PAINT, CRAYON	YELLOW					
HALLOWEEN PALETTE	YELLOW					
HORROR VALUE	YELLOW					
PAW PATROL	YELLOW					

The presence of both lead and cadmium in kids' products is dangerously concerning.

The strong association of lead with neurological and intellectual impairments has led the CDC to declare there is no safe blood level of lead.

Cadmium is of particular concern due to its capacity to mimic estrogen and research linking cadmium to breast cancer.

What labels don't tell us: Volatile organic compounds in products marketed to kids

Based upon our label-reading exercise, we tested kids' makeup products for Volatile Organic Compounds (VOCs). VOC's include chemicals like styrene, toluene, benzene, and formaldehyde that off-gas into the air. These vapors and gases are part of what make everything from perfume to paint to gasoline emit a scent. Many consumers seek VOC-free paint, but VOCs are everywhere. Some VOCs are naturally occurring—they are in plant oils and leaves, giving forests and flowers their unique smells.

We were particularly interested in styrene, which is listed by the International Fragrance Association (IFRA) as being used in fragrance.¹³⁵ Several ingredients are also made using styrene, including styrene-acrylates copolymer, and trace amounts of unbound styrene may remain in these ingredients. In both cases, styrene would not show up on the label, but would require laboratory testing to determine if it is present in products, and at what levels.

We chose products from our label reading exercise to acquire and test for trace levels of VOCs. Products we chose contained either fragrance or a styrene-based ingredient, but not both. This meant that if we found styrene in a product, we can clearly link it to one or the other of these ingredients.

We worked with colleagues from 14 states. We began with a 21-item shopping list, with the hopes that we would get each item from three different states. We also provided instructions for choosing replacement items, in case a specific product could not be found. See Appendix 3 for the original shopping list. If partners could not find the items on their shopping list, purchasers were instructed to choose products with either fragrance or one of the following: styrene/butadiene copolymer, polystyrene, styrene acrylates copolymer, styrene resin, any other ingredient with "styrene" in it.

Seven volatile organic compounds were found in 20 percent (13 of 65) of the kids' products tested (see Table 4). Many VOCs were found in multiple products, and four of the seven VOC's we found are associated with serious long-term health concerns.

In the end, we received 51 products from 15 states including California. Several products were not found in some locations. As a result, we tested products from our shopping list along with multiple substitutions. Findings and results are outlined in Table 4.

Volatile Organic Compounds Testing Approach

We sent 65 kids' makeup items from 51 products and kits to an accredited third party lab for testing of volatile organic compounds.

50 volatile organic compounds were assessed in each product. Because personal care products are complex products with many ingredients, most had to be diluted to 1/1000 of the original concentration in order to be tested. See Appendix 4. This reduced the sensitivity of the tests, and meant that the lab was generally able to see compounds with levels in the parts per million range, but not in the parts per trillion range. This means that some volatiles could be present in very, very trace amounts and our test results would not show this.

Seven volatile organic compounds were found in 20 percent (13 of 65) of the kids' products tested (see Table 4). Many VOCs were found in multiple products, and four of the seven VOC's we found are associated with serious long-term health concerns:

STYRENE. As highlighted in the label-reading section, the European Commission on Endocrine Disruption classifies styrene as a Category 1 endocrine disruptor.¹³⁶ Furthermore, the National Toxicology Program and the International Agency for Research on Cancer classify it as a reasonably anticipated human carcinogen.^{137,138}

ETHYLBENZENE. Ethylbenzene is a volatile organic compound that has been classified by the International Agency for Research on Cancer as a possible carcinogen.¹³⁹ It is also listed on California's Proposition 65 list of known carcinogens to cause cancer.¹⁴⁰ Ethylbenzene is mainly used in the manufacture of styrene.¹⁴¹ It is also used as a solvent, as a constituent of asphalt and naphtha, and in fuels.¹⁴² Short-term exposure may result in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and other effects such as dizziness.¹⁴³ Inhalation over time has shown conflicting results regarding its effects on the blood.¹⁴⁴



