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[Home](#) > Estrogenic activity test could have broad implications for plastics

Estrogenic activity test could have broad implications for plastics

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Houston—BPA has become the acronym of concern among consumers and regulators, but one company is pressing for greater awareness of another, EA, or estrogenic activity. BPA, short for Bisphenol A, is a chemical building block of the widely used engineering plastic polycarbonate (PC). PC has largely been pushed out of food-contact markets over concerns that the BPA within the material mimics the hormone estrogen, with deleterious impacts, particularly for younger populations. PlastiPure Inc.'s Stuart Yaniger argued that greater emphasis be placed on chemicals and materials that exhibit EA, saying that in fact some BPA-free materials are not EA free.

Speaking at the Society of Plastics Engineers (SPE) International Polyolefins Conference (Feb. 21-24; Houston, TX), Yaniger outlined how his company, which began marketing a line of EA-free plastics in 2009, has developed a new test method to discern whether or not plastics and chemicals exhibit EA. Telling audience members that "BPA free is not the same as EA free," Yaniger said PlastiPure, working under grants from the National Institutes of Health (NIH), among others, developed a direct biological measurement of EA utilizing the MCF-7 cell line. A breast cancer cell line isolated in the 1970s, MCF-7 cells have primarily been used by researchers to study breast cancer. PlastiPure, however, took an interest in the line because it has estrogen receptors, which show a proliferative response to the hormone, allowing it to act as an EA barometer.

In an EA survey of more than 1000 commercial resins and plastic products, including some that advertise themselves as being "EA free," PlastiPure researchers found that 92% were actually "estrogenic." The company's test procedures involved subjecting the products and materials to "common-use stresses," including microwaves, UV light, and autoclaving. After the exposures, the materials were extracted into ethanol and saline solvents, with a 72-hour extraction period at 37°C. The extraction solution was then tested for EA.

Following the study, PlastiPure concluded that while BPA is highly visible, it is not the only estrogen mimic or "the most serious one." The research is ongoing, but Yaniger says his company believes modifiers or additives could be the issue. Specifically, the researchers looked

at antioxidants, impact modifiers (styrenic and elastomer), vulcanizates, olefinic block copolymers, and cyclic olefin copolymers. In his conclusions, Yaniger asserted that EA is measurable, using the company's test method, and that EA-free polyolefins can be created if company's carefully choose their additives. — tony.deligio@cancom.com

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