

What is removed from sewage a in a waste water treatment plant?

Waste water treatment cannot remove all chemicals and pharmaceutical residues from the effluent.

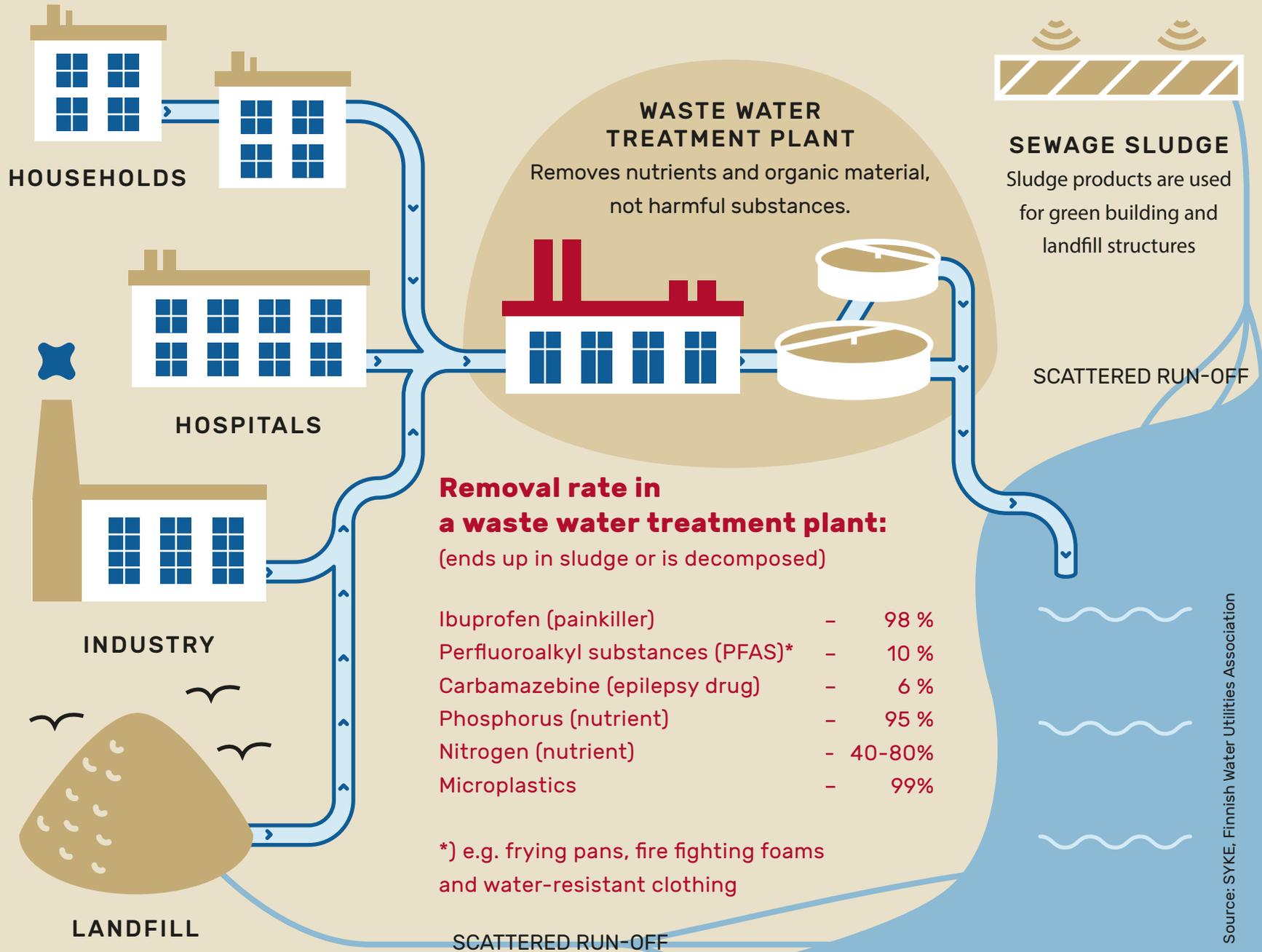
Waste water treatment plants have been designed to remove nutrients and organic material from the effluent, but not harmful substances, such as pharmaceuticals and chemicals, or microplastics.