TOLUENE. Toluene is an endocrine disrupting compound, developmental and reproductive toxicant, organ system toxicant, and skin irritant.¹⁴⁵ Toluene is listed on California's Proposition 65 list of known carcinogens to cause reproductive toxicity developmentally.¹⁴⁶ Toluene is often used as a solvent in a variety of nail products, such as nail polish, nail hardeners, and polish removers.¹⁴⁷ It is used in nail products to suspend the color and form a smooth finish across the nail.¹⁴⁸ Exposure to toluene may occur from breathing ambient or indoor air affected by such sources.¹⁴⁹ The EU limits toluene to 25% of the finished product in nail products and requires the label, "Keep out of reach of children. To be used by adults only."¹⁵⁰



VINYL ACETATE. Vinyl acetate is primarily used as a monomer in the production of polyvinyl acetate and polyvinyl alcohol.¹⁵¹ It is also used as a raw material in the production of other chemicals, adhesives, water-based paints, nonwoven textile fibers, textile sizing's and finishes, paper coatings, inks, films, and lacquers.^{152, 153} Vinyl acetate is listed as an International Agency for Research on Cancer as a possible carcinogen.¹⁵⁴ Short-term inhalation exposure has resulted in eye irritation and upper respiratory tract irritation.¹⁵⁵



OTHER VOC'S. Acetone is a colorless volatile liquid with a fruity odor and sweetish taste. It dissolves completely in water. Acetone is a commercial chemical that is used as a solvent in consumer products and in industrial processes. Another major use of acetone is a starting material to make other chemicals. People using consumer products containing acetone, such as paints and glues, nail polishes, and nail polish removers may breathe in contaminated air and have skin contact.¹⁵⁶ Acetone levels of 2 to 3 mL/kg are considered to be toxic in children.¹⁵⁷ M-xylene, P-xylene, and O-xylene are a colorless liquid with an aromatic odor. Individuals can be exposed to these chemicals through inhalation, skin absorption, ingestion, skin and/or eye contact. Short-term effects of exposure include irritation to the eyes and skin, effects on the central nervous system and complications if swallowed.^{158,159,160} Some studies have found chronic effects at high occupational doses. The CDC suggests women who are pregnant avoid exposure to p-xylene and o-xylene.^{161,162}

Table 4: Volatile organic compounds in kids' makeup products

Product	State and Store		Ethylbenzene Possible Carcinogen	Styrene Possible Carcinogen; EDC	Toluene Reproductive Toxicant	Vinyl Acetate Possible Carcinogen	Acetone	m-xylene and p-xylene	o-xylene
Blow Pop orange lip balm	CA	Target			23.00				
Creativity Lip Balm Blue	GA	Target							0.58
Disney Frog Lip Gloss	GA	Target			52.30				
Disney Frog Lip Gloss	KY	Toys R Us			72.80				
Disney Frozen stick-on nails	CO	Target		22.40					
Disney Princess Grape Lip Gloss	AK	Target					2.92		
Disney Princess Lip Gloss	CA	Target			143.00				
Disney Princess Nail Polish Green	ME	Dollar General				78.90			
Disney Princess Nail Polish Pink	ME	Dollar General				229.00			
Hershey's Bubble Gum lip balm	TN	Toys R Us	1.05		1.77			3.62	1.18
Hershey's Reese's lip balm	TN	Toys R Us	1.10		1.30			3.80	1.39
Lisa Frank Lip Balm Wand	IL	Dollar General			6.58				
Minions Nail Polish Pink	MN	Toys R Us					148.00		

* All findings are reported in milligrams/kilogram

Table 5: Concentrations of VOC's in kids' products compared to drinking water limits

We detected VOC's in 20 percent of those tested. Toluene was the most commonly detected VOC, found in seven products at levels ranging from 1.30 mg/kg to 143 mg/kg. Many of these VOCs are regulated in water, air or food at levels at or below those we found.

