

# Endocrine disruptors and obesity, diabetes and heart disease: What does epidemiological research tell us?

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1. Background

2. Bisphenol A (BPA)

3. Phthalates (results only)

4. Conclusions

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Studies based on cross-sectional datasets have been used to draw causal inferences regarding environmental chemical exposures and adverse health outcomes.

## **BPA, phthalates tied to kids' weight, diabetes risk**

Reuters Health; Aug 19, 2013;

<http://uk.reuters.com/article/2013/08/19/us-bpa-kids-weight-idUKBRE97I02E20130819>

## **BPA, Phthalates Linked With Teen Obesity, Insulin Resistance**

HuffPost Healthy Living

[http://www.huffingtonpost.com/2013/08/19/bpa-teen-obesity-insulin-resistance-phthalates\\_n\\_3781248.html](http://www.huffingtonpost.com/2013/08/19/bpa-teen-obesity-insulin-resistance-phthalates_n_3781248.html)

Bisphenol A and indicators of obesity, glucose  
metabolism/type 2 diabetes and  
cardiovascular disease: A systematic review  
of epidemiologic research

## Methods:

Followed the current methodological guidelines for systematic reviews

Particular attention paid to study design and exposure assessment: cited as main areas of weakness in BPA epidemiologic research

Study results were categorized qualitatively as **positive**, **negative**, **null**, or **mixed**

## Results:

For all outcomes, results across studies were inconsistent.

Some studies used the same data and the same or similar statistical methods: when the methods varied slightly, even studies that used the same data produced different results.

## Why?

Nearly all studies used cross-sectional design

Single measure of BPA exposure – exposure misclassification

## Conclusions:

Study design issues severely limit our understanding of potential health effects associated with BPA exposure.

Considering the methodological limitations of the existing body of epidemiology literature, current epi data **neither support nor refute** the hypothesis that BPA causes obesity, CVD or diabetes.

Do phthalates act as obesogens in humans?  
A systematic review of the epidemiology  
literature

## Results:

26 epidemiology publications; 18 independent data sources.

No inter- or intra-study consistency for any phthalate metabolite for any of the indicators of overweight/obesity, DM or CVD.

Most reported associations were not statistically significantly different from the **null**, some were **positive**, and others were **inverse**.

## Conclusion:

Considering the methodological limitations of the existing body of epidemiology literature, the current epidemiological data **neither support nor refute** the hypothesis that phthalates cause obesity, CVD or diabetes.

Not drawing conclusions as to whether or not BPA/phthalates are risk factors for obesity, heart disease or diabetes.

**Stating the opposite: using cross-sectional datasets like NHANES to draw conclusions about exposure to short-lived environmental chemicals and chronic complex diseases is inappropriate.**

Need more resources for appropriately designed epidemiologic studies and toxicological explorations to understand whether these types of chemicals play a causal role in chronic diseases.