Do like this:

Do not dispose chemicals, pharmaceuticals or trash into the toilet bowl. Take unused pharmaceuticals to a pharmacy and hazardous chemicals to a designated hazardous waste reception site.



S Y K E



Many of the chemicals in the Gulf of Finland water originate from items and things in our everyday life.

Flame retardants, microplastics and perfluoroalkyl substances, for instance, are released while washing textiles in a washing machine.

Do like this:

Use ecolabelled goods. An ecolabel guarantees that hazardous chemicals have not been used in the manufacturing process. Prefer recycling clothes to buying new ones. If you buy new ones, however, buy clothes manufactured in the EU.



S Y K E

Thousands of chemicals can be found in the Gulf of Finland water

Substances originate from our everyday life: detergents, pharmaceuticals, electronics and textiles



Environmental toxins affect for decades.

There are over 13 000 registered chemicals in use within the EU. New ones, the effects of which we do not yet know, are introduced constantly.

Bans and restrictions of use are important in reducing the amounts of harmful substances in the environment.

Do like this:

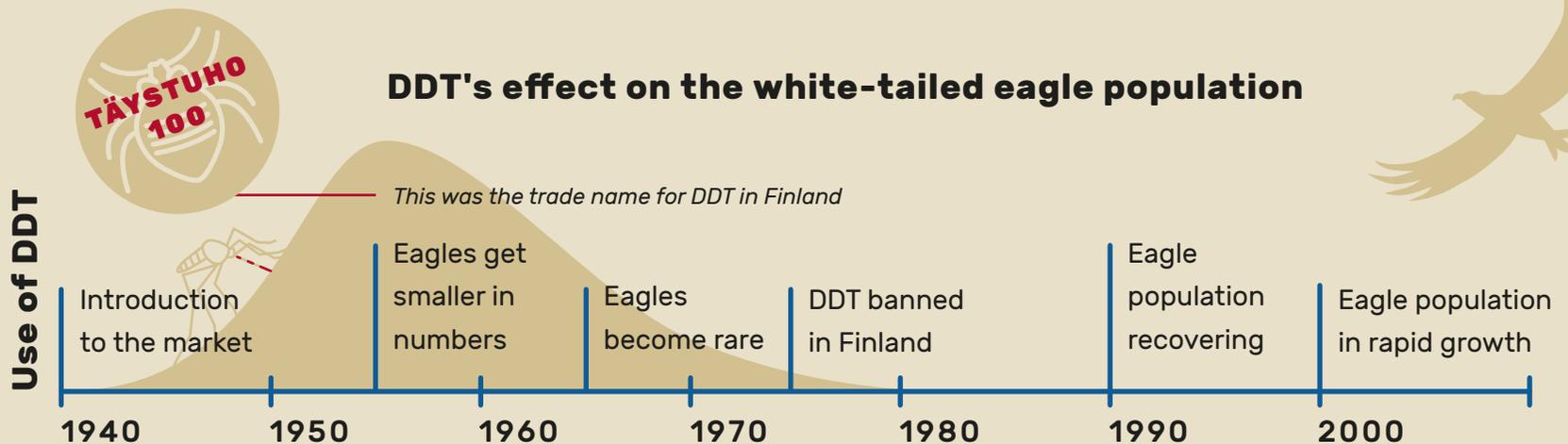
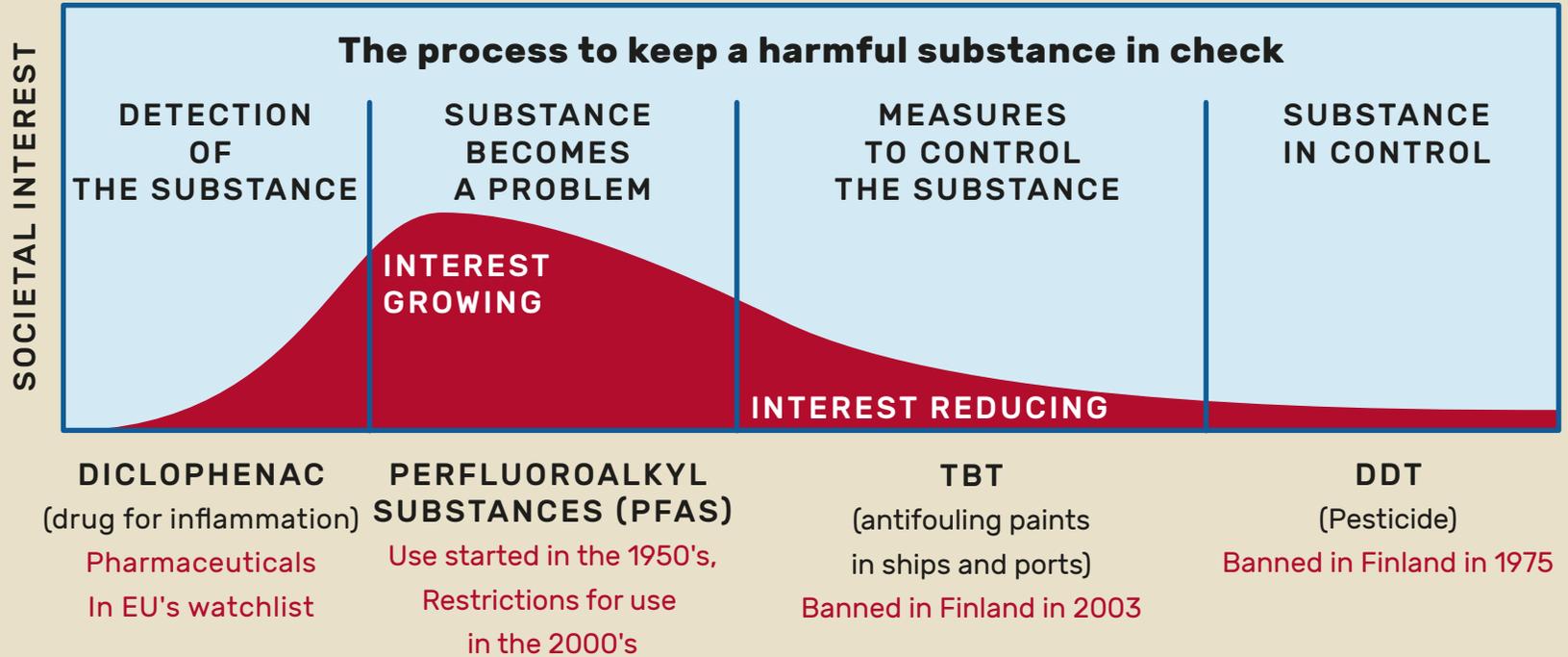
Get to know the chemicals you use in your everyday life. Use only those products that have an environmental certificate.



SYKE

Life span of a harmful substances

Classic environmental toxins, such as the pesticide DDT, are slowly waning but newcomers appear constantly.



*) The reason: eggshells became thinner because of DDT

Pharmaceuticals are constantly introduced into the sea, having an impact on marine animals.

Pharmaceuticals end up to waters because waste water treatment plants have not been designed for removing hazardous substances from the effluent. The harmful effects of pharmaceuticals in the water are yet unknown.