	Range found in kids products (mg/kg)	Drinking water limits(mg/L)	Agency
Ethylbenzene	1.05-1.10	0.7	EPA ¹⁶³
Styrene	22.4	0.1	EPA
Toluene	1.3-143.00	1.00	EPA
Vinyl Acetate	78.9-229	0.25	Florida ¹⁶⁴
Acetone	2.92-148.00	0.7; 4.0	Florida; Minnesota ¹⁶⁵

* Note: in water mg/kg and mg/L are equivalent and equal to 1 ppm. In other materials, such as the products we tested, the measures are not equivalent, and the conversion will vary depending upon the density of the material.

Of the VOC's we found, only styrene appeared on the label in any form. The Frozen stick-on nail contained a styrene-acrylates copolymer, which apparently led to residual styrene in the product. While styrene-acrylates copolymer has no evidence of adverse health concerns, the presence of a carcinogen in the product, even in trace amounts, is concerning.

The rest of the VOC's we found were not on the label. The most likely explanation for their presence in the products is as a result of their use in fragrance. However neither ethylbenzene nor vinyl acetate are on the IFRA list of chemicals used in fragrance.¹⁶⁶

Summary of findings

Our label-reading and laboratory tests unmasked a frightening fact: more than 50 percent of face paints and cosmetics marketed to kids contain at least one ingredient or contaminant linked to hormone disruption, developmental toxicity, learning difficulties or cancer.

This underscores the need for updated federal cosmetics regulation, along with action by cosmetic companies and retailers. Labels revealed the presence of hormone-disrupting parabens, ethoxylated ingredients that are sometimes contaminated with carcinogens, and frequent use of undisclosed fragrance chemicals. Furthermore, our laboratory tests uncovered contamination of face paints with heavy metals like lead and cadmium, and the presence of VOC's like toluene and ethylbenzene in kids' cosmetic products. These hidden ingredients are of particular concern, since consumers have no way of knowing they are in the products in order to take personal action to avoid them.



Our label-reading and laboratory tests unmasked a frightening fact: more than 50 percent of face paints and cosmetics marketed to kids contain at least one ingredient or contaminant linked to hormone disruption, developmental toxicity, learning difficulties or cancer.

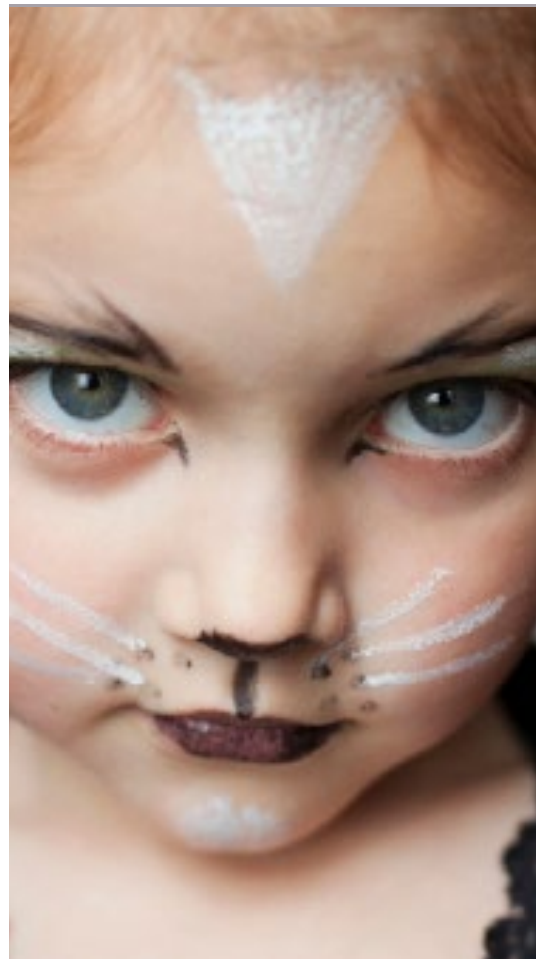
Solutions

Everyone has a role to play when it comes to buying, making and selling the cosmetics and personal care products we use, as well as regulating them for safety.

