

Beyond the Label

Health Impacts of Harmful Ingredients
in Cleaning Products



Women's Voices for the Earth
Lead Author: Alexandra Scranton

Contributors: Beth Conway and Jamie McConnell

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Nicole Acevedo, PhD
Robin Dodson, Sc.D
Sally Edwards, Sc.D
Irene Erdelmeier, PhD
Stephanie M. Holm, MD MPH
Amy D Kyle, PhD MPH

Ted Schettler, MD
Megan Schwarzman, MD MPH
Anne Steinemann, PhD
Robin M Whyatt, DrPH
Carol Westinghouse

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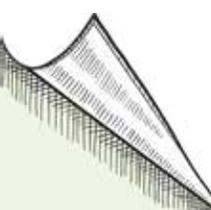
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Data compiled from many of the studies and resources cited in this report, particularly that note gender disparities, has been limited to research on cisgender males and females. Research that includes transgender people or gender nonconforming individuals is still woefully unavailable or neglected, particularly on any issues outside of mental and sexual health. In addition, transgender individuals, gender nonconforming, and agender peoples have historically been ignored by many in the healthcare system, further limiting information essential to better understanding of disproportionate health impacts and disparities.⁽¹⁾ We hope to encourage academic and research institutions to improve their commitment to inclusion, equity, and diversity to prevent harm that results from exclusion and underrepresentation.

* This report uses the term Latinx. Latinx is used as an alternative to the gender binary inherent to formulations such as Latina/o and is used by and for Latinos who do not identify as either male or female, or more broadly as a gender-neutral term for anyone of Latin-American descent.



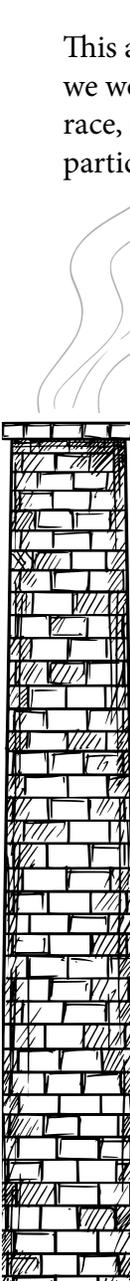
INTRODUCTION

Why did we write this report?

Every day, we are exposed to hundreds of different chemicals — from those in the products used to clean our homes and our bodies, to the pesticides sprayed in our homes, offices, gardens, and playgrounds. Toxic chemicals pump into our air, wash into our waterways, and seep into our soil — they have been detected in human blood, urine, hair, breast milk and umbilical cord blood.

There is little governmental oversight to protect the public from the threat of toxic chemical exposures. Tens of thousands of chemicals are used in the United States, placed in products and released into our environment, with very limited information on the potential consequences for human health. It is estimated that between 85,000-95,000 chemicals are registered for use in the U.S., yet only a small fraction have been adequately tested for safety, and less than half of them have ever been tested for chronic toxicity. Federal law does not require any mandatory pre-market health testing for chemicals used in most consumer products like household and institutional cleaning products. And for many products, toxic ingredients are completely unnecessary; not only do many toxic chemicals fail to enhance the efficacy of products, but, in many cases, safer and effective alternatives exist.

This added and unnecessary exposure from consumer products is further compounded by what we eat, where we work, where we live, access to information, resources, quality and affordable healthcare, as well as our gender, race, and income. Studies show that frontline workers, low-income communities and people of color are at particular risk for disproportionate and cumulative impacts of toxic exposures. Take for example:

- 
- ❖ Decades of discriminatory and racist zoning laws means that low-income communities and people of color comprise a majority of the population in neighborhoods where high-risk chemical and commercial hazardous waste facilities (also known as fenceline communities) are located in the United States.^[2]
 - ❖ Communities living in these areas have higher rates of respiratory illnesses; air pollution can worsen or instigate chronic conditions such as asthma, chronic obstructive pulmonary disease (COPD), heart disease, hypertension, and diabetes.^[3]
 - ❖ Access to safer products and healthy food can be limited in low-income communities. Often referred to as “food deserts,” communities with little to no availability of healthy food also tend to have limited options of alternatives to conventional household products. If safer and healthier options are available, these are typically more expensive.^[4]
 - ❖ Many products aggressively marketed to people of color – from cleaning products to personal care products – more often contain toxic chemicals than products marketed to white people.^[5]

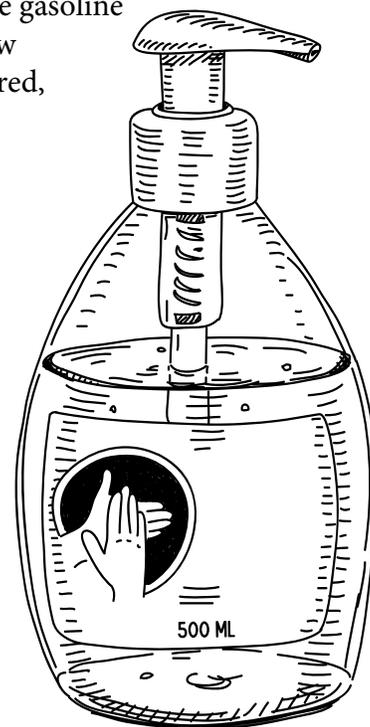
The COVID-19 pandemic has uplifted the deadly consequences of cumulative and disproportionate impacts that exposures from toxic chemicals have on the health and wellbeing of communities of color: Roughly 1 in 800 Black Americans has died from coronavirus, compared to 1 in 1325 white Americans. American Indians and Alaskan Natives are dying at almost twice the rate of white Americans.^[6]

Cleaning Products Industry and Accountability

By evaluating new ingredient information now available about toxic chemicals used in cleaning products, this report aims to highlight the role of the cleaning products industry in cumulative harm and disproportionate burdens many product users already face, from occupation and pollutants in their environments, to social, racial and gender injustices. For example, studies show that overwhelming majorities of people working as housecleaners are women. Nationally, the vast majority (91.5%) of domestic workers are women, and just over half (52.4%) are Black, Latinx or Asian American/Pacific Islander.^[7] A study of housecleaners in California found that 94% are women and 87% are Latinx.^[8] Many workers do not have the freedom to choose to use healthier products in their workplaces, and fewer still can make their own products.

Furthermore, petrochemicals are the building blocks for many of the chemical ingredients used to make cleaning products. A 2018 study found that everyday consumer products are responsible for 38 percent of volatile organic compound (VOC) emissions, which are major contributors to air pollution, while gasoline and diesel emissions accounted for only 33 percent.^[9] Communities where the raw materials are sourced, and where chemicals and products are refined, manufactured, and disposed of are especially impacted by exposure to toxins.

This report highlights health impacts linked to toxic chemicals used in cleaning products, but harmful exposure from cleaning products is not limited to the person using the product. The industry needs to prioritize the intersecting conditions that impact health when designing safer products for their customers, and they should be accountable for their role in the cumulative impacts of exposure from cleaning products on individuals, communities and the environment. Cleaning should be good for our health, and not add to the widespread public health burdens that impact our quality of life.



