Your Guide to Understanding Carcinogens and How to Avoid Them

by PAULA CLARK

Examples of Carcinogens and Why You Should Avoid Them

Ever since Hippocrates compared a cancerous tumor to a crab by giving it the Greek word “carcinoma” (meaning crab), scientists have worked diligently to understand and treat this deadly disease, including understanding carcinogens. In this article, we explore various examples of carcinogens and what they are.

A big breakthrough for cancer prevention came in 1775 when British surgeon Percival Pott identified the first environmental carcinogen. He noticed that chimney sweeps were getting scrotal cancer in higher numbers due to the soot that covered their skin.

So, what exactly is a carcinogen? Merriam-Webster defines a carcinogen as any substance or agent that causes cancer. Many more carcinogens have been discovered since the 18 century. As of February 20, 2020, the International Agency for Research on Cancer (IARC) had identified 120 carcinogens, including chemicals, radiation and viruses.

How Do Carcinogens Affect the Body?

Nearly two centuries after Pott’s discovery, scientists finally had the necessary technology to discover how carcinogens cause cancer, which is a process called carcinogenesis.

Discovering DNA helped us get there. Our DNA tells our cells what to do.

According to the American Cancer Society “the damage to DNA by chemicals and radiation, or the introduction of new DNA sequences by viruses, ... often [lead] to the development of cancer.”

In other words, mutated genes send instructions that turn healthy cells into cancer. While carcinogens do not always directly mutate our DNA, “... they may cause cells to divide at a faster than normal rate, which could increase the chances that DNA changes will occur.”

Either way, carcinogens can mutate our DNA and cause cancer. My goal is to arm you with the information you need to become a carcinogen educated to avoid putting yourself at risk.

Which Carcinogens Are Most Dangerous?

Discovering a carcinogen is complex and challenging for scientists. They cannot ethically administer a carcinogen to someone to see if it causes cancer. Instead they use other methods, like experimenting on cells or looking at existing cases in the population. Scientists can also compare substances to chemicals they already know are dangerous.

The IARC has classified carcinogens according to how dangerous they are to humans. The National Toxicology

Program also publishes a list of known and possible carcinogens. Out of the different types of carcinogens, 5% of cancers are caused by viruses, 5% are caused by radiation and 90% are caused by chemicals. Of the chemicals, 30% are caused by tobacco products and the rest by chemicals encountered in daily life.

These lists can be intimidating and not very useful for anyone who is not a chemistry expert, but we can take a different approach. There are several factors to consider when assessing your personal risk.

Carcinogens in Your Daily Life

First, you need to consult a consumer-friendly resource like the Canadian Cancer Society for information about the carcinogens to avoid, like asbestos and tobacco. These resources can also help you weed-out fact from fiction, as there are many myths and misinformation floating around about what is actually carcinogenic.

Understanding how exposure to carcinogens affects your risk is another critical piece of the puzzle. Some carcinogens only cause cancer when exposed in a specific way, like ingestion or inhalation, and the amount of exposure is also an important factor. We know that too much sun can cause skin cancer but avoiding the sun entirely would potentially deprive you of vitamin D. Striking the right balance is key.

The last factor to consider is your own DNA. If certain types of cancer run in your family, get screened for cancer-causing genes.

The Canadian Cancer Society has listed these examples of known carcinogens you should be aware of:

- Air pollution
- Arsenic
- Asbestos
- Formaldehyde
- Medical radiation
- Radon
- Sun and UV
- Shift work and circadian rhythm
- Pesticides
- Diesel engine exhaust
- Crystalline silica

How to Stay Safe From Carcinogens

Follow these recommendations from the Canadian Cancer Society:

Be Informed

If you have not clicked on the links above to review common environmental and workplace carcinogens, bookmark them and be sure to come back later. Be aware of misinformation about carcinogens by reading the list of myths and controversies. You can also sign up for product recall alerts from the U.S. Food and Drug Administration.

Make Safe Decisions

Think about how your decisions affect your health and your community’s health when it comes to cancer prevention. You can stop smoking, wear sunscreen with an SPF of at least 15, avoid idling your car and dig up weeds at the root instead of killing them with chemicals. Follow safety instructions when using, storing and disposing of harmful materials or chemicals.

If you have not already taken a trip to your hazardous waste depot, plan to do it sooner rather than later, or at least check your community’s website. Learning how to handle hazardous materials is invaluable for your safety

and the safety of others.

For those who work with carcinogenic substances (like asbestos or formaldehyde) required safety precautions should be met by your employer.

The Benefits of Being Educated About Carcinogens

Following these simple steps will help you become someone who actively participates in lowering their personal risk to cancer and protects their community. If you are still feeling discouraged about how much there is to learn, do not fret; knowledge is power, and you can use it to help keep you and your community safe from these examples of carcinogens.