

OPINION: 2017 SKINCARE PRESERVATIVES – PHENOXYETHANOL



By [Fraser Hill](#)

and

Posted [July 28, 2017](#)

In [Brands](#), [Exclusives](#), [Insight](#)

3

Phenoxyethanol has had a lot of air time in skincare ingredient circles in the past few years. So much has been said about it, and as Oscar Wilde once said, “Most people are other people. Their thoughts are someone else’s opinions, their lives a mimicry, their passions a quotation.” It seems that this is certainly true when it comes to the judgments of views on phenoxyethanol. The problem is, when one person quotes someone else’s opinion, adds to it, and then somebody quotes this view, the proverbial game of “telephone” starts to distort the facts, and we’re left asking ourselves, who do we believe? When it comes to phenoxyethanol, I know who I believe, and that will become clear as you read this article, which tries to make sense of the facts and fiction as it relates to this skincare preservative.

Preservatives are included in skincare products to prevent bacteria, mold, and yeast from growing. Killing bacteria, and creating a hostile environment for these living microbes to grow, is never going to be a job done by a friendly fluffy soft-spoken ingredient. It's a job for ingredients that show no mercy, that kill without flinching the moment the enemy has identified itself, be it bacteria, mold, or yeast. Let's be clear, the enemy will never surrender, and no ingredient that isn't prepared to go out there and kill microbes is ever going to be effective, and so you're never going to find preservatives suitable for babysitting your children, none of them.

Much hysteria and semi-informed or completely misinformed articles are written about preservatives. The fact of the matter is, for water-based products, preservatives are there to stop your products from going bad, and at worst, to prevent you from dying from nasty bacterial infections. The more effective a preservative is, the less likely it is to be nice and friendly as its very job is to be hostile towards microbes. So this isn't a choice of, "Which one of eight cute, beautiful puppies are we going to take home and love forever?"; the choice is more like, "Which deadly weapon are we going to choose to make sure our enemy doesn't kill us first, but with no civilian casualties?"

The fact is, no one "weapon" is effective at keeping all the microbes at bay at once. Some preservatives are useful for different types of bacteria, while some may be better with mold or yeast, for example. It is further complicated by the fact that various combinations of different concentrations of ingredients create different needs when it comes to preservatives. Continuing with the war analogy, dropping a nuclear bomb (a harsh broad-spectrum preservative) would do the trick, but the collateral damage is just too extreme and defeats the purpose. Conversely, sending in an army with only their fists to fight (as in the case of some so-called "natural" preservatives) is not going to get the job done. So, we must always get the balance right, to be effective, but to target specific microbes with just enough force to safely take them out.

At Skinega, when we evaluated the various preservatives in the market, our choice was driven by one factor: the safety of our water-based products for their intended purpose, using minimal ingredients and minimal disruption. We looked at many alternatives, and none of them are suitable to take home and introduce to your parents. If you do some research on parabens, imidazolidinyl urea, quaternium-15, DMDM hydantoin, methylchloroisothiazolinone, and formaldehyde, you will get some idea of what alternative preservatives may have in store for you.

When we looked at so-called “natural” preservatives, we run into significant problems. Firstly, you’ll read about certain “natural preservatives,” often found on the blogs of homemade natural skincare makers. Some of these so-called preservatives, like grapeseed extract or tocopherol (vitamin E), are not preservatives; they’re antioxidants. Antioxidants may prevent oxidation of products, and therefore help them not to go rancid, but they do not fight bacteria, yeast, and mold.

It goes without saying that the milder the preservative, the more you will need to use for it to be effective. Also, given the broad spectrum required, you need three or four or five natural preservatives, all at concentrations high enough to be effective, and then you will have a jar with a significant double-digit percentage of “natural preservatives” in it, which may not even be effective depending on what else is in the jar.

And don’t be fooled into thinking that just because an ingredient exists in a natural form, that you’re getting it in its natural form. Later we’ll be writing about benzyl alcohol, an Ecocert-certified (certification for organic and natural products) preservative, for example.