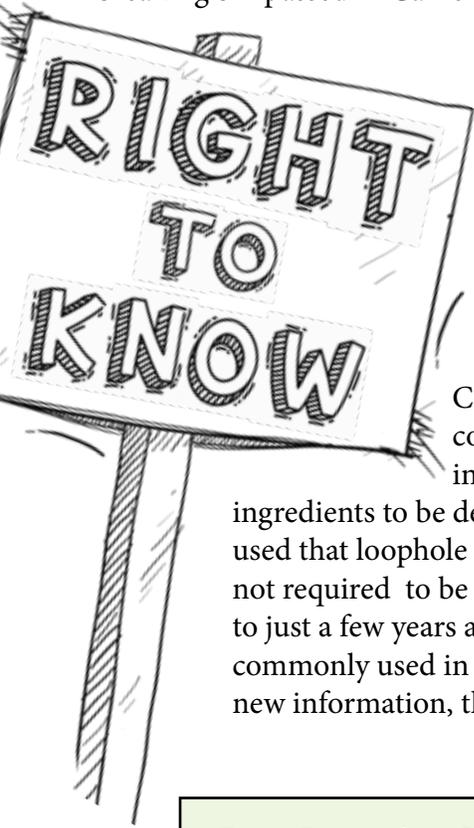
Ingredient Transparency is Essential

For over a decade, Women's Voices for the Earth has advocated for the safety and transparency of ingredients used in cleaning products. 2020 was pivotal in making information publicly available about chemicals used in cleaning products as a result of the California Cleaning Product Right to Know Act (SB 258). This act is responsible for groundbreaking ingredient disclosure requirements in the cleaning products industry — we have dramatically increased our understanding of what we are being exposed to in keeping private and public spaces clean. This report explores this new information, and calls attention to some of the most problematic and pervasive ingredients used in household and institutional cleaning products that have widely remained hidden until now.

Information in this report is the result of examining ingredient disclosures for hundreds of products – looking for hazardous chemicals commonly used in the industry but which have rarely been discussed before. Many of these toxic chemicals are unfamiliar to the general public and are being disclosed for the first time. We hope to raise awareness of these chemical exposures, because we believe the industry can and must do better. The health risks posed by many of these chemicals are simply unnecessary, because inherently safer alternatives exist. We know this is true because there are numerous cleaning products that are made without the chemicals of concern identified in this report.

Background on the Cleaning Product Right to Know Act

There is currently no federal law requiring manufacturers to list the ingredients in the cleaning products they produce. This has led to a general lack of information on cleaning product ingredients unless manufacturers voluntarily disclose this information. Voluntary disclosure in itself is problematic, as it is inconsistent, unregulated, and not universal throughout the industry. This changed in the fall of 2017, when a groundbreaking bill passed in California called the Cleaning Product Right to Know Act (SB 258).



This bill required manufacturers to disclose ingredients in any cleaning products sold in California. It went into effect on January 1, 2020, when manufacturers were required to list ingredients online. As of January 1, 2021, most ingredients are required to be on product labels in California as well. The bill also specifically requires the disclosure of ingredients used in fragrances in cleaning products. Until this bill, fragrance ingredients were considered confidential business information.

Compliance with the Cleaning Product Right to Know Act is still not perfect. Some companies are currently not complying at all, and some are only disclosing certain ingredients or disclosing for only some products. A caveat in the bill allows some ingredients to be declared confidential business information, and it appears some manufacturers have used that loophole more widely than others to keep ingredients secret. In addition, information was not required to be available in other languages, further limiting accessibility. Nevertheless, compared to just a few years ago, there is now a significant wealth of new information on the chemicals most commonly used in cleaning products that has never been publicly available before. Armed with this new information, this report aims to bring some of the newest findings from the available data to light.

WHAT WE DID

From December 2020 through January 2021, we searched for and examined online ingredient lists for hundreds of cleaning products currently on the market. This process was by no means exhaustive, but aimed to capture a snapshot of the industry as it exists today. We looked at manufacturers with the largest market shares and most popular brands, as well as some smaller manufacturers in various specialty cleaning product categories such as green cleaning, institutional/janitorial products, and products heavily marketed to the Latinx community. We focused our search on chemicals of concern that have only recently been disclosed widely.

This report does not represent a thorough review of all manufacturers or products or chemical ingredients. Where we have listed brands containing ingredients of concern, we have intentionally not identified specific products because we are unable to confirm all of the products within a brand that may contain those chemicals. Listing a brand indicates that the manufacturer includes the ingredient in at least some, but not necessarily all, products in that brand. We also acknowledge that formulas can change over time and brands listed may eliminate hazardous chemicals in the future. Until companies have removed these harmful ingredients — and acknowledging the accessibility hurdles companies have created by limiting this information to English-speakers — we strongly encourage product users to seek out the specific ingredient lists for the products they use, based on this initial analysis.

RESULTS: Toxic Chemicals Found in Cleaning Products Sold in the United States

Fragrances

Cleaning products commonly contain fragrance. Fragrance is a major driver in the marketing of cleaning products, which tend to have relatively simple formulas – often only distinguished from one another by how they smell. Fragrances used in cleaning products can be made up of dozens of different chemicals; these chemicals generally do not clean or increase the effectiveness of a product. For most of the many decades in which cleaning products have been sold, manufacturers have kept the chemical ingredients in fragrances a secret from their customers. It is only in the last few years that public demand has led to some sharing of information about fragrance ingredients. As mentioned above, the new California legislation mandates disclosure of hazardous ingredients in fragrances, so for the first time we are beginning to understand these exposures. We have identified five specific fragrance ingredients of concern that are now revealed to be commonly used in cleaning products:

- ☠ Diethyl phthalate (DEP)
- ☠ Tetramethyl acetyloctahydronaphthalenes (OTNE)
- ☠ Butylphenyl Methylpropional (Lilial)
- ☠ Hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC or Lyral)
- ☠ Hexamethylindanopyran (Galaxolide)

Each of these fragrance ingredients poses unnecessary adverse health hazards and should be avoided in the short term by product users and replaced in fragranced products with safer alternatives.

