

Understanding The Chemicals We Use



This information sheet looks at what chemicals are and the current scientific evidence about the links between chemicals and cancer.

Key Messages

- Chemicals are the ‘building blocks’ that make up everything from the plants we eat to the plastic containers we buy our yoghurt in.
- We know some chemicals are toxic to people; some are toxic only if you are exposed to a lot of it, while for others, even a small amount causes harm.
- A change in test animals in the laboratory does not mean the same will happen to people.
- The International Agency for Research on Cancer (IARC) believes only about 3 percent of all cancers are caused by chemicals and pollution in our environment.
- All workplaces should have a health and safety policy that makes it safe to work with and handle chemicals.
- In New Zealand, fruit and vegetables sprayed with pesticides are regularly checked for safe levels of pesticides.
- We can lower the amount of needless exposure (contact) by taking sensible precautions, such as washing your hands after using any chemicals.
- Tobacco (which contains over 70 cancer-causing chemicals) is one of the leading causes of cancer. Being smoke free will reduce your risk for developing cancer considerably.

Many are concerned that more people are being diagnosed with cancer because we use a lot more chemicals in our day-to-day life. It helps to make informed decisions when we understand:

- what chemicals are
- what evidence there is about the link between chemicals and cancer
- what chemicals we should be careful with.

What are chemicals?

Chemicals are the ‘building blocks’ that make up everything from the plants we eat to the plastic containers we buy our yoghurt in. For example, if we look at what was in a cup of tea we find:

- butanol, iso amyl alcohol
- hexanol, phenyl ethanol
- tannin, benzyl alcohol
- caffeine, geraniol
- quercetin
- 3-galloyl epicatchin
- 3-galloyl epigallocatechin and inorganic salts.

These chemicals are in your tea cup in varying amounts depending on where the tea grows. Chemicals are part of everyday life.

For more information on food additives visit the link below to the FoodSmart.govt.nz to read the booklet “**Identifying Food Additives**”.

We know some chemicals are toxic to people; some are toxic only if you are exposed to a lot of it, while for others, even a small amount causes harm. We cannot choose to be ‘chemical free’ but we can choose which chemicals to use, how much and when to use them.

Chemicals can be extracted (taken) from nature, copied from nature or made by scientists, but this does not tell you how 'safe' they are. For example, foxglove flowers are highly poisonous if you eat them. However, modern science has identified digitalis from foxgloves, which we now use to treat certain heart conditions.

Can chemicals cause cancer?

With so many chemicals around us it is not surprising that some can cause cancer. Asbestos, for example, can cause a lung cancer called mesothelioma. However, many other tested chemicals have *not* caused cancer in people, though there may be some evidence (proof) that in a laboratory they cause some changes in test animals. A change in test animals in the laboratory does not mean the same will happen to people.

Also, with so many chemicals around us it is very hard to separate one from the others to see if it could cause cancer. This means that for many chemicals we can't tell if they cause cancer or not.

The International Agency for Research on Cancer (IARC) is part of the World Health Organization (WHO) and its major goal is to find the causes of cancer. Over the past 30 years IARC has studied over 900 possible causes of cancer. They believe only about 3 percent of all cancers are caused by chemicals and pollution in our environment. For many chemicals the evidence (proof) is unclear so IARC has created four categories and placed each of the 900 chemicals into these categories. The four categories are:

Category 1: Carcinogenic (causes cancer) to humans

Category 2A: Probably carcinogenic

Category 2B: Possibly carcinogenic

Category 3: Unclassifiable on carcinogenicity in humans (we don't know)

Category 4: Probably not carcinogenic.

Chemicals that we know cause cancer

Category 1 chemicals are the only chemicals that have enough proof to link them to cancer. The list of 100 chemicals in Category 1 ranges from alcohol, and asbestos, to tobacco, ionizing radiation and wood dust. However, even if a chemical is listed as being a Category 1 carcinogen (can cause cancer) this does

not mean it will always cause cancer in all people.

For some substances you need to:

- be exposed (near and unprotected) to very large amounts once or
- come in contact with it for a long time or
- swallow or inhale them.

They may be carcinogenic to some people but not to others. Also, most chemicals only cause certain cancers: not all types.

Many of the Category 1 carcinogens are chemicals most people will never come in contact with. However, people can come into contact with chemicals in workplaces. With these chemicals workers should take extra care to limit their risk of being exposed to them. All workplaces should have a health and safety policy that makes it safe to work with and handle these chemicals.

Other substances, such as alcohol, are chemicals which, if taken regularly over a long period of time and in large amounts, may increase the risk for developing some types of cancer, such as liver, breast and mouth cancers.

For more technical information about all the different chemicals that have been reviewed by the International Agency for Research on Cancer (IARC) use this link:

monographs.iarc.fr/ENG/Monographs/PDFs/index.php

Animals exposed to large amounts of chemicals in pesticides have developed cancer. However, in New Zealand, fruit and vegetables sprayed with pesticides are regularly checked for safe levels of pesticides.

New Zealanders are exposed to such small amounts of spray and pesticides it is unlikely they will cause any problems. Simply washing fruit and vegetables before eating them will reduce any left on the fruit or vegetables. However, growers who handle large amounts of pesticides should protect themselves by wearing gloves and a mask.

What chemicals should we avoid?

We can lower the amount of needless exposure (contact) by taking sensible precautions, such as washing your hands after using any chemicals.

People in workplaces that use harmful chemicals should use personal protective equipment (safety gear) to protect themselves at all times. Industries, such as the petroleum industry, dry cleaners, farmers, hairdressers, horticulturists and workers in the textile industry are all likely to be exposed to cancer-causing agents at times and should make sure they understand how to protect and keep themselves safe.

Of all the chemicals in the Category 1 list, tobacco (which contains over 70 cancer-causing chemicals) is one of the most likely to cause cancers. Being smoke free will reduce your risk for developing some cancers considerably.

For more detailed information:

Cancer Research UK web site

A general web page that explains what we know about harmful substances and cancer.

American Cancer Society web site

A general web page that looks at a range of possible cancer causing agents in the home and the workplace.

Cancer Council Australia web site

A general web page looking at cancer causing agents in our environment.

NZ Food and Safety Authority

A general information on food labelling and additives.

The IARC web site (WHO International Agency for Research on Cancer)

<http://monographs.iarc.fr/ENG/Monographs/PDFs/index.php>

Here you will find technical information about all the different chemicals that have been reviewed by IARC.

This information sheet was reviewed in August 2013 by the Cancer Society of New Zealand. The Cancer Society's information sheets are reviewed every four years.