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Reprinted by Permission Paul Bryson, Ph.D.  
Codirector of R&D, [OPI](#) 3/29/99

A Quick Chemistry Lesson.....

The methyl methacrylate (MMA) problem affects the liquids only; powders never contain MMA monomer. The FDA ban applies only to the liquid MMA, because only the liquid form of MMA is dangerous.

There has been some confusion about this because many nail powders do contain a solid material called poly-methyl methacrylate (PMMA.) Many nail glues and wrap gels also have a small amount of solid PMMA dissolved into them as a thickener. Understandably, when nailtechs or regulators see PMMA on the labels or MSDS of these products, they are concerned. However, despite the similar name, PMMA is harmless and perfectly legal.

PMMA is made from MMA; but PMMA is harmless because all the original MMA molecules (monomers) have become bound together in long chains (polymers.) For a mental picture of "monomer" vs "polymer", visualize a monomer molecule as a single chain link. Now imagine a reaction that makes the links join up by the thousands; these chains with thousands of links are called "polymers." So, once MMA has been converted to PMMA, the molecules are thousands of times larger, and they can no longer evaporate or penetrate the skin. This is why PMMA is harmless. This is true of many other polymers: ethylene and styrene monomers are not very nice substances either, but polyethylene and polystyrene (Styrofoam) are quite safe, and you use them every day.

In fact, PMMA is so safe that it's very likely that some of your dental work (if you have any) is made from it. You have probably also encountered PMMA many times in other products, under trade names such as "Plexiglas" and "Lucite." It's also worth mentioning that mixing PMMA with liquid monomers, acetone, or other nail remover solutions will NOT break it down into harmful free MMA molecules. Therefore, there is no reason to fear nail powders that contain PMMA.

If you see "copolymer" on a label, more than one type of monomer was used to make the polymer, such as "poly(ethyl/methyl) methacrylate copolymer." Copolymers containing MMA are also harmless. These solid materials are often listed generically on the powder label as "Acrylic Ester Polymers," "Acrylic Ester Copolymers," or "Acrylates Copolymer."

If you suspect MMA liquid is being used, reading the ingredients off the liquid monomer bottle may not be of much help. First of all, dishonest nail techs and suppliers sometimes use an honest company's bottle to hide an illegal liquid. (If you suspect this, send a sample to the company - they will be happy to test it and pursue legal action against the fraudulent refillers.) Secondly, liquid monomer labels, even from honest companies, often simply use generic terms such "Acrylic Ester Monomers" or "Methacrylate Esters", without listing the individual monomers by name. Finally- do you expect MMA bottlers to tell the

truth on the label, anyway? However, one time I actually saw MMA brazenly listed on a monomer's MSDS (Material Safety Data Sheet), even though the bottle label denied it-so check the MSDS sheet, just in case.

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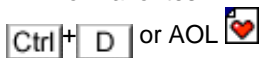
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