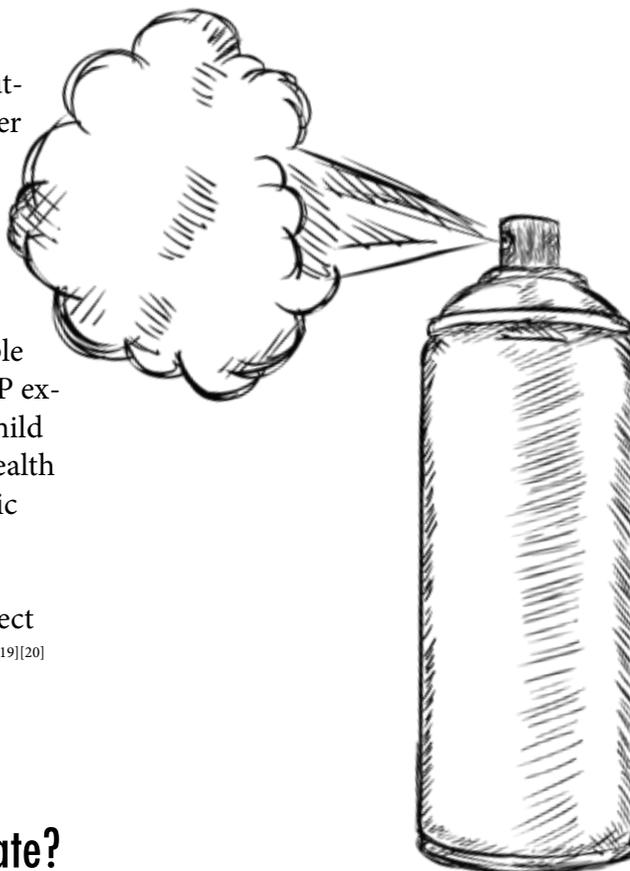
Diethyl Phthalate (DEP):

What is it and why is it a problem?

Diethyl phthalate (DEP) is a fragrance ingredient that does not give off a scent, but that helps blend other fragrance ingredients together. It also functions as a plasticizer in many consumer products. DEP is a phthalate, a chemical family which includes very toxic chemicals such as dibutyl phthalate (DBP), diethylhexyl phthalate (DEHP). Phthalate exposure is linked to adverse effects on male children, reduced sperm count in adult men, higher risk of preterm birth and affects the brain and behavior.^{[10][11][12][13]} Animal studies have also demonstrated reproductive effects of phthalate exposure including reduced fertility, smaller testicles, female reproductive disorders and adverse brain development.^{[14][15]} For a long time, diethyl phthalate was thought of as “the safer phthalate” by industry, as early studies suggested it might not have the endocrine disrupting effects as other phthalates. However, more recent research shows that diethyl phthalate also poses significant health hazards of its own.

For example, in many studies of reproductive outcomes, DEP appears to be less harmful than other types of phthalates such as DBP and DEHP, which are well-confirmed reproductive toxicants.^[16] However, DEP is not harmless, and given the widespread exposure to DEP by women of reproductive age from numerous products, there is still cause for concern. Multiple studies have shown that women with higher DEP exposure are at higher risk of preterm birth.^[17] A child born prematurely can have numerous lifelong health effects and prevention of preterm birth is a public health priority.

Exposure to diethyl phthalate also appears to affect the lung function of both children and adults.^{[18][19][20]} Exposure to DEP from cleaning products is unnecessary and should be avoided.



Where are we finding diethyl phthalate?

We did not expect to find many disclosures of diethyl phthalate, because many manufacturers have made clear statements that they no longer use phthalates of any kind in their products. For most of the companies making this claim, we found no products that contained diethyl phthalate.

Unfortunately, we were surprised to find several products in the category of carpet cleaners reporting diethyl phthalate as an ingredient (but NOT as part of their fragrance). We are unclear what function diethyl phthalate plays in carpet cleaners and are unaware of any studies that have measured exposure to phthalates from the use of carpet cleaners. We imagine that most people are unaware that by cleaning their carpets they may be exposed to diethyl phthalate.

We identified the following carpet cleaner brands using diethyl phthalate:

Formula 409
Clorox Pet Solutions
WD-40
Hoover

We identified one company, the Clorox company, that uses diethyl phthalate in its fragrances in multiple products. This is especially of concern because Clorox does not include diethyl phthalate on its fragrance palette on its website, which may mislead product users into thinking there are no phthalates present. (A fragrance palette, offered by some manufacturers, is a single comprehensive list of all fragrance ingredients that may be used in any of their products.)

Clorox products using diethyl phthalate include:

Fragranzia products (especially Spring scent)
Clorox Healthcare cleaners
Dispatch Hospital cleaners
SOS Steel Wool (Lavender scent)

Additional brands by other manufacturers that disclosed diethyl phthalate:

Calgon
Simple Green (Lavender scent)

Butylphenyl Methylpropional (Lilial)

What is it and why is it a problem?

Butylphenyl methylpropional, also known as Lilial, is a common fragrance component first developed in the 1950s. It is a synthetic fragrance that mimics the scent of lily of the valley (a desired scent which had stumped perfumers for years, as the flower does not lend itself to natural distillation techniques). It quickly became a very popular and lucrative fragrance, because it was inexpensive to make, smelled terrific, blended easily with other fragrances and worked in a wide range of products from perfumes to lotions to cleaning products. Unfortunately, many decades into its production, some serious health hazards were discovered.

Starting in 2022, butylphenyl methylpropional will be banned from cosmetics and cleaning products in the European Union (EU) because it has been classified as a CMR reproductive 1B toxicant.^[21] Substances are classified as CMRs due to their likelihood of being carcinogenic, mutagenic or toxic to reproduction. CMR reproductive 1B chemicals are those which “may damage fertility or the unborn child”.^[22] Unfortunately, this fragrance ingredient is still widely used in the United States where there is no pending ban in place.

The European ban is based on a history of research on butylphenyl methylpropional, much of which was kept secret by manufacturers for decades. Industry research in 1990 and 1991 first detected significant reductions in sperm count and motility when butylphenyl methylpropional was administered to rats.^[23] Follow-up research nearly 20 years later replicated these results, and also found that at the highest doses, there was severe degeneration of rat testicles, 90% of sperm were found to be abnormal, and none of rats given high levels of butylphenyl methylpropional were able to successfully reproduce.^{[24][25]} At lower doses, the rate of pregnancy loss tripled, compared to controls, among rats that were able to conceive.^[26] Another study from 2009 which exposed dogs to butylphenyl methylpropional also reported significantly increased risk of damaged sperm, and testicular damage in 90% of those tested.^[27] Unfortunately, none of this research was published, and when the data was submitted to the US Environmental Protection Agency (EPA), it was classified as confidential, keeping it secret from the general public.

It was not until 2014 that a paper on alternatives to butylphenyl methylpropional (published by a fragrance industry researcher) publicly admitted “Recent studies have shown that Lilial may cause harm to the unborn child.”^[28] In 2016, the German government did the first-ever testing for butylphenyl methylpropional in humans and detected the chemical in the bodies of nearly all the people tested, indicating widespread exposure.^[29]

Butylphenyl methylpropional has also been identified as a major skin allergen.^[30] It is one of just 26 fragrance chemicals required to be disclosed on products in the European Union due to their ability to cause allergy.

Where are we finding butylphenyl methylpropional?

