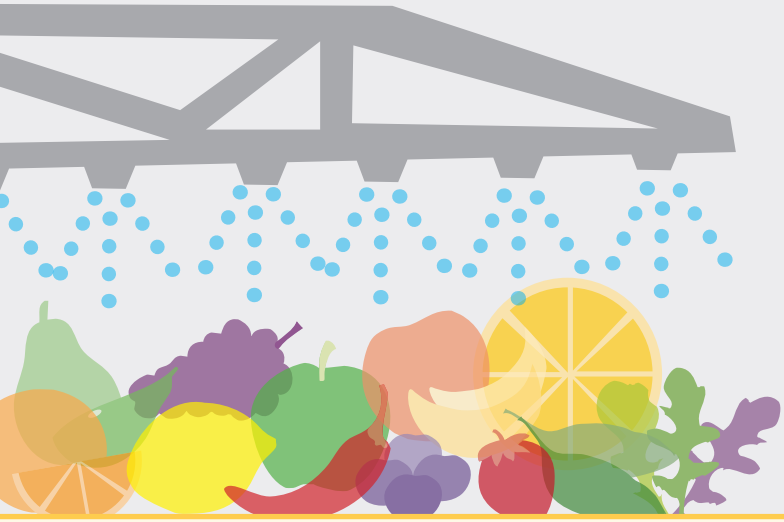
PESTICIDES IN OUR FOOD

INTRODUCTION

Pesticides are poisons designed to kill living organisms. 'Pesticides' is the umbrella term for thousands of different active substances designed to kill plants (herbicides, commonly referred to as weed killers), insects (insecticides), and mould and fungus (fungicides). All three of these groups of pesticides are used by farmers to grow the food we eat. Crops are not sprayed just once during a growing season; multiple applications of different pesticides can be applied – as many as 20 different chemicals can be applied to winter wheat for example.

Certain groups of people are more susceptible to the effects of pesticides, especially young children and expectant mothers. Exposure to certain pesticides at critical stages in development can interfere with particular organs and their functions. Of particular concern are endocrine disrupting chemicals which affect hormone systems and have been associated with learning disabilities, attention deficit disorder, and cognitive and brain development problems.



Each year, the UK Government tests a range of produce and other food stuffs for pesticide residues. While this is useful to an extent it only provides a snapshot in time as testing is inconsistent and piecemeal – for example, tomatoes might be tested one year and not the next and only a tiny proportion of tomatoes consumed in the UK are tested.

BEYOND FRUIT AND VEGETABLES

While we have focussed on fruit and vegetables for the Dirty Dozen, cocktails of pesticide residues are found in many different foods, including grains, such as barley, oats and wheat (and subsequently bread). For example, in 2019, 94% of oats contained residues of more than one pesticide.

Glyphosate and chlormequat residues were found in all of the grain produce tested in both 2018 and 2019. Chlormequat is a plant growth regulator which helps to reduce plant height and increase stem thickness, making plants such as wheat more robust and easier to harvest. However, chlormequat has been linked to developmental and reproductive health issues and its use on produce for human or animal consumption is banned in the USA.

Glyphosate remains a potential human health issue and is classified by the UN World Health Organization as a 'probable human carcinogen'. Its presence in grain is largely due to its use as a pre-harvest desiccant, when it's used to artificially dry crops to make harvesting easier. If the UK Government banned the use of glyphosate as a pre-harvest desiccant it could reduce the amount of this residue found in grains.

THE COCKTAIL EFFECT

Our lists of the 'dirtiest' fruit and vegetables are based on UK Government data showing what percentage of samples revealed residues of more than one pesticide. We have chosen to focus on multiple residues because our regulatory system is only set up to assess the safety of one pesticide at a time, and so misses what is often called 'the cocktail effect'. There is a growing body of evidence that pesticides can become more harmful when combined and the 'cocktail effect' has long-been recognised as an area of concern in the UK. Despite this, little has been done to understand or prevent the human health impacts that may occur due to long-term exposure to pesticide cocktails. **www.pan-uk.org/the-cocktail-effect**

DIRTY DOZEN

	% of samples with multiple residues*
Grapefruit	99%
Clementines, mandarins and satsumas	96%
Strawberries	89%
Pre-packed salad	81%
Grapes	78%
Lemons	75%
Peaches and Nectarines	67%
Pears	66%
Spinach	57%
Chilli Peppers	57%
Apples	52%
Blackberries and blueberries	51%

* Based on 2018 and 2019 data for multiple residues published by The Expert Committee on Pesticide Residues

A CLOSER LOOK AT THREE PESTICIDES FOUND ON THE DIRTY DOZEN:

Chlorpyrifos (insecticide) - recently banned for use in the EU, it is still present as a residue on produce imported into the UK. In multiple epidemiological studies, chlorpyrifos exposure during pregnancy or childhood has been linked with lower birth weight and neurological changes such as slower motor development and attention problems. Exposure to low levels of chlorpyrifos is increasingly associated with changes in children's cognitive and behavioural performance. Chlorpyrifos is also a suspected endocrine-disrupter.

Difenconazole (fungicide) - used to control a variety of problems including blight and seed rot. It appears as a residue on the majority of the Dirty Dozen. Many of the 'azole' class of fungicides, of which this is one, are suspected endocrine disrupting chemicals (EDCs). Difenconazole is also a possible human carcinogen and reproductive or developmental toxin, meaning that it can have adverse effects on sexual function and fertility, reduce the number and functionality of sperm and cause miscarriages

Glyphosate (herbicide) - concerns about the health effects of glyphosate have been growing for many years. The most widely used of all the herbicides, it has been linked with various types of cancer, birth defects and kidney disease. Calls for a ban on glyphosate have intensified and a number of countries around the world have already prohibited its use or are in the process of phasing it out. It is not only used to grow crops but also widely applied in UK towns and cities to combat weeds – see **www.pan-uk.org/pesticide-free**

WHAT IS PAN UK DOING?

Pesticides appear in millions of different combinations in varying concentrations in our food. It is arguably impossible to create a system sufficiently sophisticated to be able to assess the full spectrum of health impacts resulting from long-term exposure to hundreds of different pesticides. The only way to minimise the risk to health is to hugely decrease our overall pesticide use, thereby reducing our exposure to pesticide cocktails. PAN UK is working hard to put in place the measures needed to support farmers to reduce their use of pesticides.

Sign up to follow our work at: **www.pan-uk.org**

PESTICIDE ACTION NETWORK *UK*