Keratin Treatments & Formaldehyde Facts

What is formaldehyde, where is it used?

Formaldehyde is naturally occurring in most living systems and the environment, and is present in glues, resins, textiles, wood products, even food. It exists in our homes, our offices, our cars and the places we shop.

It is present in our blood in a concentration of 2-3 ppm and is necessary for specific biological functions. Formaldehyde is also used regularly in vaccines, including our annual flu shots.

We breathe formaldehyde every day both indoors and out, inhale it when in traffic, and if you smoke are exposed to between 5 and 181 ppm of formaldehyde depending on the brand. It is also produced when burning wood, so anyone with a wood burning fireplace or stove is exposed regularly to more formaldehyde than those without.

Exposure to formaldehyde

Can formaldehyde be dangerous or harmful? For some people the answer is yes; with repeated and consistent exposure to high concentrations. There are people who are more prone to a reaction to formaldehyde than others, just like nuts, cats, gluten or hair product components like ammonia, bleach, perm solution or ingredients in hair color.

The most dangerous route of exposure for some people is through airborne vapor and is measured in "ppm", which stands for "parts per million." A 2 ppm concentration in air means that for every million particles of air there are 2 particles of the substance being measured.

Formaldehyde in cosmetics

Formaldehyde has been used as a preservative in cosmetics for decades, usually in the form of formaldehyde "donors" or "releasers" such as Imidazolidinyl Urea, DMDM Hydantoin or Quaternium-15. It is one of the most effective and inexpensive anti-bacterial and anti-fungal ingredients available.

Since formaldehyde is a gas, it needs to be dissolved in water to be used in a liquid solution. This final mixture is typically called methylene glycol or formalin and is usually a ratio of 60% water and 40% formaldehyde by weight. This means a product with 1% methylene glycol actually contains approximately .4%formaldehyde by weight.

Formaldehyde in treatments

When keratin treatments using these methylene glycol/formalin are heated, formaldehyde gas is released. Airborne exposure to formaldehyde vapor is regulated by OSHA in the USA.

However, products containing or releasing formaldehyde can be safely used when following recommended procedures and instructions. The key is to know the numbers; specifically whether or not formaldehyde is present in any form in a product and how much gas is generated when using the product.

Any brand that uses less product, less heat and less passes of the flat iron is going to release the least amount of gas; and in many cases it is so low that it cannot be measured.

US Formaldehyde regulations

Several Government agencies in the United States, Canada and other countries have established maximum exposure levels for formaldehyde gas in the workplace. The agency in the USA with workplace regulatory authority is the Occupational Safety and Health Administration (OSHA). The OSHA levels are as follows:

- .5 ppm over 8 hours = Action Level - requires increased industrial hygiene monitoring and initiation of employee medical surveillance and training programs
- .75 ppm over 8 hours = PEL (Permissible Exposure Level) - maximum exposure permitted over an 8 hour period
- 2.00 ppm over 15 minutes = STEL (Short Term Exposure Limit) - maximum exposure allowed during a 15-minute period

Keratherapy currently has 6 professional treatment formulas that are all OSHA compliant. None of Keratherapy's treatments release formaldehyde above the OSHA Action Level of .5 ppm, and three are completely formaldehyde free.