Federal Regulation

We need safer products and smarter laws so everyone will be protected from unsafe chemicals in the cosmetics and personal care products we use every day. This is doubly true for kids. The Breast Cancer Fund and its Campaign for Safe Cosmetics has been working for over a decade to help the FDA get the statutory authority and resources it needs to more effectively regulate the \$71 billion cosmetics industry. With two cosmetic safety bills introduced in the 114th congress and more coming, the safe cosmetics issue is finally getting the attention it deserves. The challenge will be to ensure that whatever cosmetic safety reform emerges is as meaningful and health-protective as possible.

Moms, dads, grandparents, teachers, and anyone that cares about kids should advocate for stricter federal regulation of the unsafe chemicals in cosmetics that includes a strong safety standard that protects kids and other vulnerable populations.



Health-protective federal cosmetic safety reform should include:

- A ban on ingredients linked to cancer, reproductive or developmental harm in cosmetics. A health-based safety standard that protects children and other vulnerable populations.
- Mandatory FDA recall authority and registration of cosmetic facilities.
- Pre-market safety assessment of cosmetics ingredients.
- Full ingredient disclosure of fragrance, flavoring, colorants and contaminants on product labels, including professional salon products and web-based sales of cosmetics products.
- Granting the public access to adverse event reports.
- Authorizing “producer right-to-know,” enabling cosmetics companies to get safety information for cosmetic chemicals and raw materials they purchase from formulating labs, fragrance houses and other suppliers, including a full listing of the chemicals in fragrance and preservatives.
- Creating a publicly accessible database of cosmetic products, ingredients and safety studies to promote data sharing among manufacturers, consumer right-to-know, and minimizing animal testing.
- Federal support for small businesses to help them meet federal regulations for safer products.
- Protecting existing state cosmetic safety laws against federal preemption and continuing to allow for state co-enforcement of federal law.
- Adequate funding and support of the FDA Office of Cosmetics and Colors to provide effective oversight of the cosmetics industry.



Retail Regulation

The \$71 billion personal care product industry in the United States is largely unregulated, and retailers are stepping up to fill the void. When retailers adopt policies on the safety of the products they sell, it's called retail regulation.

The following goals should guide retailers' policies and practices to improve the safety of personal care products sold in their stores:

- Expand the sale of safer cosmetics and personal care products that are free of chemicals linked to cancer, birth defects, developmental harm and other health concerns.
- Adopt a list of chemicals that are banned from use in private-label and national brands sold in their stores, and ensure that toxic chemicals are replaced with safer alternatives.

- Reward full ingredient disclosure on the part of the brands they carry, including fragrance disclosure.
- Reformulate private-label products to eliminate chemicals of concern.
- Practice the highest level of transparency by sharing the company's safe cosmetics policy, practices and progress on websites and in corporate responsibility reports.
- Strive for continuous improvements in policies and practices by monitoring scientific research regarding emerging chemicals of concern.

Voluntary market-based action

In the absence of adequate government oversight of cosmetic safety, consumer demand has driven meaningful change in the marketplace, on the part of many small and medium cosmetic companies, and even some large ones. The natural personal care market grew to 29.5 billion in 2013.¹⁶⁷

Some large, multinational manufacturers are also starting to raise the bar for their competitors by responding to consumer demand for safer personal care products. In response to consumer demand for safer products, major multinational companies have pledged to stop using phthalates, triclosan and other harmful chemicals. Others are making even broader commitments. For example, Johnson & Johnson recently made good on its commitment to globally reformulate its baby and adult products to remove a range of chemicals of concern.

