1. FDA. (2012, March 30). FDA continues to study BPA. *U.S. Food*

 *and Drug Administration*. Retrieved October 15, 2012, from

<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm297954.htm?source=govdelivery>

According to the US Food and Drug Administration (FDA), current scientific studies do not suggest that BPA is unsafe at the very low levels that humans encounter through their diet, so consumer changes need not be made in food consumption; however, the FDA will continue to study BPA. Scientists at FDA’s National Center for Toxicological Research (NCTR) found that infants are exposed to BPA 84-92% less than previously thought and pregnant rodents’ fetuses did not have detectable amounts of BPA 8 hours after their mothers were exposed to 100-1000 times more BPA than humans are through food. This research is questionable, first, because the study is not cited in this article and is not easily found online; thus, the scientific method and results cannot be assessed to evaluate the accuracy of the conclusion. Second, the FDA is biased toward industry, so research conducted by the FDA’s NCTR could be subjectively interpreted to favor industry. Third, the FDA is only taking into account BPA exposure from food when humans are exposed to BPA through numerous outlets, not just food. Ultimately, the FDA’s assessment of BPA is the most important because the FDA holds the power to allow or ban BPA in the manufacturing of food.

2. Lang, I. A., Galloway, T. S., Scarlett, A., Henley, W. E., Depledge, M., Wallace, R. B.,

Melzer, D. (2008). Association of urinary bisphenol A concentration with medical disorders and laboratory abnormalities in adults. *The Journal of the American*

*Medical Association* *, 300* (11), 1303-1310.

Lang asserts that higher Bisphenol A (BPA) concentration levels found in human urine are associated with cardiovascular diseases, diabetes, and abnormal concentrations of certain liver enzymes and alkaline phosphatase. This study took urinary BPA concentration data representative of adults ages 18-74 living in the United States collected from the US National Health and Nutrition Examination Survey (NHANES) and analyzed it using adjusted regression models to determine BPA’s impact on the health of the human body. Due to the four-year gap between data collection and analysis, the results may be outdated because of increases or decreases in urinary concentrations of BPA since 2003-2004. However, overall this study is very reliable because it uses an *adjusted* regression model. This means a broad range of variables, such as race/ethnicity, education, annual household income, and body mass index, were taken into account while expanding the data to represent the entire US population—the first study to do so. Expanding the scope by which high urinary BPA concentrations are harmful, this study condemns the plastic hardening chemical to being a health risk beyond just disrupting the endocrine system, giving more reason to ban BPA from everyday products. Limiting, though, is the possibility of reverse-causation; increased BPA concentrations could be a result of lifestyle changes made by people with these health issues instead of a cause of the health issues.

3. Melzer, D., Gates, P., Osborn, N. J., Henley, W. E., Cipelli, R., Young, A., . . .

Galloway, T.S. (2012). Urinary bisphenol A concentration and angiography-defined coronary artery stenosis . *PLoS ONE* *, 7* (8), 1-7.

Melzer concluded in this study that adults with heart disease living in the UK with severe coronary artery stenosis have a higher urinary BPA concentration compared to similar adults without a vessel disease. As in the other studies, adjusted regression models were used to analyze urinary BPA concentration data. Unlike the other studies, this study does not encompass the general adult or child population in the US; it only involves 591 patients with heart disease in Cambridgeshire, UK, whose urine was collected between 2001 and 2004. Just like the other studies, the years passed between the urine collection and analysis could limit the accuracy of this study. However, this study is still very important because the results suggest that the associations between urinary BPA concentrations and coronary artery disease or heart disease (as found in other studies) could be specific to coronary artery stenosis. The major limitation in this study is the small sample size because the results are solely based off on only 591 people, and the study was not expanded to a whole population.

4. Melzer, D., Rice, N. E., Lewis, C., Henley, W. E., & Galloway, T. S. (2010).

Association of urinary bisphenol A concentration with heart disease: evidence from NHANES 2003/06. *PLoS ONE* *, 5* (1), 1-9.

According to this study, higher urinary BPA concentrations are associated with reported heart disease in adults ages 18-74 in the United States. Similar to the Lang 2008 study, this study cross-sectioned urinary BPA concentrations as reported from 2003-2004 and 2005-2006 by the NHANES to make the data representative of the general US adult population and, using adjusted regression models, determined that there is a correlation between higher BPA concentrations and heart disease, though further studies are needed to understand why. This study is more comprehensive than the Lang 2008 study because it used urinary BPA concentration data from two NHANES surveys rather than only one; thus, this study concluded that urinary BPA concentrations were lower in 2005-2006 and the association with diabetes was also less significant in these years than in 2003-2004. Overall, this study is very reliable and expands upon the results found in the Lang 2008 study, although the possibility of reverse-causation still exists.

5. Trasande, L., Attina, T. M., & Blustein, J. (2012). Association between urinary

bisphenol A concentration and obesity prevalence in children and adolescents. *The Journal of the American Medical Association* *, 308* (11), 1113-1121.

Trasande concluded in this study that there is an association between higher urinary BPA concentrations and obesity among children and teens. Using urinary BPA concentration levels found in 2,838 children ages 6-18 who participated in the 2003-2008 NHANES, the scientists created adjusted regression models to determine that there is a correlation between high urinary BPA concentrations and obesity in children. However, this study took into account race and determined that there is no such correlation in African American or Hispanic children. Trasande’s study is less convincing of harmful effects of BPA than the others because it is possible that food ingested by obese children contain higher levels of BPA, so BPA might not necessarily be causing obesity in children. Instead, higher urinary BPA concentrations could just be a side effect of eating certain foods, such as canned foods, whose cans are lined with BPA. Despite this, the study is still ground breaking because it is the first proof that BPA and obesity in children are connected.