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For more information please contact:

Doug Schoon, M.S. Chemistry
President, Schoon Scientific
Dana Point, CA.
949-493-3380

Internationally Known Scientist/Chemist, Doug Schoon, Speaks Out About:

The Hair Smoothing Controversy

Ask Doug Schoon what he thinks about the recent Hair Smoothing controversy and he'll say the following, which may be freely quoted, posted or distributed:

I'm a scientist and chemist that has been researching and writing about salon product safety for over 20 years and have studied the use of **Formalin** in cosmetics and personal care products. I've been researching **Formalin** containing hair smoothing products for almost two years and am considered a leading expert on this subject. In light of all of the misinformation, worry and confusion, I believe it is important to provide information that might help to clarify the situation.

The 15 things I believe the public should know about this controversy:

1. In general, "hair/keratin smoothing products" use **Formalin** as the functional ingredient. **Formalin** treatments provide superior results and services that last up to three to four months.

2. **Formaldehyde** is a GAS, not a Liquid. **Formalin** is a generic name for a substance that contains 59% **Methylene Glycol** and 0.0466% **Formaldehyde,** mixed in water with a small amount of Methanol to prevent the **Methylene Glyco**l (which is a Liquid) from converting into a solid polymer.

3. A change accepted in late 2008 and published in the International Nomenclature of Cosmetics Dictionary (**INCI**), 2010 edition, corrects the error in previous editions and now recognizes **Formalin** by its correct name, **Methylene Glycol,** making this the name manufacturers will be using to label cosmetic products containing **Formalin.**

4. Products containing 5% **Formalin** (or less) contain less than 0.0025% **Formaldehyde.** The reason Oregon OSHA (and others) quote a much higher percentages is: The test methods they use actually measure both **Methylene Glycol** and **Formaldehyde** together as though they were one chemical, and do not report them separately, or use their

proper chemical names. A "10% **Formaldehyde"** report from Oregon OSHA would be scientifically correct if it reported 9.96% **Methylene Glycol** and 0.04% **Formaldehyde** instead**.**

5. Why is Oregon OSHA taking this stance? They cite regulations which repeat the 100+ year old misunderstanding that **Formalin** is nothing more than dissolved **Formaldehyde,** which is chemically and scientifically incorrect. M**ethylene Glycol** is a unique and different chemical substance and Oregon OSHA knows this to be true, but is required by regulations to call **Methylene Glycol** by the incorrect chemical name, **Formaldehyde**.

6. Science has known about this chemical identity crisis for over 35 years. In 1972 the American Chemical Society gave **Methylene Glycol** and **Formaldehyde** two separate and unique registry numbers (CAS#) to recognize them as two different chemicals. Federal OSHA should require **Methylene Glycol** and **Formaldehyde** to be measured and reported separately, which would help avoid confusion and provide for a better understanding of these two separate and unique chemical substances.

7. Why do I believe this misunderstanding should be corrected? Confusion created by this long held misunderstanding is causing medical, environmental and other scientific researchers around the world to be misled. For example, researchers often perform scientific studies with 37% **Formalin** and are misled to believe it is 37% **Formaldehyde**, when in fact its 0.0466% **Formaldehyde** and mostly **Methylene Glycol,** Methanol and Water. This makes researchers more likely to report erroneous information and draw incorrect conclusions, which in turn, can prevent the proper study of **Methylene Glycol.**

8. When **Formalin** containing hair smoothing products are heated, they can release low levels of **Formaldehyde** gas. The limited salon studies I have performed over the last 18 months have indicated that inhalation exposure levels are within the Federal OSHA safe limits. Even so, sensitive individuals may experience acute (short term) symptoms such as irritated eyes or skin, headaches, difficulty breathing, sore throat and/or nausea, even at levels considered safe by Federal OSHA guidelines. Safe and proper use largely depend on the salon ventilation, as well as, cosmetologists' product control and application procedures. Cosmetologists sometimes apply far too much product to the hair, which unnecessarily increases inhalation exposure, while wasting product and money.

9. The safety of these types of products and services is currently being examined by the FDA and OSHA. They will look at the results obtained by monitoring cosmetologists' and clients' exposure to **Formaldehyde** gas in salon air. This type of testing is proper and accurate and will address the real issue: What are the levels of exposure for clients, cosmetologists, and other salon workers? This information is needed before any final conclusions can be reached. I have great respect for OSHA, their mission and work. I am

convinced that they will provide valuable information to help determine if levels of **Formaldehyde** in salon air are safe. I would expect this information to be released over the coming weeks.

10. **Yes, there is a <u>Safe Level</u>** for exposure to **Formaldehyde** and this substance is NOT automatically harmful at any concentration. Both **Methylene Glycol** and **Formaldehyde** are natural, organic substance normally found in trace amounts in many foods, e.g. pears, apples, tomatoes, radishes, cabbage, carrots, green onions, meat, fish and shellfish. They are also naturally found in human blood and breath and both can be found naturally in organically grown foods and traces of **Formaldehyde** exist even in the purest mountain air.

11. In general, one or two, or even a million molecules aren't likely to cause harm, since the potential for harm is caused by prolonged and/or repeated overexposure to unsafe levels; usually over an extended period of time. Less frequent exposures are less likely to result in harm or injury. Controlling the amount of exposure, e.g. proper ventilation, lowers exposure, lessens the risks and improves safety. Even so, persons with a previous history of allergic sensitivity to **Formalin** or **Formaldehyde** may adversely react with one exposure. Therefore, individuals who have or suspect allergic sensitivities should NOT receive or perform these services.

12. My (limited) experience with testing the air in salons over the last 18 months leads me to believe that a well-ventilated salon, performing two or three hair smoothing treatments per day will not exceed the Federal OSHA safe levels for Formaldehyde gas.

13. Cosmetologist and client safety can further be improved by using proper ventilation. The most useful type is called "chemical source capture" or "local" ventilation, meaning these devices pull much of the vapors into an overhanging hood, down a flexible tube, and through at least a 3 inch bed of activated charcoal to absorb a sizeable amount of **Formaldehyde** and lower exposure**.** Such systems can also be designed to safely ventilate to the outdoors.

14. Even salons that do not perform these types of hair smoothing treatments should still always use proper ventilation. Other services also create vapors, mists and dusts which must be controlled. I have evaluated and recommend the source capture system sold by Aerovex Systems, Inc. I suspect that similar systems on the market may also be effective, but I haven't evaluated them.

15. Cosmetologists should always wear impervious gloves, e.g. nitrile gloves, to help avoid the potential for adverse skin reactions from accidental skin contact to **Formalin** containing products. Safety eye protection equipment should be worn to prevent accidental eye exposure. Read and understand ALL warnings provided by the manufacturer, including the Material Safety Data Sheet (MSDS) and call to ask the company questions.

Fair Disclosure: I do not have any commercial interest in selling products containing **Formalin (Methylene Glycol)**, nor do I derive any profit from the sale of **Formalin** containing products. I provide scientific assistance to many cosmetic/personal care/beauty companies, some of whom sell **Formalin** containing products, as well as work with governments, associations and advocacy groups on cosmetic/personal care related matters.

This document is not intended to be a complete or comprehensive guide. If you experience significant problems which you believe may be related to these treatments, you should seek the advice of a qualified medical doctor.