Cosmetics manufacturers can and should voluntarily move toward safer products and production by taking the following steps:

- Avoid the use of chemicals linked to cancer, reproductive and developmental harm, endocrine disruption, asthma and allergies, and neurotoxicity, as well as chemicals linked to occupational harm.
- Replace chemicals of concern with safer alternatives.
- Practice a high level of transparency by disclosing all product ingredients, including the constituent ingredients in “fragrance.”
- Adopt a restricted-substances list that governs the current and future use of hazardous chemicals.
- Seek continuous improvement by monitoring scientific research regarding emerging chemicals of concern.



Everyone has a role to play when it comes to buying, making and selling the cosmetics and personal care products we use, as well as regulating them for safety.

Moms, dads,
grandparents,
teachers, and
anyone that
cares about kids
should advocate
for stricter federal
regulation of the
unsafe chemicals
in cosmetics.

What the science tells us

We have cause for concern—and so should you. Label reading research and laboratory testing of Halloween face paints and children’s cosmetics indicate the widespread presence of chemicals that can be extremely dangerous to children’s health and development.

Based on label reading alone we found:

- Formaldehyde-releasing preservatives
- Some of the more endocrine-active parabens
- Polymethyl methacrylate
- Ethoxylated ingredients that can lead to 1,4 dioxane contamination

Based on laboratory testing we found:

- Hidden heavy metals
- Residual styrene in one product with styrene-acrylates copolymer
- VOC ingredients hiding in “fragrance”

Kids are especially vulnerable to the effects of many exposures to these chemicals, particularly those linked to cancer, brain development and the hormone system.

The presence of many dangerous chemicals in kid’s products—and those hidden from even the most savvy of consumers—is shocking new evidence that must concern us all; reinforcing the need for stricter federal oversight of all personal care products and most specifically those products that are actively marketed to children.



Kids are especially vulnerable to the effects of many exposures to these chemicals, particularly those linked to cancer, brain development and the hormone system.

What you can do

Science must be actionable, so here's what we are asking you to do:

- Stay away from face paints all year round, including during the Halloween season. There are lots of alternatives for dress up that don't contain lead or cadmium.
- Audit all the children's cosmetic and personal care products in your home. Read the labels. Follow our science and our scientific method. If there are toxins on the label, throw the cosmetics out. Be particularly wary of any product that says "fragrance" on the label. Throw those out too.
- Let your kids be kids a little longer and try to delay the use of children's cosmetics until your kids are older.
- Be a savvy shopper. Look before you buy, and try apps like Think Dirty, Healthy Living and the Good Guide. Many playful items are anything but that.
- Share your concerns with the manufacturer of products you suspect contain toxic chemicals that are harmful to kids. Ask for changes.
- Use social media and share our scientific findings with others. Also use social media to be an advocate for #toxicfreekids.
- Join us in our fight to close the gaping holes in federal legislation and raise your voice for stricter oversight of all personal care products, especially those marketed to kids.

And lastly, please help us keep doing the things we do to stop breast cancer before it starts by donating to Breast Cancer Fund at breastcancerfund.org.

Thank you.



Appendix 1: Colleagues who purchased products for VOC testing

Colleague Organization	State	Store
Alaska Community Action on Toxics	AK	Target
BEE-OCH Cosmetics	CO	Target
Clean Water Action	CT	Claire's
Clean Water Action	MA	Justice
Clean Water Action	RI	Justice
Fig and Flower	GA	Target
Individual purchaser	TN	Toys R Us
Learning Disabilities Association	ME	Dollar General
Learning Disabilities Association	IL	Dollar General
MN Healthy Legacy	MN	Toys R Us
My Sisters' Natural	NC	Justice
Soul Candy Skincare	KY	Toys R Us
US PIRG	IL	Claire's
Toxic-Free Future	WA	Claire's

Appendix 2: Heavy metals limits of detection (LOD)

