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## Paint and Your Health

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## Paint Odor / Paint Fumes

Have you just painted the walls in your house and are bothered by irritating odors, fumes, vapors and off-gassing? Wondering how long will you will be able to smell the paint, what the dangers and health effects are?

Different paint products such as epoxy urea-formaldehyde, latex, oil-based, etc. use different ingredients, so it is difficult to comment on the health effects of paint in general. However, health effects associated with the paint will be significantly diminished as the paint dries. The best thing that you can do is to create conditions inside your home which would encourage a more rapid drying of the paint and ventilate the odors out of the house.

The reason you can smell the paint when it is wet, but not when it is dry, is because the ingredients that make paint liquid (usually water, oil, or solvent based depending on the type of paint) become dispersed in air as they evaporate from the painted surface. The chemical process that occurs during the drying of paint is called evaporation. Evaporation is where the liquid portion of the product changes from being a liquid to being a gas.

Just because it vaporizes doesn't mean it disappears altogether. For example, water liquid and water vapor are both still water, they just have slightly different properties. During the process of evaporation, another process occurs - dispersion. The best illustration of dispersion is when you take a bottle of cologne and open it in one corner of the room. Within a few seconds, you can smell that cologne clear across the room, even if the bottle has not been moved. That is because the cologne has changed state from liquid to gas, and then been dispersed (mixed in) with the rest of the air in

the room. As the air flows through the room, it carries the odor of the cologne with it. Once you cap off the cologne (therefore removing the source), you will notice that the odor dissipates completely within a few moments. That is because as it mixes with the air in the room it becomes less concentrated and therefore your breathing in and smelling less of the cologne. This is what happens as paint dries. Eventually all of the liquid in the paint will evaporate and be dispersed, and there should be little or no odor remaining.

There are steps you can take to speed up the drying process. First, if you can wait until fall or winter, it is best to apply paint when the humidity is low. When the humidity is high, air has a harder time picking up excess moisture from paint, thus slowing the drying process. If you can't wait until there is less humidity, you could purchase or rent a dehumidifier and place it in the room which has been painted. You can also use fans to help dry paint. Fans serve several purposes. First, air that is moving has a greater capacity to pick up moisture; and second, in conjunction with open windows, fans help move the inside air to the outside where it can disperse even more rapidly, and they can help bring in fresh air from the outside. The process of moving air through a room is called "air exchange," and the more air exchanges you can accomplish, the faster you will remove the irritating odors.

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## **Epoxy Paint and Your Health**

Worried about free isocyanates being released from epoxy paint applied in a poorly ventilated area. The label often says that the paint takes 7 to 14 days to cure properly. How long should one wait before re-entering the work after the paint is applied?

The isocyanates in epoxy paint are dimers or longer polymers and are not gasses. In addition, the isocyanates act as a catalyst so that the application process, all of the isocyanates react almost instantaneously to form the epoxy resin. The shorter the isocyanate polymer, the more quickly it will react. As a result, there are no free isocyanates in the paint after it is applied that could volatilize during the curing process. Thus, no adverse health effects are expected following the proper application of the epoxy paint. However, during the curing process, the solvent in the paint will continue to evaporate (gas off) as the paint hardens over the next several days. The amount of solvent that evaporates decreases over time so that under "standard conditions," i.e. a temperature of 68 degrees F and a relative humidity of 50%, the workers should be able to safely enter the work area after 2 to 4 hours. This will depend on the amount of air "turn over," i.e., the ventilation of the area. For small confined spaces, one might wait a couple of days, whereas, in a large area like a garage or airplane hanger, one might return to the area after a couple of hours. For more information about the specific solvent in the paint you are using, call the Customer Service and/or Health Departments of the manufacturer.

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