

WHAT EFFECT DO DETERGENTS HAVE ON THE ENVIRONMENT?

Read the following text and choose the correct option among those in italics in the activity below.

Clean clothes, clean planet

We all love clean clothes, but most of us also love a clean planet. Do the two things go together? Look at the ingredients label on a typical bottle of detergent and you'll see a chemical cocktail. What are all these things and what do they do? More to the point, do they have any harmful effect on our health or the planet on which we all depend? There's very good reason to think so. That's why some detergent brands deliberately position themselves as eco-friendly, not by comparing themselves to soap and water (the basic dynamic-duo of the detergent world) but by drawing attention to the potentially harmful chemicals used by their rivals.

What harm do detergent chemicals do?

You might think this is a matter of opinion; mostly it's a matter of science: the effects of detergent chemicals are well documented. What's less well understood is that all chemicals are added to detergents for a specific purpose, and some of the additives actually *reduce* the harmful impacts that detergents would otherwise have.

Surfactants

As we've already seen, these play a crucial part in helping water to attack and remove dirt. But once they flush away down the drain, surfactants don't stop working: they start to play similar tricks on aquatic life, for example, attacking the natural oils in the mucus membranes of fish, stopping their gills from working properly, and increasing their risk of attack from other chemicals in the water. Some surfactant ingredients produce what are called endocrine-disruptors, which can affect the hormonal balance of animals (including humans), causing a variety of health problems and sometimes changing their sex characteristics. Although surfactants *can* be toxic to fish and other aquatic life (some are even listed as persistent organic pollutants (POPs) ones that remain in the environment for many years without breaking down), most surfactants biodegrade relatively quickly in sewage treatment plants before they can do much harm to the natural world.

Phosphates

When the phosphates in detergents enter freshwater, they can act like fertilizers, promoting the growth of tiny plants and animals. The biggest problem they can cause is a huge growth of algae, known as an algal bloom, which kills fish life by reducing oxygen. Although phosphates enter water in many different ways, detergents contribute significantly to the problem.

Enzymes

Enzymes are catalysts, which means they're chemicals that help to make chemical reactions happen more quickly or easily. Generally, they're added to detergents to make them more effective at tackling tricky forms of dirt that ordinary detergents struggle with. They also help to lower the environmental impact of detergents by reducing the need for surfactants. Although it's widely believed that enzymes can cause skin problems, a recent scientific review by David Basketter et al in the British Journal of Dermatology suggested that's a myth: "the irritating and allergenic hazards of enzyme raw materials do not translate into a risk of skin reactions."

Perfumes

Fragrances in detergent serve no purpose other than to make your clothes smell nice. But the oils from which they're made can cause rashes and skin allergies.

(By Chris Woodford)

1. Most detergents contain *a lot of/no* harmful chemical substances.
2. Some substances are added to detergents to *increase / reduce* their damaging effect on the environment.
3. Surfactants are added to detergents to *improve / worsen* the cleaning power of water.
4. Detergents washed down sewers build up in water bodies *damaging / repairing* aquatic, animal and human life.
5. *All / Some* surfactants break down quickly in the environment.
6. Sewage treatment plants can biodegrade *all / most* surfactants.
7. Phosphates in water bodies *prevent / promote* eutrophication.
8. Enzymes are added to detergents to *improve / worsen* their cleaning power.
9. The use of enzymes in detergents *increases / reduces* the need for surfactants.
10. Fragrances added to detergents *cannot / may* cause skin reactions.