

What do Female Biologists, Chemists, Pharmacists, and Janitors All Have in Common?

By Stephen Ashkin

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Recently, a study published in the journal *Occupational and Environmental Medicine* (December 21, 2009)* reported that women working in certain occupations and industries have an increased likelihood of giving birth to children with birth defects—such as spinal and heart malformations as well as gastrointestinal problems—when compared to most other occupational groups. The women at greater risk were working as biologists, chemical scientists, pharmacists, and janitors.

In fact, there is a possibility that a child born to a woman in one of these occupations/industries would be more at risk for developing any one of up to 45 physical defects that are not DNA related.

To conduct the study, Researchers used data collected from over 9,000 mothers across the U.S. who gave birth between October, 1997, and December, 2003, to children with one or more of the 45 defects. The women were divided into 24 occupational categories, such as office workers, cleaning professionals and those in manufacturing, and were compared with a control group of

close to 4,000 mothers whose children did not have defects.

Although one of the key researchers, Dr. Michele Herdt-Losavio with the New York State Department of Health, is careful to point out that right now, it isn't possible to make a clear link between an occupation and the likelihood of developing a birth defect, the study does appear to indicate that ongoing exposure to certain chemicals can increase the likelihood of birth defects.

Chemicals, Cleaning, and Hospitals

As a longtime advocate for Green Cleaning in the professional cleaning industry, especially in hospitals and healthcare facilities, the findings of this study, as unfortunate as they are, are not a surprise to me. We have known for nearly two decades that certain conventional (not Green) cleaning chemicals, especially the powerful chemicals and disinfectants typically used in healthcare, can be harmful to indoor air quality and can cause health-related problems for the user, patients, staff, and the environment. This survey just adds more credence to the growing evidence.

However, what is surprising is the fact that the study found that women working as janitors faced the highest risk of giving birth to children with birth defects. According to Herdt-Losavio, janitors were at a higher risk of giving birth to children with any one of seven different birth defects. This was followed by scientists' children, who had an increased risk of developing five defects.

So what are some of the cleaning products that can cause health problems and potentially be the cause for the birth defects noted in this study? Many if not all are used every day in hospitals and healthcare facilities. Among them are these:

Disinfectants. Some disinfectants used in hospitals contain quaternary ammonium compounds, phenols, or bleach. Although these products/ingredients have served us well and are effective at eliminating a wide range of germs, bacteria, and other pathogens, we know that long-term exposure to these products can be harmful.

Floorcare chemicals. Hard-surface flooring tends to be the floor covering of choice in medical facilities. However, the strippers and polishes used to clean and maintain these floors often contain diethylene glycol, ethyl ether, petroleum distillates, butoxyethanol, and sodium hydroxide (lye). Exposure to these products can result in a wide range of health problems from dizziness and nausea to irreversible lung damage. (See sidebar)

Glass cleaner. One of the most common cleaning products used in virtually all types of facilities is glass cleaner, and many conventional glass cleaners contain

ammonia. According to the American Association of Poison Control Centers, there are approximately 6,400 "poison exposures" due to glass cleaner each year.**

Making Cleaning and Cleaning Chemicals Safer

We know that conventional cleaning chemicals can prove harmful to the user and the environment—and there may be a likelihood their use can lead to birth defects as the study discussed earlier indicates. So what can medical facility administrators do to lessen their impact and minimize the problem? A major step would be to transfer to environmentally preferable cleaning chemicals whenever and wherever possible.

It should be noted that even Green Cleaning chemicals can be harmful if not used properly. However, environmentally preferable cleaning chemicals that have been certified by such organization as the U.S. Environmental Protection Agency's (EPA) Design for the Environment (DfE) program, EcoLogo™, and Green Seal® have been independently analyzed and proved to have a reduced impact on the user, building occupants, and the environment.

A particular problem that many healthcare facilities must grapple with is that they are legally required to use certain disinfectants to clean specific areas of their facilities. Further, at this time, the EPA does not allow any disinfectants in the United States to be labeled as Green. To reduce their impact,

administrators should make sure these disinfectants are used properly and only where and where required. In other areas, hydrogen peroxide can be a safer yet powerful alternative. The city of Santa Monica, California, known for its environmental leadership, uses this product as its primary cleaning agent in municipal buildings.

The professional cleaning industry has made great strides in the past few years reducing cleaning's negative impact on the user and the environment. Although we still have a ways to go, cleaning is becoming safer and the health risks to both male and female janitors will likely be reduced. The hope is that the next time a study on birth defects among cleaning workers is conducted, we will find the numbers have been reduced significantly.

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*Published in London, Occupational and Environmental Medicine is an international peer-reviewed journal focusing on occupational medicine and environmental health issues.

**Based on 2005 figures.

Although Green equivalents of most all types of cleaning products are now available, have proven to be cost effective and perform well, this has not always been the case for the products used for floor care. As mentioned earlier, this is of particular concern for healthcare and hospital facilities because hard surface flooring is used so extensively. However, new, more environmentally responsible technologies such as floor care equipment that does not require the use of chemicals as well as Green floor care chemicals are being introduced that are helping to meet this challenge.