

## Examples of common chemicals that increase estrogen or progesterone synthesis

<b>Pesticides</b>	<ul style="list-style-type: none"><li>• atrazine, terbutylazine, and the other triazines (herbicide)</li><li>• cyfluthrin (insecticide)</li><li>• 2,4-dichlorophenol (metabolite of triclosan, 2,4-D, pentachlorophenol)</li><li>• imazalil (fungicide for post-harvest use on citrus, bananas)</li></ul>
<b>Consumer product chemicals</b>	<ul style="list-style-type: none"><li>• 1,4-benzenediamine (used in dyes and pigments including permanent and semi-permanent hair color)</li><li>• nitriloacetic acid (chelator in detergents, other uses)</li></ul>
<b>Combustion products, for example in air pollution or tobacco smoke</b>	<ul style="list-style-type: none"><li>• hydroquinone (benzene metabolite, e.g. from gasoline)</li><li>• benz(a)anthracene (combustion product)</li></ul>
<b>Industrial chemicals used to make commercial products, and with expected exposure in the general population, also may be drinking water contaminants</b>	<ul style="list-style-type: none"><li>• 2,4-dimethylphenol (aka m-xylenol)</li><li>• 4,4-methylenedianiline (precursor to polyurethanes)</li><li>• several aniline and benzidine dyes and pigments used to make consumer products or in food processing or packaging</li></ul>

### Reference:

Cardona, B. and R.A. Rudel. 2021. [Application of an in vitro assay to identify chemicals that increase estradiol and progesterone synthesis and are potential breast cancer risk factors](#). *Environmental Health Perspectives*. DOI: 10.1289/EHP8608