Do like this:

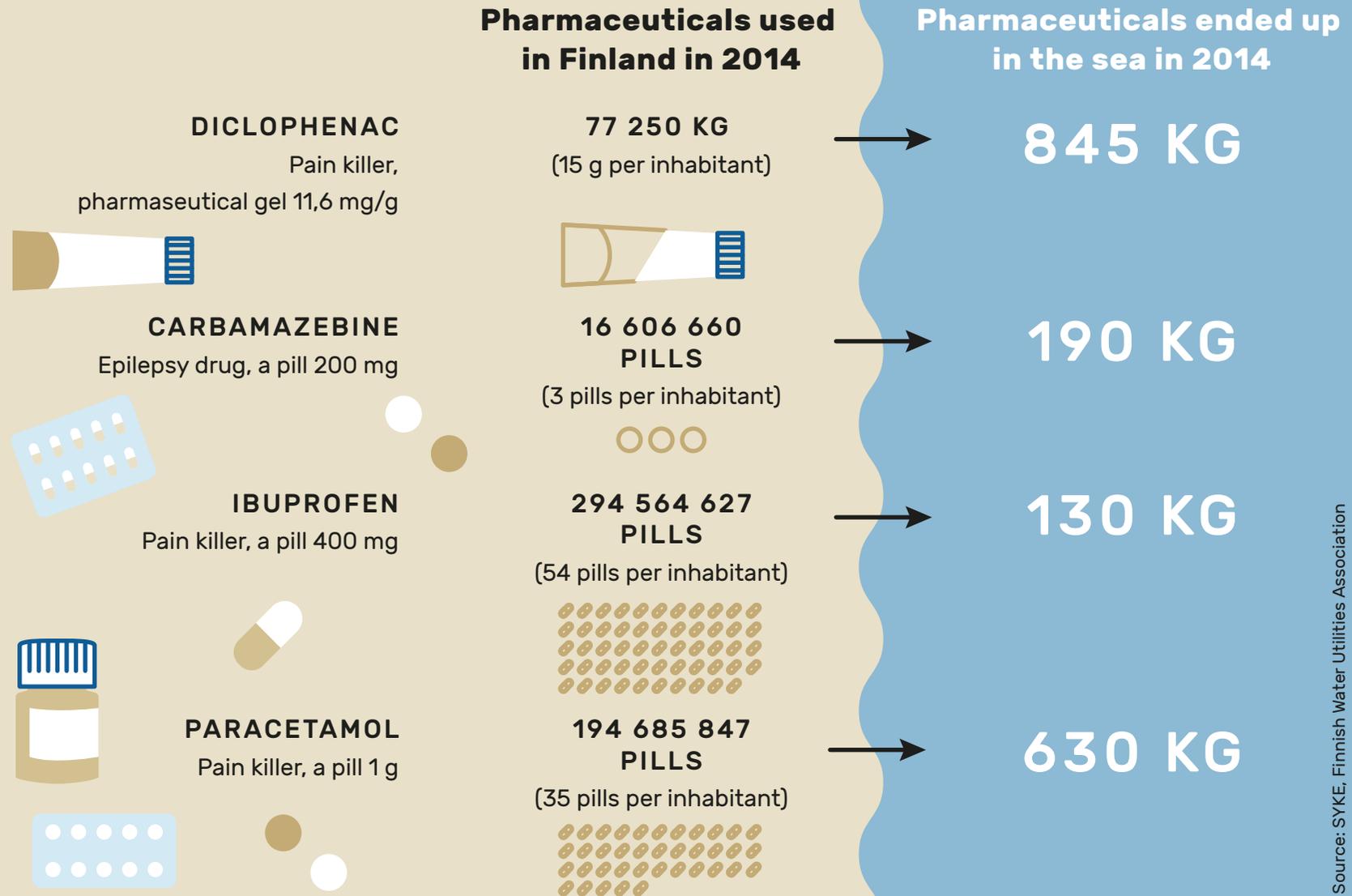
Take unused pharmaceuticals to a pharmacy. Do not dispose them to toilet bowl or trashcan. Part of the pharmaceuticals goes intact through the waste water treatment process to the sea, having a degrading effect on marine animals.



S Y K E

Hundreds of kilos of pharmaceuticals end up in the Finnish waters every year

Contemporary waste water treatment techniques do not allow removing all pharmaceutical residues from the effluent. All that is left in the water flows to the sea.