Butylphenyl methylpropional is one of the most common fragrance chemicals of concern we identified in cleaning products, found in almost every cleaning product category. It is especially common to find in fragranced laundry products including laundry detergent, laundry scent boosters, fabric softeners, dryer sheets as well as in dish soap, air fresheners, multipurpose cleaners, glass cleaners, carpet deodorizers, etc.

Brands identified with products containing Butylphenyl methylpropional:

Tide	Glade
Gain	Glass Plus
Ajax	Lysol
☞ Suavitel	Signature Select
☞ Fabuloso	Purex
☞ Frangranzia	Snuggle
☞ PineSol	Scrubbing Bubbles
☞ Xcelente	Pledge
Palmolive	Caldrea
Windex	Mrs. Meyer's
AirWick	Ecolab



A significant concern with this list of brands is the large number of brands which are particularly marketed to and used by people of color. Products marketed to the Latinx market for example commonly have Spanish-language sounding names (☞ **Suavitel**, **Fabuloso**, **Frangranzia**, **Xcelente**). **PineSol** has had Diane Amos, a Black woman, as their spokesperson for many years, to promote this product to Black audiences. Yet it is these brands which are more likely to include butylphenyl methylpropional, a reproductive toxicant, in their products. The reproductive health of people of color is already disproportionately impacted by numerous factors, leading to higher risks of pre-term birth, infertility, maternal mortality and more.^{[31][32]} Responsible manufacturers should acknowledge these disparities and take even greater precautionary steps to ensure the safest products for their customers who are people of color. They can start by eliminating this unnecessary reproductive toxicant from their fragrances.

Hexalindanopyran (Galaxolide)

What is it and why is it a problem?

Galaxolide is a fragrance chemical in the family of synthetic musks. Synthetic musks were originally developed to simulate the scent of natural musks, which are scents derived from musk deer and civet. Galaxolide does not break down easily in the environment, builds up over time, and is highly toxic to fish and other aquatic creatures.^[33] There is also concern the Galaxolide is a potential endocrine disruptor^[34] and may break down the body's natural defenses against other toxic chemical exposure.^[35] Galaxolide has been assigned a GreenScreen® score of Benchmark 1, meaning it is a chemical of highest concern, whose use should be avoided.^[36] Specifically, the GreenScreen® assigned the Benchmark 1 score due to Galaxolide's high persistent, bioaccumulative and aquatic toxicity properties. The GreenScreen® also noted a moderate human health hazard for endocrine disruption. (GreenScreen® for Safer Chemicals is an internationally recognized method for chemical hazard assessment, used by industry, government and NGOs, that is designed to identify chemicals of high concern and safer alternatives.)^[37] Exposure to Galaxolide is widespread in humans, having been detected in the blood of over 90% of people tested, and in over 95% of breastmilk samples tested.^{[38][39]} Environmental contamination is also widespread with Galaxolide commonly detected in rivers,^[40] drinking water,^[41] lake sediment^[42] and fish tissue.^[43] Responsible manufacturers should not be using a chemical purely for its aesthetic qualities (such as scent) that is so detrimental to the environment and potentially to our health.

Where are we finding Galaxolide?

Galaxolide is commonly found in fragranced cleaning products like air fresheners, all-purpose cleaners, bathroom cleaners, laundry detergent, laundry scent boosters, fabric softener, dryer sheets, carpet cleaners and dish soap.

Brands identified with products containing Galaxolide (usually listed as hexalindanopyran)

- ☠ Method (Ginger Mango scent)
 - Arm & Hammer Clean Scentsations
 - Arm & Hammer Fresh Scentsations
- ☠ Scrubbing Bubbles
- ☠ Glade
- ☠ Pledge
 - Ajax
- SpotShot
 - Suavitel
- Carpet Fresh
 - DG Home
- Palmolive
 - Ecolab

BROKEN PROMISES

We were particularly disappointed to discover that despite a public commitment to transition to alternatives to Galaxolide in 2017^[44], **SC Johnson** continues to market numerous products containing Galaxolide in 2021. In fact, other than some scents of Glade being discontinued, we were unable to find any evidence of any SC Johnson products that have been reformulated to replace Galaxolide with alternative fragrance ingredients. We also identified several new products, manufactured since 2017, that contain Galaxolide, indicating that the promise made to their customers about transitioning to alternatives has been broken.

We were also disappointed to see **Method** on this list, a company that has long claimed to use safer ingredients, but only recently disclosed their fragrance ingredients for the first time. As they clearly state on their website, "we use the precautionary principle, meaning that if there's a chance that an ingredient isn't safe, we don't use it."^[45] It is unclear how a chemical like Galaxolide that has been assigned a GreenScreen® score of Benchmark 1 could meet their safety standards and be used in their products.

ELVA'S STORY

My name is Elva Aguilar and I am a Salvadoran immigrant. I came to the United States at 36 years of age with my 7-year-old daughter. I was an executive secretary in my country. In the USA I worked in more risky trades. I worked as a janitor and later I began to work on my own, cleaning houses. About a year after working as a house cleaner, I became ill; first with a pain in the upper middle part of my back. It seemed like a joint pain. But I had other symptoms as well including a totally constipated body; pain on the front and back of the chest cage; shortness of breath and pain; headaches; skin allergy; a breakdown of the nervous system; dry eyes; and my digestive system has been damaged by ethers.

I went to the hospital and was medicated with naproxen. The relief was very little and temporary. Later, my breathing was not normal. I had to breathe short breaths because when I would breathe, there was intense pain in the rib cage. I had a nervous breakdown. My whole body was a bundle of affected nerves. I returned to the doctor, who from these symptoms, diagnosed me as having a nervous breakdown. He then asked me some personal questions, like if I had "problems with my husband and / or family" which I didn't.

I had to breathe short breaths because when I would breathe, there was intense pain in the rib cage. I had a nervous breakdown. My whole body was a bundle of affected nerves.

The hospital did not have a serious diagnosis, much less a treatment to improve my health. That meant more pills and more poison for me. I began to treat myself with massages and that did not help at all. I happened to go to a health fair on the street and went to a chiropractor who checked me and did not find any problems with sprains or tendons etc... however he told me that it could be poison. He asked me what cleaners I used in my daily work and I told him: Tilex, Windex, Ajax, Easy-off, Bleach, 409, etc. I once remember that I came home after a day of work and my daughter told me that I gave off a smell of bleach. This chiropractor with a single interview was my salvation because from this diagnosis, I knew that the hospital would not help me in anything, instead they would poison me even more. I chose to investigate by myself and stop using all the cleaners and now I changed my company to be totally non-toxic and if it is necessary to use something toxic I take the measures to use the necessary equipment.

Even now, my body still has reactions to toxic chemicals. I have zero tolerance to aromas and perfumes. All toxics makes me nauseous and change my mood. I get headaches and my digestive system has to be treated with probiotics.