Methods: EPA 6010B¹⁶⁸ for Arsenic, Cadmium, Chromium and Lead; EPA 7471A¹⁶⁹ for Mercury

Product	Arsenic LOD	Cadmium LOD	Chromium LOD	Lead LOD	Mercury LOD
Paw Patrol, Gold Crayon	1.0	0.5	1.0	1.0	0.01
Paw Patrol, Brown Crayon	1.0	0.5	1.0	1.0	0.01
Paw Patrol, Black Crayon	1.0	0.5	1.0	1.0	0.01
Spirit Clown Makeup Crayons, Blue	1.0	0.5	1.0	1.0	0.01
Spirit Clown Makeup Crayons, White Cream	1.0	0.5	1.0	1.0	0.01
Spirit Makeup Crayons, Black	1.0	0.5	1.0	1.0	0.01
Spirit Makeup Crayons, Blue	2.0	0.5	2.0	2.0	0.01
Batman Party Makeup Set, Blue	1.0	0.5	1.0	1.0	0.01
Batman Party Makeup Set, Yellow	1.0	0.5	1.0	1.0	0.01
Batman Party Makeup Set, Red	1.0	0.5	1.0	1.0	0.01
Batman Party Makeup Set, Black	1.0	0.5	1.0	1.0	0.01
Zombie Kids Makeup Kit, Black	1.0	0.5	1.0	1.0	0.01
Zombie Kids Makeup Kit, White	1.0	0.5	1.0	1.0	0.01
Lips 'n' Lashes, Black Crayon/ Lipstick	1.0	0.5	1.0	1.0	0.01
Killer Clown Makeup Kit, Bloody Scab	1.0	0.5	1.0	1.0	0.01
Killer Clown Makeup Kit, Red	1.0	0.5	1.0	1.0	0.01
Killer Clown Makeup Kit, Black	1.0	0.5	1.0	1.0	0.01
Howleen Wolf, Purple	1.0	0.5	1.0	1.0	0.01
Howleen Wolf, Lavender	1.0	0.5	1.0	1.0	0.01
Howleen Wolf, Black Crayon	1.0	0.5	1.0	1.0	0.01
Zombie Makeup Kit, Capsule	2.0	0.5	2.0	2.0	0.01
Zombie Makeup Kit, Red	2.0	0.5	2.0	2.0	0.01
Zombie Makeup Kit, Black	2.0	0.5	2.0	2.0	0.01
Abbey Bominable, Blue	1.9	0.5	1.9	1.9	0.01

Appendix 2, cont'd.

Product	Arsenic LOD	Cadmium LOD	Chromium LOD	Lead LOD	Mercury LOD
Abbey Bominable, Purple	2.0	0.5	2.0	2.0	0.01
Abbey Bominable, Black Crayon	1.9	0.5	1.9	1.9	0.01
Abbey Bominable, Pink Lipstick	2.2	0.5	2.2	2.2	0.013
Zombie Boys Makeup Kit, Black	1.9	0.5	1.9	1.9	0.01
Zombie Boys Makeup Kit, Red	2.0	0.5	2.0	2.0	0.01
Face Paint, Grease Makeup, Black	2.0	0.5	2.0	2.0	0.01
Face Paint, Grease Makeup, Red	2.0	0.5	2.0	2.0	0.01
Face Paint, Grease Makeup, Blue	2.0	0.5	2.0	2.0	0.01
Face Paint, Yellow Crayon	1.9	0.5	1.9	1.9	0.01
Face Paint, Red Crayon	2.0	0.5	2.0	2.0	0.01
Face Paint, Blue Crayon	1.8	0.5	1.8	1.8	0.01
Halloween Makeup Palette, Yellow	1.9	0.5	1.9	1.9	0.01
Halloween Makeup Palette, Green	1.9	0.5	1.9	1.9	0.01
Halloween Makeup Palette, Orange	2.0	0.5	2.0	2.0	0.01
Halloween Makeup Palette, Purple	2.0	0.5	2.0	2.0	0.01
Halloween Makeup Palette, Black	2.0	0.5	2.0	2.0	0.01
Halloween Makeup Palette, Blue	1.9	0.5	1.9	1.9	0.01
Horror Value Makeup Kit, Red Crayon	1.8	0.5	1.8	1.8	0.01
Horror Value Makeup Kit, Blue Crayon	1.9	0.5	1.9	1.9	0.01
Horror Value Makeup Kit, Purple	1.9	0.5	1.9	1.9	0.01
Horror Value Makeup Kit, Olive	1.8	0.5	1.8	1.8	0.01
Horror Value Makeup Kit, Black	1.9	0.5	1.9	1.9	0.01
Horror Value Makeup Kit, Gold	1.9	0.5	1.9	1.9	0.01
Horror Value Makeup Kit, Fake Blood	1.0	0.5	1.0	1.0	0.01