We tested several different preservatives, which can only be done over a period of months, as preservatives don’t work the same with every combination of ingredients. The ones we tested simply didn’t stand the test of time. We then came back to phenoxyethanol and decided to do some serious research as it is so widely used, but grossly misrepresented and misinterpreted.

The most compelling, fact-based research we found was published on the 6 October, 2016, in a paper written by the 8 professors and 9 doctors that make up the European commission Scientific Committee on Consumer Safety (SCCS), and in the study they reviewed over 100 studies that have been published since 1980 on the safety of phenoxyethanol.

[This report](#) was a professional “study of studies” written by a team of well-informed, qualified professionals. If you read this paper in its entirety, you will understand exactly why the scientific opinion shared by the international community of regulators share the view that phenoxyethanol is indeed safe at 1% or less in skincare. Your opinion may still differ, but “Based on what research?” would be the challenge from the scientific community.

They base their professional opinion entirely on the facts ascertained from these studies, and the conclusion they came to in the 100-page report was this:

“The SCCS considers 2-phenoxyethanol safe for use as a preservative with a maximum concentration of 1.0%, taking into account the information provided. ... The SCCS is asked, when making the assessment, to take into account the specific age groups who might be especially sensitive to the effects of phenoxyethanol used as preservatives in cosmetic products.”

One can assume, this was about the [press release](#) (not a lab-based scientific report) published by the FDA in 2008, which warned consumers not to purchase Mommy’s Bliss Nipple Cream as it contained two ingredients, one of which was phenoxyethanol. Interestingly, the “blame” put upon phenoxyethanol is that “It also can depress the central nervous system and may cause vomiting and diarrhea.” In isolation, that is a very scary statement, and it is now often the point of reference for misinformed people citing its dangers to adults (even though an infant child was the subject). We’ll come back to the “nervous system” quote, but it’s fair to say that ingesting almost anything we’re not meant to ingest may cause such a reaction.

In fact, take tea tree oil, for example, a 100% natural remedy topically applied for many things from acne to helping remove makeup. Tea tree oil can be poisonous if ingested. Now to get scientific to make some kind of a direct comparison, we refer to some toxicology nomenclature: “LD50” is the common term used for assessing the lethal dose that would kill 50% of a test population, and it is expressed in mg/kg, or milligrams of substance per kilogram of body weight. LD50 as a reference in itself has its flaws, but it’s a way to at least try to compare unrelated ingredient toxicity. The LD50 for tea tree oil is 1.9mg/kg, and the LD50 for phenoxyethanol is 1,260 mg/kg. Accordingly, tea tree oil is apparently over 600 times more poisonous than phenoxyethanol if ingested, yet it is used as a natural remedy for the skin. Why? Because it’s safe to do so in adults at recommended levels, and you’re not supposed to ingest it, let alone feed it to babies. Incidentally, caffeine has an LD50 of 200mg/kg, which makes it more “toxic” than phenoxyethanol. This is not saying phenoxyethanol is safe because other things are less safe, but rather, most substances can be unsafe if misquoted without reference to their concentration, as is the case here.

Now, back to the FDA press release of 2008. It seems the FDA, who made no mention of the source of their claim, may have been referring to a particular concentration of phenoxyethanol far above that cited by every scientific study done on phenoxyethanol safety as a skincare preservative. Let’s take an American example if the EU study of studies wasn’t convincing enough. The *Journal of the American College of Toxicology* (Volume 9, Number 2, 1990), which references 65 other published medical

articles on its findings, concluded that, “On the basis of the available information presented in this report, the Expert Panel concludes the Phenoxyethanol is safe as a cosmetic ingredient in the present practices of use and concentration.”

Let’s not forget, the FDA have never banned phenoxyethanol for use as a preservative. Why? Because the science they rely upon to reach informed decisions clearly states that phenoxyethanol is safe.

Regarding the FDA’s statement referring to the nervous system, it may have come from various Material Safety Data Sheets (MSDS) for phenoxyethanol, which is often conveniently quoted as a source of misinformation in quoting the “dangers” of phenoxyethanol, as it says, “It’s hazardous in case of eye contact, skin contact, ingestion, and inhalation. The substance is toxic to kidneys, the nervous system, liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged inhalation of vapors may lead to chronic respiratory irritation.”