Tetramethyl Acetyloctahydronaphthalenes (OTNE)

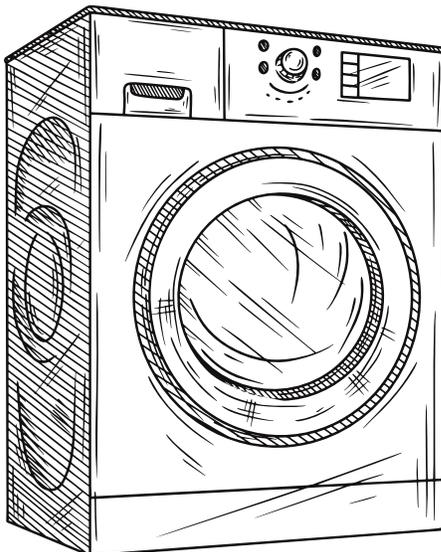
What is it and why is it a problem?

OTNE is an emerging fragrance chemical of concern due to its chemical structure which is similar to other harmful synthetic musks. OTNE poses acute aquatic toxicity,^[46] which is a concern because like other synthetic musks, OTNE contamination is commonly detected in water sources like rivers and oceans.^{[47][48]} OTNE enters our water sources when it goes down the drain after use of products. But even wastewater treatment plants are not completely effective at removing OTNE from our water. In tests in Germany, and the United States, OTNE was still detected in 100% of treated water samples collected coming out of wastewater treatment plants.^{[49][50]} OTNE is also commonly found to contaminate household dust^[51] and has been detected in breast milk.^{[52][53]} A National Toxicology Program (NTP) study concluded that that OTNE is a potential reproductive toxicant in mice.^[54] There is no research available to tell us how OTNE may be affecting human reproductive health. Overall, OTNE is relatively poorly studied, with limited toxicological information, but exposure to OTNE through product use and water sources is very common. For an optional, aesthetic feature like fragrance, it is unnecessary to introduce the environmental hazards posed by the use of OTNE in products.

Where are we finding tetramethyl acetyloctahydronaphthalenes (OTNE)?

OTNE is commonly found in fragranced laundry products such as fabric softener, dryer sheets, laundry detergent, laundry scent boosters. These are all of concern because of the how much of these products is quickly washed down the drain into our water. It is also found in air fresheners and occasionally in dish soaps, all-purpose cleaners and glass cleaners.

Brands identified with products containing tetramethyl acetyloctahydronaphthalenes (sometimes listed as Iso E Super):



Suavitel	Air Wick
Method	Glade
Tide	Windex
Bounce	Scrubbing Bubbles
Cheer	Pledge
Downy	DG Home
Dreft	Caldrea
Febreze	Mrs. Meyer's
Gain	Ecolab
Mr. Clean	

Hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC)

What is it and why is it a problem?

Hydroxyisohexyl 3-cyclohexene carboxaldehyde is a commonly used fragrance ingredient which has gained attention for the exceptional number of cases of fragrance allergy it has been linked to. As of August 2021, this fragrance ingredient is banned in both cosmetic products and cleaning products in the European Union.^[55] The ban was based on a 2012 report by the Scientific Committee on Consumer Safety (SCCS) which strongly recommended that HICC be removed from consumer products because of its high rates of allergy.^[56] As a result of the impending ban, HICC has largely been removed from products in the EU and consequently, rates of allergy to HICC there have dramatically decreased in recent years.^[57] Unfortunately, no such regulation or ban applies in the United States, and companies are allowed to use HICC in their products sold in the US (even if they have removed it from identically branded products in the EU). Major manufacturers are clearly aware of the EU ban, and the important public health reasons behind it. Responsible manufacturers should protect their US customers from ensuing allergies to HICC by removing this fragrance ingredient from their products.

UNILEVER & HICC

Unilever, a major manufacturer of personal care and some cleaning products, took action on hydroxyisohexyl 3-cyclohexene carboxaldehyde well before the EU ban was put in place, out of concern for the increasing rate of allergies. As Unilever explains on their website:

Loyal [HICC] is a common fragrance ingredient with floral notes. A small number of people have an allergy to Loyal, but with evidence of these numbers growing, we have removed Loyal from all our product formulations, except for just a handful of products which we are still working on.^[58]

Where are we finding hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC)?

Similar to OTNE, this fragrance ingredient is commonly found in laundry products such as dryer sheets, laundry detergent, laundry scent boosters. We also found it in some air fresheners.

Brands identified with products containing hydroxyisohexyl 3-cyclohexene carboxaldehyde (also listed as HICC or Loyal):

Bounce	Tide
Cheer	Air Wick
Downy	

Isothiazolinones: MI and MCI

What is it and why is it a problem?

Isothiazolinones are preservatives used in both cleaning products and cosmetics to prevent the growth of bacteria or other organisms in the product. While preservatives serve an important function – particularly in liquid products with long shelf-lives, the use of isothiazolinones in products has created an epidemic of skin allergies around the world.^{[59][60][61][62]} These chemicals – particularly methylisothiazolinone (MI) and methylchloroisothiazolinone (MCI), were introduced into products only in recent decades. Once unknown to dermatologists, these chemicals swiftly moved to the top of the list of the most common allergens seen affecting their patients.

The use of MI and MCI in cosmetics has been well-known as problematic, leading to restrictions and bans of these chemicals from cosmetics in both the European Union and Australia. The extensive use of MI and MCI in cleaning products has rarely been investigated. The United States has not implemented any regulatory ban or restrictions for MI and MCI for any type of consumer product. As a result of the international regulatory efforts on cosmetics, skin sensitization rates to MI decreased by 50% between 2015 and 2017 in the European Union.^[63] Skin sensitizations to MI also dropped by half in Australia over the same time period.^[64]

The latest available data from the United States indicates that the already high rates of skin sensitization to MI and MCI are still on the rise.^[65] In people with hand eczema in the United States, MI is now the most common substance causing skin allergy.^[66] Responsible manufacturers are well aware of the increasing international regulations on isothiazolinones in personal care products and should be working to eliminate the use of these sensitizing chemicals from cleaning products.

Until the recent ingredient disclosures, it has not been publicly understood how frequently isothiazolinones are used in the cleaning product sector, and how much personal exposure there might be from these products.

SEVENTH GENERATION & MI

Seventh Generation's efforts to eliminate isothiazolinones in products: Beginning in 2016, Seventh Generation reported on their initial efforts to achieve a 15% reduction of methylisothiazolinone in their products as they searched for better alternatives.^[67] By 2018, they had met their initial goal for significantly reducing levels of MI to less than 1% of the product, and established a new 2020 goal of eliminating MI from 100% of their products.^[68] In their latest 2019 report, they have stated they are "nearly there".^[69] While we still identified MI as an ingredient in a number of Seventh Generation cleaning products, we appreciate the company's forward-thinking commitments and public reporting on their progress towards their goal of eliminating this toxic chemical from their products. We encourage other manufacturers to do the same, without waiting for regulations to force their hand.

Where are we finding Isothiazolinones: MI and MCI?

