

## Should Pregnant Women Be Concerned About BPA?

BY STEVE HENTGES | NOVEMBER 28TH 2016 06:32 AM

A recent [study](#) from French government researchers reported new results on the exposure of pregnant women to more than 100 substances that might be a concern for the health of a developing fetus. The study examined exposure to various metals (e.g., lead, mercury, arsenic) and many common organic compounds that we might encounter in our daily lives.

Included in the study was bisphenol A ([BPA](#)), which is used primarily as a building block to make polycarbonate plastic and epoxy resins. Although those names may be unfamiliar to you, the materials are not; both are used in countless products that we use every day.

Polycarbonate is a clear, durable and lightweight plastic that is used in a diverse range of products from bicycle helmets to eyeglass lenses. Epoxy resins are tough and chemically resistant materials that excel in applications that require a protective coating (e.g., anti-rust primer on automobile bodies) or a material that is both high strength and lightweight (e.g., wind energy turbine blades).

The French researchers reported that the majority of women in their study were exposed to BPA and provided quantitative data on the levels of exposure. Missing from the paper was any context to help us understand whether we should be alarmed or comforted by their findings. In other words, are the exposure levels safe or not?

Coincidentally, a group of Greek scientists recently published their [assessment](#) of BPA in the peer-reviewed scientific literature and concluded that "*exposure to BPA does not pose any significant threat according to most realistic exposure scenarios.*" The conclusion is well supported by a set of complementary analyses that specifically included pregnant women. The conclusion of the Greek scientists is also consistent with and further supports the science-based conclusions of government bodies worldwide on the safety of BPA.

## **New French Study on BPA Exposure to Pregnant Women**

An increasingly accepted way to measure human exposure to chemicals is through biomonitoring studies, which measure the level of a chemical in biological samples such as urine or blood. For BPA, analysis of urine is most appropriate since BPA is rapidly eliminated from the body in urine within hours of exposure. By measuring what comes out of the body, urine biomonitoring measures exposure to BPA from all sources over the last day or so. When applied to a representative group of people, urine biomonitoring provides a reasonable estimate of average exposure to BPA across a population.

The new [study](#) was conducted by a team of researchers from Santé publique France, which is the French national public health agency and is responsible for the French Human Biomonitoring Program. In this study, BPA was measured in the urine of more than 1,700 pregnant women who gave birth in France in 2011. Due to the study design, the results provide an estimate of exposure that is representative of the population of French pregnant women in that year. The results are important since pregnant women might generally be considered one of the most vulnerable subpopulations for exposure to chemicals.

Not surprisingly, considering how widely it is used, BPA was quantified at low levels in the urine of almost 74% of pregnant women, indicating that exposure to BPA is common. The median BPA level (0.75 micrograms/liter) is comparable to the results of a large-scale [study](#) of pregnant women in Canada from a similar time period. The BPA levels measured in the French study are also comparable to the results of biomonitoring [studies](#) from the same time period that are representative of the U.S. population.

Comparison of the BPA levels with the levels of metals and other organic chemicals measured in the French study reveals that the BPA levels are relatively low. However, the French researchers did not include information in their paper to help us understand whether the levels are safe.



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### **How Can We Evaluate Safety?**

With thousands of studies published in the scientific literature, BPA is almost certainly one of the best tested substances in commerce. Many studies, including the new French biomonitoring study, report that people are exposed to BPA at low levels, but exposure studies alone can't tell us whether the levels are safe. After all, we're exposed to many chemicals that occur naturally in our diet, but we don't conclude that our diet is unsafe just because we can (and do) measure exposure to those chemicals.

An even larger number of studies, typically conducted on laboratory animals, report various health effects that might be caused by exposure to BPA, but these studies alone also can't tell us whether BPA is safe. Health effects have also been identified for the chemicals that occur naturally in our diet, even for vitamins and other essential nutrients, but that doesn't make them unsafe.

We can evaluate safety by combining information on exposure and health effects in a scientific process known as a safety or risk assessment. Health effect information tells us what effects can be caused by exposure to a chemical and, most critically, at what exposure level the health effects might occur. Exposure information then tells us whether actual exposures are above or below the critical level.

## **What Do the New BPA Exposure Results Mean?**

Just before the new biomonitoring study was published, a group of researchers in Greece published their [assessment](#) of BPA. Jumping to the bottom line, they concluded that *"exposure to BPA does not pose any significant threat according to most realistic exposure scenarios."* Since their analysis explicitly included pregnant women, their conclusion is particularly applicable to the exposure levels measured in pregnant women in France.

What the Greek scientists did was focus on the exposure side of the safety assessment equation with four complementary analyses. Of particular relevance for the French biomonitoring data is that they calculated a "biomonitoring equivalent" (BE) based on the conservative safe intake level for BPA recently established by the European Food Safety Authority. The BE level represents the estimated concentration of BPA in urine corresponding to intake of BPA at the safe intake level.

The median BPA level measured in the French study is more than 400 times below the BE level. This indicates that not only are the actual French exposure levels safe, but they're safe with a wide margin of safety. It's not even close.

The other three analyses from the Greek scientists gave consistent results and provide further support for the safety of the French exposure levels. The Greek scientists also stated that *"there is no reason for concern based on either individual or aggregate scenarios of BPA exposure."* That conclusion is consistent with the views of government bodies worldwide that have recently evaluated the safety of BPA, for example the [U.S. Food and Drug Administration](#) and the [European Food Safety Authority](#).

## **What Else Does the French Study Tell Us?**

Careful inspection of the data table in the French [study](#) reveals another very important piece of information. Although we may frequently say that urine biomonitoring measures the level of BPA in urine, as is stated above in this article, that's not exactly what is measured.

The data table indicates that urine was monitored for both “unconjugated” and “total” BPA. Unconjugated BPA, which is simply BPA itself, was found but could only be quantified at very low levels in about 10% of the urine samples.

Total BPA consists almost entirely of a metabolized form of BPA. From many other studies on laboratory animals and, most importantly [people](#), we know that BPA is efficiently converted in the body to a biologically inactive metabolite, which is then rapidly eliminated in urine. It is this metabolized form of BPA that was found in approximately 74% of the urine samples.

The urine biomonitoring data from the French study confirms that this important metabolic process occurred in the French pregnant women. As a result, since the metabolite is biologically inactive and rapidly eliminated from the body, BPA is not likely to cause health effects at the low exposure levels measured in the study.