

Questions from research

What are some popular chemicals in society?

<https://www.health.harvard.edu/blog/common-food-additives-and-chemicals-harmful-to-children-2018072414326>

<https://www.cnn.com/2016/07/01/health/everyday-chemicals-we-need-to-reduce-exposure-to/index.html>

<https://www.epa.gov/saferchoice/health-concerns-about-spray-polyurethane-foam>

What are some chemicals in food?

<https://www.health.harvard.edu/blog/common-food-additives-and-chemicals-harmful-to-children-2018072414326>

What are some health risks of eating chemicals or having chemicals in society?

<https://www.healthline.com/nutrition/7-food-toxins-that-are-concerning#section1>

How much has chemical use increased?

<https://www.ncbi.nlm.nih.gov/books/NBK268889/>

What is the link with chemicals in society and cancer?

<https://www.atsdr.cdc.gov/emes/public/docs/Chemicals,%20Cancer,%20and%20You%20FS.pdf>

<https://www.cancer.gov/about-cancer/causes-prevention/risk/substances>

What can I do to limit my consumption and exposure to chemicals?

<https://thetruthaboutcancer.com/10-cancer-causing-toxins/>

How can chemicals enter the body?

<https://www.ncbi.nlm.nih.gov/books/NBK268889/>

[https://www.ccohs.ca/oshanswers/chemicals/how\\_chem.html](https://www.ccohs.ca/oshanswers/chemicals/how_chem.html)

Does the rise of disorders and diseases correlate with the rise of chemicals?

<https://www.ncbi.nlm.nih.gov/books/NBK268889/>

What is the link with GMOs and pesticides?

<http://sitn.hms.harvard.edu/flash/2015/gmos-and-pesticides/>

What are nitrates?

<https://www.pbs.org/newshour/science/red-meat-bacon-hot-dogs-processed-meats-cause-cancer-dangerous-smoking>

Glyphosate

<https://bigthink.com/surprising-science/roundup-beer-wine?rebellitem=1#rebellitem1yphosate>

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### Chemicals in Society: Are We Guinea Pigs?

Society craves modernity and advancement. Anything that makes our lives easier, more pleasurable, or allows to get the job done faster, we demand. How much do you enjoy your memory foam mattress? Or the peace of mind knowing your cereal won't expire in a week? How about sweet-smelling laundry detergent or even shampoo? A scented candle for a hard day? Even the supplies we use to clean our house to stay healthy appear to actually be harming us. In modern day society, we are saturated with chemicals all around us that our ancestors or even people fifty years ago were not exposed to; and not just a few, but thousands (National Academies Press, 2014). The long-term question is, what will they do to us?

There's nothing more American than enjoying grilled hot dogs on the fourth of July. It is in some cases expected of parties and gatherings to have hotdogs and burgers. However, in just recent years it has been proclaimed by the World Health Organization that processed meat, like hot dogs, bologna and bacon are linked to colorectal cancer; and cooking them using high heat like on a grill is even worse. Not just a carcinogen, but WHO places processed meat in group 1, meaning it ranks as high as tobacco smoking and asbestos (PBS, 2015). Nitrates or NOC's are created naturally in the curing process as well as added to hot dogs where it causes damage to

intestinal tissue that is carcinogenic. Curing meats to preserve color and extend shelf life elevates these levels of NOCs (PBS, 2015). If the news of hot dogs revealed as basically asbestos for our bodies, what new chemical added to food or found in our daily lives will be on the news tomorrow?

Nitrates are only a small sample of the amount of chemicals in society. Just how many chemicals in all are produced for today's modern use? Well even today a definitive number cannot be made because companies come up with chemicals but may do away with them because of the EPA. The range, however, appears to be between 25,000 and 84,000 found in commerce in the United States (National Academies Press, 2014). This range is enormous and definitely gives no answer. "The uncertainty—in both the number of the chemicals and even the identities of which are in circulation—offers an indication of the problems that arise in trying to prioritize the various chemicals" (Goldman, 2014). This uncertainty would mean there isn't much research on chemicals, much less their long-term effects. Without definitive research or clarity on what chemicals do to our bodies, one might ask themselves and argue, are we simply the guinea pig generation?

If we are so in the dark, do we know of any chemicals that do cause harm? At least there is evidence on some items that we should avoid. According to Harvard Health, some common ones are:

**BPA**, found in the lining of food and soda cans, plastics with the number 3 or 7, and cash register receipts.

**Phthalates**, found not just in plastic packaging, garden hoses, and inflatable toys, but also in things like nail polish, hairsprays, lotions, and fragrances.