The two categories of cleaning products most likely to contain MI and/or MCI are products that involve significant skin contact: cleaning wipes and dishwashing liquid soap. Given the extensive skin exposure from these products, and the high rates of hand eczema caused by MI exposure, safer alternative preservatives should be used in these products especially. We also found MI and MCI in some carpet cleaners, laundry detergents, all-purpose cleaners, and fabric softeners.

Brands identified with products containing Isothiazolinones: MI and MCI:

Dawn
Joy
Method
Ajax
Palmolive
Suavitel
Clorox (cleaning wipes)

Real Simple
Green Works
Fragranzia
Seventh Generation
Windex (wipes)
Pledge
Glade

Resolve carpet cleaner
DG Home
Caldrea
Mrs. Meyer's
Ecolab
ECOS

PHUONG'S STORY

I first starting noticing my reactions to cleaning products in 2015 when I was traveling for business and staying at an Airbnb in Sacramento. I noted to the host that I have serious allergic reactions to cats and am sensitive to strong fragrance. She was very responsive and did a thorough cleaning of the room. But when I arrived, I started not feeling well, the symptoms where similar to my allergic reactions to cats — wheezing and asthmatic — but I was not sneezing, so I knew something was different. I asked the host about the cleaning products she used, and she showed me various Ecolabs detergent and spray bottles.

Since that time, I have continued to have reactions like these, especially in hotels. When I smell the familiar biting citrus/alcohol mix like smell, I react by wheezing, coughing, and a shortness of breath. When I ask what cleaning products are being used it is, without fail, Ecolabs. I can no longer stay in hotels that use these cleaning products because of the way my body reacts. I have tried writing to corporate offices, contacting the manufacture directly, leaving reviews, etc. I have not received any response.

Now with COVID-19, I am further concerned that harmful cleaning products are being used more frequently to meet the compliant requirements for a business to stay open. So the fumes are accumulating in the air and in many places even with Hepa filters cannot filter out all that toxins in the air.

For me, avoiding these products has been extremely difficult in public places and I have struggled to find hotels that don't use the products I am reacting to. On a recent trip, I had to call every hotel I wanted to stay at within my price range and asked what cleaning products they used so I could protect my health. And I am concerned that there are other people who experience the same problem as me, but don't know what causes their reactions.

I am concerned that there are other people who experience the same problem as me, but don't know what causes their reactions.

Glycol ethers

What is it and why is it a problem?

Glycol ethers are solvents – chemicals used to dissolve substances. Glycol ethers are of concern because they can pass through the placenta and into the fetal brain. The fetal brain is exceptionally sensitive and vulnerable because it is growing and developing, and very small exposures can throw off this delicate process and cause lifelong effects. Glycol ethers are a large class of chemicals, with some found to be more toxic than others. There is emerging research available on the three specific glycol ethers most commonly used in cleaning products. Several studies have previously reported increased risk of behavioral concerns such as attention deficit and hyperactivity in children whose mothers reported exposure to these glycol ethers during pregnancy.^{[70][71]} More recent studies measured levels of glycol ethers commonly found in cleaning products in the bodies of pregnant women, and then followed up to study the brain health of their children. The studies, while still preliminary, found significant deficiencies in the brain health of the children whose mothers had the highest exposures to glycol ethers. By age 6, these children had poorer performance on intelligence tests.^[72] By age 10, children whose mothers were most exposed to glycol ethers, showed poorer ability on motor function, particularly the ability to inhibit physical actions.^[73]

Unfortunately, exposures to glycol ethers are very common among women, likely due in part to exposure from cleaning products. Recent studies found evidence of glycol ethers present in the urine of 90% of the pregnant mothers they tested.^[74] Given this evidence of exposures and growing evidence of harm, people of reproductive age should avoid exposures to glycol ethers. Glycol ether exposure from cleaning products should be avoidable. Manufacturers should take the responsibility for removing these harmful solvents from their products and replace them with safer alternatives.

There are numerous chemicals in the family of glycol ethers, and each has several synonyms. Those most commonly found in cleaning products are often listed as:

- 2-butoxyethanol or butoxyethanol (CAS #: 111-76-2)
- Butoxydiglycol or 2-(2-Butoxyethoxy)-Ethanol) or diethylene glycol monobutyl ether. (CAS #: 112-34-5)
- Diethylene Glycol Ethyl Ether or ethoxydiglycol. (CAS #:111-90-0)

Where are we finding glycol ethers?

Glycol ethers used to be commonly found in popular consumer brands like Formula 409, Simple Green, Glass Plus and others. Many of these brands have since replaced these chemicals with safer solvents. We identified glycol ethers in only a few popular consumer brands. The major exceptions, however, are institutional/janitorial cleaning products and cleaning products found in dollar stores. We identified numerous products – especially spray glass cleaners, aerosol foaming glass cleaners, and carpet cleaners manufactured for the janitorial sector or commonly for sale in dollar stores that still contain glycol ethers. This means that people cleaning for a living are much more likely to be exposed to glycol ethers from their use of cleaning products. Similarly, people who purchase cleaning products at dollar stores for home use are much more likely to find products also containing glycol ethers. Those who both clean for a living and shop at dollar stores are doubly exposed. Manufacturers should be especially vigilant about the chemicals they use in products for these audiences, who are already disproportionately burdened by toxic chemical exposure from other sources and face health disparities.

Brands identified with products containing glycol ethers:

- 🦋 DG Home (Dollar General Brand)
- LA's Totally Awesome
- Mop & Glo
- Spot Shot
- Great Value (Walmart)
- First Force
- Spic and Span (P&G Professional)
- Spartan Chemical

- Glisten (Fulton Distributing)
- Chase Products
- Stearns Packaging
- Ameriplus, Inc. (Tile Plus)
- Victoria Bay
- Sealed Air
- Claire Manufacturing
- Simoniz (Brite)
- Ecolab

CASE STUDY: Dollar General DG Home Brand

In 2015, the Campaign for Healthier Solutions^[75] sent a letter to the CEO of 🦋 **Dollar General** expressing their concerns about toxic chemicals in the products they sell, asking them to take action to improve their offerings. The letter stated:

"We believe you have the responsibility to not promote the proliferation of these chemicals in our communities and to not contribute to our already disproportionate burden. The communities that you serve are predominantly low-income and people of color, and these communities are already disproportionately exposed to environmental harm and suffer from economic and health disparities. We are also aware, as are you, that your customers often lack convenient access to other retailers, or rely on your stores to be able to purchase main staple food and personal care items because of their financial disparities. Your customers both want and deserve to have safer and healthier products, and you have the resources and the opportunity to provide them."^[76]

We echo these same concerns, as we identified glycol ethers in numerous products in Dollar General's DG Home brand. More than any other products they sell, Dollar General has considerable control over the ingredients allowed in their own brand. We hope they will eliminate glycol ethers in addition to their ongoing efforts to improve chemical safety of the products they sell.