Let’s put that into context. The MSDS reported on pure 100% phenoxyethanol, not the 0.5%–1% typically used in skincare products. Once again, consider the tea tree oil reference regarding concentration.

Let’s look at another ingredient listed on an MSDS, which says “May cause gastrointestinal irritation with nausea, vomiting, and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.”

Who in their right mind would use that chemical quoted as doing so much harm in the MSDS? Well, I can safely say that many of you reading this now do! This MSDS report is about alcohol (in its drinking form) at 70% concentration. Now, scientific parallels cannot easily be made, but who drinks alcohol at 70% concentration anyway? Is beer at 5% concentration likely to have these effects? Maybe, if you drink enough, it will be. If you took a bottle of beer at 5% alcohol and mixed it with twenty bottles of water (of the same volume), would that resulting liquid, with 0.5% alcohol, be in any way toxic?

This isn’t about making unscientific comparisons, but it is about rationale. If you read that something “is toxic to the nervous system,” it would be naïve to conclude, without further investigation, that this means you should avoid that substance.

Now let’s consider another chemical MSDS report: chlorine that they put in swimming pools (sodium hypochlorite). MSDS says of this chemical (at 5% concentration):

“Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion. Repeated or prolonged exposure to the substance can produce target organs damage.”

Are there reports and blogs out there with titles “Swimming Pools Burn Babies and Cause Organ Damage”? No, because that would be an out-of-context statement. In swimming pools, the typically recommended concentration is 0.5 mg/L to 1.5mg/L, which, lo and behold, is all of a sudden a safe level of a “toxic” ingredient, that your body and that of babies is submerged in for as long as you care to swim. Chlorine, like preservatives in skincare, is there to do a job: kill microorganisms. The reason you will see phenoxyethanol in so many skincare products is that it does its job very well, and the alternatives, in our opinion, are certainly worse.

Furthermore, about the mis-association of reactions by children to preservatives in comparison to that of adults, let’s consider another preservative used in skincare: benzyl alcohol. Now, this is an interesting one because it is Ecocert approved, meaning it is allowed to be used in organic and natural products. So it must be natural, and it must be safe right? Well, yes it can be found naturally, but for the skincare and cosmetics industry, it is mass produced using chemicals that you may want to research, and on paper, according to its LD50, it is slightly more toxic than phenoxyethanol. Is it safe? Of course it is, just like phenoxyethanol is, at the right level.

We found in tests that phenoxyethanol was more efficient, and that’s a conclusion probably reached by many skincare companies, hence why you see it so much. It’s not because there’s a conspiracy in skincare companies to use dangerous ingredients; on the contrary in fact. If misinformed opinion is going to drive skincare companies to move away from more efficient, and arguably less toxic (even although neither are toxic at levels used in skincare, but commentators feel it relevant to comment on toxicity) preservatives just because a self-appointed “natural and organic” industry body, Ecocert, allows one chemically produced preservative over another, because of some tenuous link to its natural cousin, then it will be a great shame.

Back to the FDA nipple cream announcement. If the same discrimination was made towards benzyl alcohol that has been made to phenoxyethanol, based on a child’s reaction, it’s worth noting that benzyl alcohol was linked to the deaths of 16 babies in 1982 (*American Journal of Diseases in Children*, 1982 Nov; 136(11):974-5).

In fact, if we're looking to compare like for like, let's see what the FDA had to say about benzyl alcohol. On the FDA website, it reads, "The preservative benzyl alcohol has been associated with serious adverse events and death in pediatric patients. The minimum amount of benzyl alcohol at which toxicity may occur is not known. Premature and low-birth weight infants may be more likely to develop toxicity."

So the same FDA that's been so often quoted regarding the dangers to babies from nipple cream containing phenoxyethanol (which killed no babies), has a far more uncompromising stance than the very preservative that you can readily find in organic products, even although it is not even natural. Also, it is worth noting that phenoxyethanol is still used in hospitals for intravenous equipment; the Ecocert benzyl alcohol is not.

