

By ~~Site2008~~ Anitei, Science Editor

Plastic Does Harm the Boobs

BPA connected to the triggering of aggressive breast cancer

Could you imagine a world without plastic? Everything around us is plastic, from the wrapping of our food and beverage bottles to clothes and the mouse you are touching right now. Bisphenol A (BPA) is one of the most common chemicals in plastics, from sunglasses, dental fillings and CDs to water and food containers and shockproof baby **bottles**. It has been known to cause long-term severe impacts on a woman's health, inducing **sterility**. A new research published in the Cancer Research journal has shown that this molecule activates specific genes connected to aggressive **breast cancer** in the normal, non-cancerous human breast cells. This research made by a team at the California Pacific Medical Center Research Institute and the Stanford Genome Technology Center comes exactly at the moment when the State of California is considering to include BPA on the category of hazardous chemicals and to ban it from child products. "This is a very common compound that most of us are exposed to on a regular basis, often without even being aware of it. If it's true that exposure to BPA can cause normal, non-cancerous human breast cells to behave in ways that are more characteristic of aggressive breast cancer cells, this is very worrying," said lead researcher Dr. William Goodson, Senior Clinical Research Scientist at the Institute. Healthy cells from eight female subjects at high risk of breast cancer, or its recurrence, were taken. These cells were exposed to BPA levels, which even if being low (less than one tenth of a millionth of a gram per milliliter) was encountered in the blood of pregnant women in US and Germany. "We screened 40,000 genes in normal human cells that had been exposed to BPA and found a striking increase in the sets of genes that promote cell division, increase cell metabolism, and increase resistance to drugs that usually kill cancer cells, and prevent cells from developing to their normal mature forms. Breast cancer patients with this kind of gene expression tend to have a higher recurrence than other patients, and they have a worse survival rate," said co-author Dr. Shanaz Dairkee, the Principal Investigator of this California State-funded project at CPMCRI. BPA mimics estrogen, and animal studies showed it increases the risk of breast and prostate cancer, decrease female fertility and sperm-count and lowers the activity of the immune system. 95% of Americans have BPA traces in their urine, women's BPA blood levels being higher than those of the men, and children's, higher than those of the adults. "Our use of fresh cells for short term cultures in this research is unusual in medical research, which makes the results especially useful because this is the closest we can ethically get to studying the effects of giving BPA directly to living people. Our cells are much closer to normal tissue than usual cell culture techniques which use cells that have been growing in laboratories for months or even years," said Goodson. "Although the study itself does not prove that BPA causes malignancy, the observation that exposure to BPA altered the expression of genes in human breast cells deserves further investigation," said co-author Dr. Wenzhong Xiao, a senior researcher at Stanford Genome Technology Center.