DONNA'S STORY

Ingredients like those in scented cleaning products, laundry products and air fresheners are making me sick; what I call my Hidden Illness. I call it this because for decades manufacturers have hidden these toxic ingredients from us — and because you can't tell by looking at me that I am sick.

When I am exposed to these products, especially fragranced products, they make my head buzz, my tongue swell and often trigger a migraine or a cluster headache, instantly. I can't even safely walk in my neighbourhood without worry that I will be bombarded by chemicals from someone's fabric softener or dryer sheets wafting through the air.

I've been living with this and learning what triggers me for so long, but the greatest challenges comes from lack of awareness or even validation by many in the medical community.

Fear, panic and anger set in quickly because I know that these exposures will add to my toxic burden and set off a myriad of symptoms. Some symptoms like headaches are easier explained but others — like not being able to remember the simplest of things like my banking PIN number — are sometimes dismissed as depression, stress or even my age. Some, I suppose, are even hidden from me.

I've been living with this and learning what triggers me for so long, but the greatest challenges comes from lack of awareness or even validation by many in the medical community.

When I do get sick (when not if) where do I go? Who will help? Will I be believed that chemicals in everyday products wreak havoc on my health? I've been fortunate to have connected with a couple of amazing holistic/functional medical professionals, but more often I am judged for speaking my truth.

A recent appointment with a new practitioner went like this:

"I was diagnosed with chemical sensitivities at Women's College Hospital in 2001." It is a prominent hospital with an Environmental Health Unit and I think this will add validity to my statement.

The response was, "I've never heard of that."

I whispered that I thought that mainstream medical awareness would have come further in twenty years. I'm defeated and deflated and sit quietly listening to his motivational speech on how important it is to get back in the workplace. My workplace that is full of sanitizer and disinfectants because of public health protocols. I don't argue because he is the expert. It's safer to stay hidden. I will wear a mask not simply because it is part of today's protocol, but because I can slip a carbon filter inside in an attempt to diminish the caustic affects from toxic chemicals.

My home is my sanctuary. It is as fragrance free as it can be, given the pervasiveness of these toxins in everything we use on a daily basis. I wish I could hang a Do Not Disturb sign on my door and stay hidden.

Car Wash Products

Car wash products and automotive cleaners are a unique niche of the cleaning products industry that clearly needs attention. More than any other category we examined, manufacturers of car wash products were the least likely to disclose any ingredients at all. In the products where ingredients were disclosed, we identified a wide variety of hazardous chemicals, including some listed in this report (glycol ethers, phthalates, isothiazolinones and fragrance allergens), as well as a host of other chemicals of concern. We identified nonylphenols, ethylbenzene, formaldehyde, ethylene oxide and several forms of petroleum distillates. These chemicals pose a number of health hazards including effects on the central nervous system, breathing problems, cancer and more.^{[77][78][79][80]} This incomplete ingredient data raises questions about the impact on car wash workers who spend hours each day, often without protective gear, exposed to these products. These exposures are in addition to the health burdens of workers who are often from low-income and immigrant communities.

There is little research on the health of car wash workers, but one recent study which examined acute symptoms on the job found significant results. The study evaluated the health of Latinx car wash workers in New York City and found that 60% could link their work to health conditions including shortness of breath, eye problems, skin rash and headaches.^[81] These are all symptoms that could easily result from chemical exposures. No long-term follow-up has been done to find out if these symptoms might link to increased risk of chronic disease. The industry can and should do better for these workers, starting with the disclosure of the chemical ingredients in car wash products. From there, immediate attention is needed to design inherently safer products that not only clean vehicles effectively, but which are safe for the workers using them day in and day out.

Problematic Product Category: CARPET CLEANERS

Carpet cleaners are a type of cleaning product that particularly stood out in our analysis due to the many toxic chemicals they contain. From phthalates to glycol ethers, to numerous fragrance allergens, some of these products may pose considerable hazards. However, none of the harmful chemicals was consistently found across carpet cleaning products, indicating that they are not essential to performance and that alternatives are available.

Furthermore, some carpet cleaners are intended to be vacuumed after using them, while others are supposed to be applied and left there. There is very little research about how much residue is left behind, or what kinds of hazards these products present for people living or working in the carpeted space. The effects on children are a considerable concern because they spend more time on the floor. Clearly, safer products and more research is needed to ensure that we are not harming our health when we clean our carpets.

Car Wash product brands which contain chemicals of concern:

Malco Zep
Meguiars PowerWash

Car wash product brands with no ingredient disclosure:

Ultra Clean 3D
All American Car Care

CONCLUSION

Manufacturers are responsible for the safety of their products and for making the health of the people that use them and are exposed to them a priority. They must do a better job of understanding who uses their products, how people are using them, and how cleaning products add to the cumulative impacts related to sourcing, manufacturing, sale, and disposal of cleaning products on the environment and overburdened communities. Many users of cleaning products are disproportionately burdened by toxic exposures and injustices that affect their health in numerous ways. This is where the safety analysis of cleaning products needs to start – to better understand how cleaning product exposures may compound and add to these other health burdens.

In addition, companies often address their impact on climate change in terms of energy use, but petrochemicals — the building blocks of many chemicals used in cleaning products — contribute to an economy dependent on fossil fuels. Companies need to invest more R&D in green chemistry that isn't reliant on fossil fuels.

An important step in being a responsible manufacturer is transparency; ingredient disclosure makes a difference. The secrecy around cleaning product ingredients is not only antiquated, it is unnecessary and potentially dangerous to public health. Manufacturers owe it to their customers to be fully transparent about the chemicals they use and how they determine the safety of products. This report is just the beginning of further investigations to better understand the actual impact cleaning products may have on our health. The chemicals of concern included here are not a complete list but rather exemplars of chemicals that need to be substituted with those that are safer and effective. Manufacturers have much more work to do to establish, document and publicly report the strict safety standards they will apply to determine which chemicals are appropriate to use in products, and which must be replaced with safer alternatives.

With the California disclosure law in place, the ingredient information we have is much better than we had before, but it is imperfect. We still must rely on manufacturers to both fully know the ingredients in their products and to honestly disclose them. There are still allowances in the law to protect “confidential business information” – so, without in-depth and costly independent testing, the public simply does not know how many ingredients are not being disclosed for this reason.

From creation and distribution, to use and disposal, everyday products are having a dramatic impact on our health and environment. Exposure to toxic chemicals in products adds to the burden people of color, Indigenous people, and low-income families already face from industrial pollutants, climate change, lack of adequate health care or access to healthy foods. Companies cannot ignore these existing conditions. They must take an active approach in understanding their role in disproportionate exposures and impacts and take precautionary measures to ensure their practices and policies are not adding to existing problems for the sake of cleanliness or scent. These are the actions of responsible manufacturers.