Now on the subject of Ecocert and "natural and organic" certification of preservatives, we do empathize with Ecocert as they have a tough job on their hands when it comes to preservatives. We can only assume they choose benzyl alcohol as a preservative because it can exist in a natural form. However, let us consider that more carefully. By that logic, Dolly the cloned sheep is a natural sheep, because, she's a sheep (R.I.P. Dolly).

That's not to say that benzyl alcohol, or indeed any other real preservative that has been duly qualified as safe to use by the US or EU, is a questionable preservative and "only phenoxyethanol should be utilized as its superior." Not at all. We are 100% behind the research done by the regulatory bodies to qualify these preservatives, and if they say its safe, then we believe they're safe. Just don't be duped into believing a preservative that is Ecocert approved means that it is natural, or more harmless.

Finally, we should touch on allergic reactions, because a lot of the articles we read announced that phenoxyethanol is a known allergen, like a) that was new news, and b) it should be locked away in quarantine until the end of time. Unfortunately, there will always be someone allergic to one or more of the available preservatives on the market.

People die from allergic reactions to bee stings and peanuts. People live uncomfortable lives all summer from allergies to pollen simply from breathing. Some people are even allergic to water (aquagenic urticaria), so we empathize with those who have allergies brought on by phenoxyethanol, but that is not a reason for us to not make our water-based products less safe for the majority of people who do not have an allergic reaction. The chances are, if you are allergic to phenoxyethanol, you'll have known about it for some time now and will be well versed in how to avoid it (it's hard to, we are aware, as it seems to be everywhere).

The fact that we chose phenoxyethanol after all of this research is because after considering all options alongside all the drawbacks and merits of different preservatives, phenoxyethanol came out on top. Could we have used benzyl alcohol just to qualify for Ecocert and claim therefore to be a natural skincare company? We could have, but that would have been hypocritical in our view given that benzyl alcohol found in skincare as a preservative is not always naturally made. What's the sense in that? It reminds me of the people that drive around in a big new Mercedes but rent a tiny apartment. Anyone who knows them knows they can't afford the car, but as long as they believe that other people believe they're rich, then it must be true.

In conclusion, we have to consider the facts over and above the rumors, and the detailed research that is relied upon worldwide for all ingredients, chemicals, and substances that people come into contact with. All the real research indicates that phenoxyethanol is a safe preservative at 1% or below. All the regulatory bodies including US FDA, the EU SCSS, and even Japan cite phenoxyethanol as being a safe preservative at 1% or below.

You have to ask yourself, are the professors, doctors, and patrons of long-established, highly credible journals and regulatory bodies correct, or is it Julie who loves skincare so much she started to blog about it last March, but figured she'd use some of Carol and Dave's blog to write about it (who by the way may have been allergic to phenoxyethanol)? That shouldn't be a million-dollar question, but hey, this is just another blog telling you another opinion, and we're a skincare company, so do your research before you start believing us! You must decide for yourself what your truth is and run with it. Just don't be sharing too much of it if it's the wrong truth unless you are comfortable falling under Oscar Wilde's definition of "most people."

Photo credit: Fraser Hill

The views expressed in opinion pieces are those of the author and do not necessarily reflect the views of BeautyMatter.

SHARE THIS:

- [Facebook](#)
- [LinkedIn](#)
- [Twitter](#)
-

LIKE THIS:



[Fraser Hill](#)

Fraser is the Founder and CEO of Skinega, Inc. He grew up and was educated in Scotland before going on to forge an 18-year career in executive consulting and research, living and working in London, Hong Kong, Poland, Canada, and in the US, working for companies including J.P. Morgan, as well as starting Consulting firms in Canada in 2008, and London in 2012. With his background in research and technology, Fraser embarked on a consumer driven journey to seek out cleaner, vegan, more effective luxury skincare. He sought a "free from" list that went beyond just harmful ingredients to include ingredients that serve no purpose to skin's wellbeing like synthetic thickeners, colors, fragrance, and other texture modifiers. His search was unsuccessful, so Skinega was developed over a two-year period, then formally established in 2017.