**Food coloring**, particularly increasing the symptoms of ADHD in children

**Perfluoroalkyl chemicals** (PFCs), found in grease-proof paper, cardboard packaging, and commercial household products such as water-repellent fabric and nonstick pans  
**Perchlorate** used to decrease static electricity (I'm assuming dryer sheets) and used in dry food packaging.

**Nitrates and nitrites**, a food preservative found in processed food.

Source: Harvard Health Blog, 2018

These chemicals are harmful to children and adults. This doesn't mean they directly link to cancer, but is there any evidence that says definitively otherwise?? The list of carcinogens are also appearing to add up. As of right now The Agency for Toxic Substances and Disease Registry (ATSDR, 2009) notes specific carcinogens or those specific to cause cancer as

- Asbestos
- Arsenic
- Benzene
- Beryllium
- Vinyl chloride

Americans may be aware, or somewhat aware, of these carcinogens that are linked to cancer, but the issue lies on what isn't known. It seems all too frequent there is a new chemical on the news to worry about. It was only recently we discovered memory foam may include toxic chemicals when inhaled (EPA, 2017) and even more recently, we have discovered the harmful chemical glyphosate used in RoundUp, in trace amounts in our beer and wine (Big Think, 2019). Trace amounts may mean nothing or appear to be "harmless" for everyday use, but studies have suggested otherwise. Scientists found that 1 part per trillion of glyphosate has the potential to stimulate the growth of breast cancer cells and disrupt the endocrine system (Big Think, 2019)

RoundUp is banned in other countries. When other countries, such as France, have completely banned a chemical, it's definitely noteworthy to seriously reconsider its use.

A skeptical person may ask, how are these chemicals getting inside of a body?

Glyphosate is sprayed on crops and nitrates are consumed through the food we eat, but how about others? If people aren't eating them, how do they get in the bloodstream to cause damage? Most chemicals are absorbed into the body through inhalation (CCOHS, 2019) A more indiscrete way involves not even being around chemicals currently in use. Say you simply sit on an upholstered item, a bit of dust containing chemicals flies into the air, to which you inhale or digest this dust. Dust in the home can collect chemicals from cleaners, wires, or flame-retardant material, to which is easy to inhale (National Academies Press, 2014). The skin is an organ of the body and can also absorb chemicals through it. Lotions or now even sunblock can enter the body in ways we do not intend.

Most Americans are not thinking of phthalates, or long-term exposure to phthalates when they are applying lotion or nail polish; nor are they thinking of BPA when they are grabbing a cash register receipt. Is it ignorance that has them turning a cheek, or is it denial? In this current age, it is most likely ignorance of the amount of chemicals in society and simply not understanding the possibly serious long-term effects to their bodies. When more definitive research is conducted, perhaps more people will avoid these items or look for a healthy organic alternative. However, one can argue, would the average stubborn American give up their red meat steak, hot dogs on birthdays, new car smells, and all the royalties and luxury items chemicals have given them? If there's no immediate negative effects why not continue this lifestyle? The sad news is, cancer is slow; it takes a long time to be detected in its latency period

(ATSDR, 2009) So does this mean there could be cancer in more people than we think? It can be asked then, has cancer increased with modernized chemical use?

According to the National Cancer Institute, in 2018, there were 14 million cases of cancer worldwide; by 2030 there'll be 23.6 million cases (2018). Although it is unclear on direct correlation with chemicals and cancer because some cancers like stomach have fallen, while others are rising (Science Blog, 2015). Overall, cancer is increasing, so does this mean it's the modern lifestyle that's behind it? More research needs to be done on chemicals and their long-term effects on the body. There should also be studies on people in tribes in South America and Africa who have not moved with the modern world; those that are still in hunter-gatherer lifestyle. Are hunter-gatherers stricken with the same types of cancer? Are people simply getting cancer because we are living longer? (Science Blog, 2015). There are so many questions that need answers when it comes to chemicals in society. It seems grim to suggest walking around with a respirator and buying strictly organic foods and household items. I don't even think there are organic household items. Be cautious, be aware of what you eat. Avoid fragrances and chemicals you rub on your body. If a food item has more than 10 chemicals on its label, don't buy it. Try to make food from scratch. I would suggest to not buy GMO, but after researching it, it may be the new organic when properly implemented. Supporting science and research can help pave the way for a brighter future for us and generations to come. Let's not be the generation everyone feels bad were the guinea pigs.

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