Appendix 3: Shopping list for kids' makeup products

Store	Brand (e.g., Disney, Hello Kitty, Barbie)	Secondary Brand (e.g., Elsa, Dory)	Product name
Claire's	Claire's	n/a	lengthening mascara
Claire's	Shopkins	n/a	shower gel+loofa set
Justice	Justice	Just Shine	changes color in the sun nail polish
Justice	Justice	Just Shine	gel-like nail polish
Justice	Justice	Just Shine	lemonade splash shampoo
Justice	Justice	Just Shine	lemonade splash shower gel
Justice	Justice	Just Shine	rollerball fragrance set
Justice	Justice	Just Shine	temporary hair color
Justice	Justice	Just Shine	lemonade splash body mist
Target	Disney	Frozen	nail polishes/glue on press on nails
Target	Lisa Frank	n/a	tattoo kit/glitter, glue on stickers, and body glue
Target	Disney	Princess	3-pack lip gloss set
Target	Mattel	Barbie	lip gloss mobile phone
Target	Disney	Princesses	2-pack lip gloss+mirror
Target	Hello Kitty	n/a	DIY lip gloss kit
Toys R Us	Hot Focus	n/a	deluxe nail studio nail art set/3D press on nails
Toys R Us	Hot Focus	n/a	deluxe nail studio nail art set/color nail polish
Toys R Us	Disney	Frozen	4-pack lip shine+mirror
Toys R Us	Disney	varies	cosmetic set/lip balm
Toys R Us	Hello Kitty	n/a	7-piece bath tote set
Toys R Us	Disney	Frozen	7-pack lip balm

Appendix 4: VOC limits of detection

Methods used: Analysis: EPA 8260B¹⁷⁰; Extraction: EPA 5035¹⁷¹

Because of the variety of products tested and the differing dilutions needed to test each product type, limits of detection varied greatly for the VOCs. Ranges are presented below and details for each individual product are available from the Breast Cancer Fund on request. VOCs which were detected are presented first and then all VOCs we tested for but were not present above the Limits of Detection are presented alphabetically.

VOC's Tested for and detected in kids' makeup products

CAS Number	Analyte Name	Limit of Detection range (mg/kg)	
		Low	High
67-64-1	Acetone	2.010	15400
100-41-4	Ethylbenzene	0.504	3860
108-38-3 or 106-42-3	m-xylene or p-xylene	1.010	7710
95-47-6	o-xylene	0.504	3860
100-42-5	Styrene	0.504	3860
108-88-3	Toluene	0.504	3860
108-05-4	Vinyl Acetate	1.010	7710

