Phenoxyethanol & EDTA Preservative System

by Kayla Fioravanti

Phenoxyethynol is created by treating phenol with ethylene oxide in an alkaline medium. Each ingredient individually does not sound great, but when they react it creates a safe and effective preservative. Individually many chemicals may harm you, but together they create a beneficial product. For instance, lye alone is extremely dangerous, but after it reacts with oil and water to create castile soap it is harmless and useful. The MSDS for a pure ingredient can cause undo alarm. But as you consider other ingredients that are widely used and safe in cosmetics you will find that the MSDS sounds alarming for them as well. For instance commonly used ingredients like glycolic acid, lye, citric acid, potassium sorbate and even essential oils have MSDS warnings that could be misunderstood and deemed as too dangerous to use in cosmetics. However, we all know that these ingredients are commonly used in cosmetics. The MSDS sheet is designed to inform the end user of how to handle the ingredient properly in an undiluted form.

Some companies claim that phenoxyethynol is derived from rose oil, sage oil, minerals, plant derivatives and even coconut. But honestly, phenoxyethynol is not even remotely related to these ingredients. It is, however, very safe. It is not pH dependant and not a formaldehyde releasing agent. It is paraben free. It does not react with other ingredients, air or light. It is very stable. According to the CIR Expert Panel it is safe as a cosmetic ingredient as it is currently used. It has been tested on the skin and eyes and it is non irritating and non sensitizing at levels of 2.2% or lower. We use phenoxyethynol at 1% or less. You may have seen phenoxyethynol used in cosmetics in conjunction with other preservatives, such as parabens. This is because phenoxyethynol is not a broad spectrum preservative by itself. Through extensive research and testing, we have found success in combining it with another commonly used and completely safe cosmetic ingredient, Edta.

Tetrasodium Edta is derived from sodium salts. Edta is used as a chelating agent. The Greek root of the word chelate is chele which means “to claw”. The root of the word creates a great visual image of what Edta as a chelating agent does. Edta “claws” or “binds” minerals, which are necessary components for the growth of mold. For instance, Edta binds up magnesium which is necessary for mold to grow. In cosmetics, Edta not only is a great additive to create a stable product, but it also pulls heavy metals from your skin when you apply the cosmetic. Edta is widely used for chelation therapy, which is approved by the Food and Drug Administration (FDA) as a treatment for lead and heavy metal poisoning. An estimated one million people in America use chelation therapy for this purpose. The NIH National Center for Complementary and Alternative Medicine (NCCAM) is currently funding a study to prove the effectiveness of Edta chelation therapy for heart disease. Over 100,000 people per year use it in place of heart surgery. In chelation therapy, Edta is injected intravenously. Once in the bloodstream, Edta latches onto lead and other metals to form a compound that can be excreted in the urine. Edta is also used in many foods, for instance mayonnaise and soft drinks, that include ascorbic and sodium benzoate to reduce the formation of benzene (a carcinogen). It is often used in household products. In household products it is sent out into waste water and it binds up the minerals. While Edta is non toxic in waste water it can impact the natural balance of minerals.

Some might wonder why we use preservatives at all. The water portion of a product is the perfect breeding ground for mold, fungus, bacteria and yeast. It is only a matter of time and all unpreserved cosmetics will go bad. What is frightening is that the product might look and smell just fine, but be filled with micro organisms that are dangerous for your skin and health. Some products may look fine on the outside, but when we run them through micro tests, the bacteria, yeast, fungus and mold count is off the chart. Other times, the signs of contamination are more obvious. Possible signs of a product going bad can be an off smell, separation and visual evidence of mold. An unstable, unpreserved product can be contaminated by the water in the product, spores in the air, even unseen contaminates in your packaging and the germs on your hands. A good stable preservative system can keep your product safe and free from these microorganisms for years.

We are often asked, “Why does brand X not use any preservatives?” Our research has been extensive. It has included testing many chemical, semi-synthetic and natural preservatives on the market today. It has also included running tests on many Brand X products. In our research there are five possible answers to the question of how Brand X uses no preservative.

- **One:** is that there is a preservative system on the market with the INCI (Industrial Nomenclature of Cosmetic Ingredients) name “fragrance or parfum”, which does not disclose the ingredients and hides the preservative. They might also be using ingredients that are “multifunctional”, which does again do not fully disclose the ingredients.
- **Two:** there are many products on the market that failed our challenge tests and grew yeast, mold, bacteria and fungus quickly.
- **Three:** they do not fully disclose their ingredient lists evidenced by the fact that their product does not fail micro testing and they do not have any ingredients listed that have any preservative properties at all. That’s odd, isn’t it…
- **Four:** they might be using ingredients that do not require preservatives. For instance a product that does not contain water might not require preservatives, only antioxidants such as Vitamin E.
- **Five:** they could be using extracts in one or two different methods. Extracts in alcohol used at the right percentage create an effective preservative. Many extracts are in a propylene glycol base and preserved with parabens and urea. These used at high enough levels without fully disclosing them to the other ingredients can create an effective preservative system.