Methodology:

In December 2020 and January 2021, we analyzed online ingredient disclosures for cleaning products in compliance with the California Cleaning Product Right to Know Act. We searched the sites of popular brands sold by major market shareholders, as well as several green cleaning brands, and industrial/janitorial supply websites. In all, we reviewed ingredient disclosures for over 500 products on the market today. Disclosure methods varied widely between companies, from individual manufacturer websites with search capabilities, to static downloadable lists of ingredients linked on product websites. We also searched SmartLabel.com which several manufacturers use to disclose their ingredients. We aimed to understand the use of chemicals in both the most often used products by the general public as well as to focus on products more often used by and marketed to specific populations such as cleaning workers and people of color. We chose to highlight hazardous chemicals now known to be commonly found in cleaning products, but which have been infrequently discussed among public health professionals.

We also consulted with several non-profit organizations prior to writing the report, to help ensure that we were capturing information on relevant brands, and addressing key concerns about cleaning product exposure.

RECOMMENDATIONS

State/Federal Policy Solutions

Safe products should be available, affordable and accessible to people no matter where they live, where they work, or what their income is. These recommendations are designed with this in mind.

Domestic cleaning workers, janitors, and people who perform cleaning duties as part of their job are disproportionately exposed and impacted by exposure to harmful ingredients in cleaning products. People in these positions use cleaning products much more frequently and for longer periods of time than the general public. We need stronger worker protection laws to ensure the safety and health of people who clean for a living or who clean as a regular part of their job duties. The following policies are good place to start.

- ☛ California Senate Bill 321, the Health and Safety for All Workers Act, was reintroduced in March 2021. The bill includes domestic workers under CALOSHA, and will give them the same protections as other workers, including the right to health and safety training, protective equipment, and legal protections against retaliation.
- ☛ The Protecting America's Workers Act (PAWA) will strengthen the federal Occupational Safety and Health Act that was enacted over 50 years ago. The bill will increase protections for "whistleblowers" who report on unsafe working conditions, ensure employers are held accountable for health and safety violations, and ensure hazardous working conditions are rectified in a timely manner.
- ☛ The National Council for Occupational Safety and Health released a National Agenda for Worker Safety and Health that includes federal policy recommendations to protect workers. You can view the full agenda here: <https://www.coshnetwork.org/2021NationalAgenda>

There are very few restrictions on the use of toxic chemicals in household and institutional cleaning products. The Consumer Product Safety Commission is responsible for the safety of cleaning products, but the agency has done very little to address the use of harmful ingredients in cleaning products. The following policies are needed to ensure the safety of ingredients used in household and institutional cleaning products.

- ✿ A strong federal policy that requires the safety substantiation of ingredients, taking into account the cumulative impact of the chemicals on overburdened and vulnerable populations including workers, people who live at the fenceline where these chemicals are produced or disposed of, and pregnant women, and children.
- ✿ The California Cleaning Product Right to Know Act (SB 258) and the New York Household Cleansing Product Information Disclosure Program (not yet implemented) require the disclosure of ingredients in cleaning products. These policies provide a good model for disclosure that companies, no matter what state the products are sold, should follow.
- ✿ Municipalities, school districts, universities, and other public entities should adopt procurement policies that require the use of 3rd party certified green cleaners to protect the health of workers using these products and the general public. Model policies can be found at: http://www.responsiblepurchasing.org/purchasing_guides/cleaners/policies/

What corporations can do:

In the absence of strong regulatory oversight, manufacturers of cleaning products have a responsibility to disclose all ingredients, and should have a strong and transparent chemical policy that outlines how the company is screening ingredients for safety, and that includes strong safety criteria. The following recommendations are what manufacturers can do now to gain the public's trust in the safety of cleaning products.

- ✿ Manufacturers should disclose all intentionally added fragrance ingredients, on a product-specific basis, regardless of threshold. An increasing number of manufacturers are disclosing ingredients, but often only disclose fragrance ingredients down to 100ppm. This is unacceptable, as even fragrance below 100ppm may cause an allergic reaction or pose a health risk to the user.
- ✿ Although hands soaps are not regulated as cleaners, manufacturers should disclose all ingredients in hand soaps.
- ✿ Manufacturers should follow the Health First Roadmap^[82], a resource developed by Women's Voices for the Earth that provides companies with a roadmap for selecting safer chemicals to ensure the safety of their products for all users, including workers, pregnant women and children.
- ✿ Manufacturers should disclose ingredients in a way that is easily understandable and accessible to users. Reckitt, makers of Lysol and other cleaning brands, provides a good model for online disclosure. Ingredients are listed on product brand pages and contaminants are clearly identified. The company also identifies which ingredients are present on hazard lists (such as lists of carcinogens, asthmagens etc).

- ✿ Companies should provide ingredient information in English and Spanish, especially considering 87% of housecleaners are Latinx.
- ✿ Manufacturers should increase the functionality of online disclosure and enable the user to search for an ingredient to help identify which of the company's product contain a chemical they want to avoid.
- ✿ Manufacturers should certify the safety of their products via 3rd party certification programs like the EPA's Safer Choice.
- ✿ If manufacturers discontinue a product because of product reformulation that eliminates the use of toxic chemicals in the product, the company should put measures in place to ensure that remaining inventory is not sold in dollar stores. Dollar stores are predominantly located in low-income communities and communities of colors, and are often the only store in town for some communities to purchase household goods.

What individuals can do:

In the absence of strong federal laws that ensure the safety of cleaning products, there are measures individuals can immediately take to protect their health.

- ✿ Reduce or eliminate your use of fragranced cleaning products. If you employ a domestic cleaning worker, buy products free from fragrance and with safer ingredients.
- ✿ If you employ a domestic cleaning worker, check out the domestic worker resources from Hand to Hand, which includes tips for helping to protect the health of the people working in your home. <https://domesticemployers.org/resources-and-faqs/>
- ✿ Read cleaning product labels/go to the product brand website and check whether your cleaning product contains any of the chemicals mentioned above.
- ✿ Some companies provide ingredient information in Spanish online, but many do not. Often, a company's 1-800 customer service number will have the option to receive information in Spanish, and you can ask whether a chemical you are concerned about can be found in a particular product.
- ✿ Contact cleaning product manufacturers to ask them not to use toxic chemicals, like those listed here, in their products.
- ✿ Make your own products using safer ingredients like vinegar and baking soda. To find recipes visit www.womensvoices.org. If scent is important to you, consider using safer alternatives like lemon or orange peel, or fresh herbs to infuse an all-purpose cleaner made with vinegar and water.
- ✿ You can use EWG's safe cleaning products database to search for cleaning products that use safer ingredients. Products are given an A, B, C, D or F rating for safety.
- ✿ Resources and trainings for people who clean for a living are available from California based IDEPSCA, and New York-based Make the Road New York in both English and Spanish.
- ✿ Look for products with the EPA's Safer Choice label, which lets you know the ingredients have been screened for safety by a 3rd party. Other 3rd party certification programs include GreenSeal and EcoLabel. (Note: while 3rd party certifications can help you find safer products, no certification is perfect.)

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