VOC's tested for but not detected

CAS Number	Analyte Name	Limit of Detection range (mg/kg)	
		Low	High
630-20-6	1,1,1,2-Tetrachloroethane	0.504	3860
71-55-6	1,1,1-Trichloroethane (TCA)	0.504	3860
79-34-5	1,1,2,2-Tetrachloroethane	0.504	3860
79-00-5	1,1,2-Trichloroethane	0.504	3860
75-34-3	1,1-Dichloroethane (1,1-DCA)	0.504	3860
75-35-4	1,1-Dichloroethene (1,1-DCE)	0.504	3860
96-18-4	1,2,3-Trichloropropane	0.504	3860
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	1.010	7710
106-93-4	1,2-Dibromoethane (EDB)	0.504	3860
95-50-1	1,2-Dichlorobenzene	0.504	3860
107-06-2	1,2-Dichloroethane	0.504	3860
78-87-5	1,2-Dichloropropane	0.504	3860
541-73-1	1,3-Dichlorobenzene	0.504	3860
106-46-7	1,4-Dichlorobenzene	0.504	3860
78-93-3	2-Butanone (MEK)	2.520	19300
591-78-6	2-Hexanone	1.010	7710
108-10-1	4-Methyl-2-pentanone (MIBK)	1.010	7710
71-43-2	Benzene	0.504	3860
74-97-5	Bromochloromethane	0.504	3860
75-27-4	Bromodichloromethane	0.504	3860
75-25-2	Bromoform	0.504	3860
74-83-9	Bromomethane	0.504	3860
75-15-0	Carbon Disulfide	1.010	7710
56-23-5	Carbon Tetrachloride	0.504	3860
108-90-7	Chlorobenzene	0.504	3860
75-00-3	Chloroethane	0.504	3860
67-66-3	Chloroform	0.504	3860
74-87-3	Chloromethane	0.504	3860
156-59-2	cis-1,2-Dichloroethene	0.504	3860
10061-01-5	cis-1,3-Dichloropropene	0.504	3860
124-48-1	Dibromochloromethane	0.504	3860
74-95-3	Dibromomethane	0.504	3860
75-71-8	Dichlorodifluoromethane	2.010	15400
74-88-4	Iodomethane	1.010	7710
1634-04-4	Methyl tert-Butyl Ether	0.504	3860
75-09-2	Methylene Chloride	1.010	7710
127-18-4	Tetrachloroethene (PCE)	0.504	3860
156-60-5	trans-1,2-Dichloroethene	0.504	3860
10061-02-6	trans-1,3-Dichloropropene	0.504	3860
110-57-6	trans-1,4-Dichloro-2-butene	2.010	15400
79-01-6	Trichloroethene (TCE)	0.504	3860
75-69-4	Trichlorofluoromethane	2.010	15400
75-01-4	Vinyl Chloride	0.504	3860

Endnotes

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Top 5 Tips



1. Find or create a costume which does not require face paints or makeup use.
2. Try a DIY recipe for face paints or enhance an outfit with ears, caps or customized mittens or socks.
3. Buy safer products:
 - Read product ingredient labels, and avoid items with fragrance or other Red List Chemicals
 - Avoid use of darkly pigmented makeups
 - Use smartphone apps such as Think Dirty, Healthy Living and Good Guide to check the safety of products
4. Let your kid be a kid a little longer, and delay their introduction to makeup, especially color cosmetics, hair dye, nail polish and lipstick.
5. Support health-protective federally mandated cosmetic safety legislation!



Breast Cancer Fund

The Breast Cancer Fund is the leading science-based advocacy organization dedicated to preventing breast cancer by reducing and ultimately eliminating our exposure to toxic chemicals, radiation and environmental health issues linked to the disease. We translate the scientific evidence into public health policy initiatives, consumer education and market campaigns that take action to transform how we think and act about breast cancer.



Campaign for Safe Cosmetics

Since 2004, the Campaign for Safe Cosmetics has used smarts and sass to pressure the cosmetics industry to make safer products. The Campaign for Safe Cosmetics coalition, a project of the Breast Cancer Fund, works to protect the health of consumers, workers and the environment through public education and engagement, corporate accountability and sustainability campaigns and legislative advocacy designed to eliminate dangerous chemicals linked to adverse health impacts from cosmetics and personal care products.