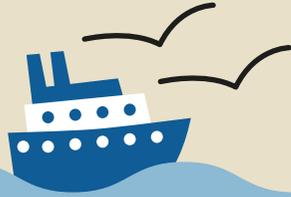
Fish in the Gulf of Finland ingest

What fish have you eaten lately?

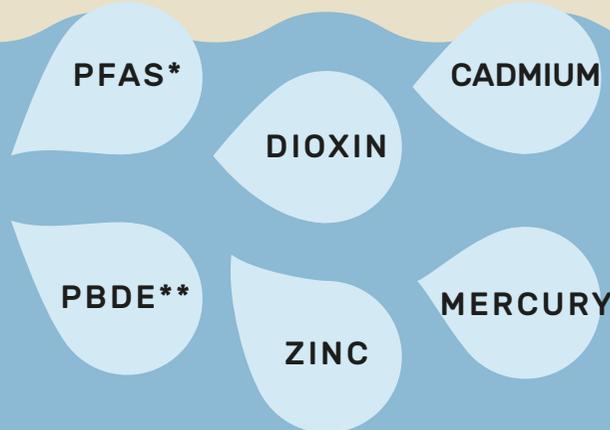
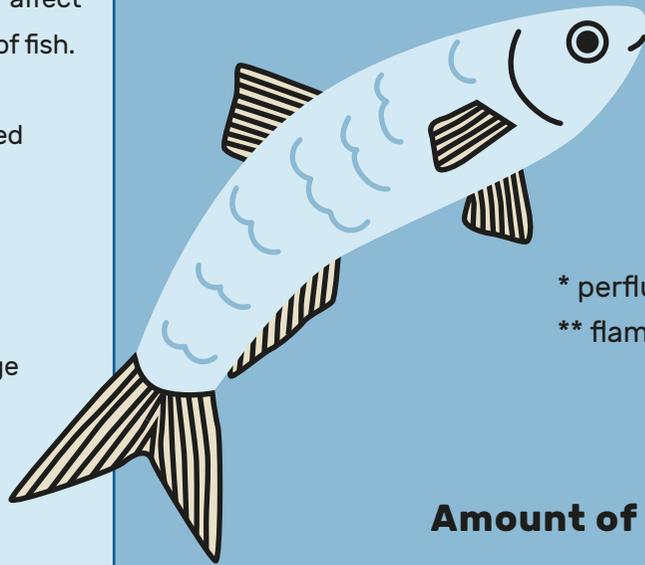
Harmful substances accumulate in fish. Not all synthetic substances cause restrictions for fish use or affect negatively the condition of fish. However, also these substances are transferred forward in the food chain - all the way to humans.

Do like this:

Do not eat salmon or large herring of marine origin or pike more than 1-2 times a month.

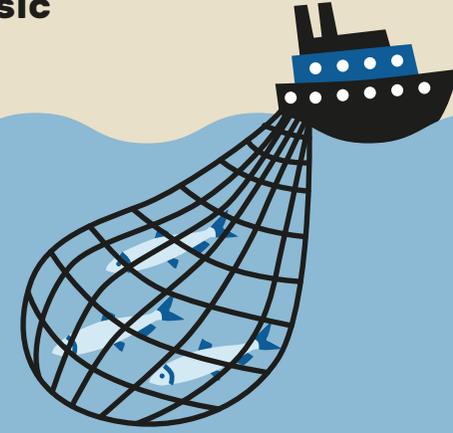


flame redartants, pharmaceuticals and classic environmental toxins in their food



* perfluoroalkyl substances

** flame redardants



NEXT TO COME IN THE FOOD CHAIN:

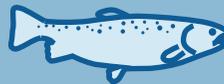
birds, fish of prey, seals and humans

Amount of environmental toxins in the Gulf of Finland fish

Does the maximum allowable level for human consumption get exceeded?

MAXIMUM ALLOWABLE LEVEL FOR HUMAN CONSUMPTION

SALMON



PERCH



HERRING



Concentration of mercury
0,5 mg / kg



...but other large fish of prey are the problem



...but often a problem in the lakes



Concentration of dioxin (TEQ)
6,5 ng / kg



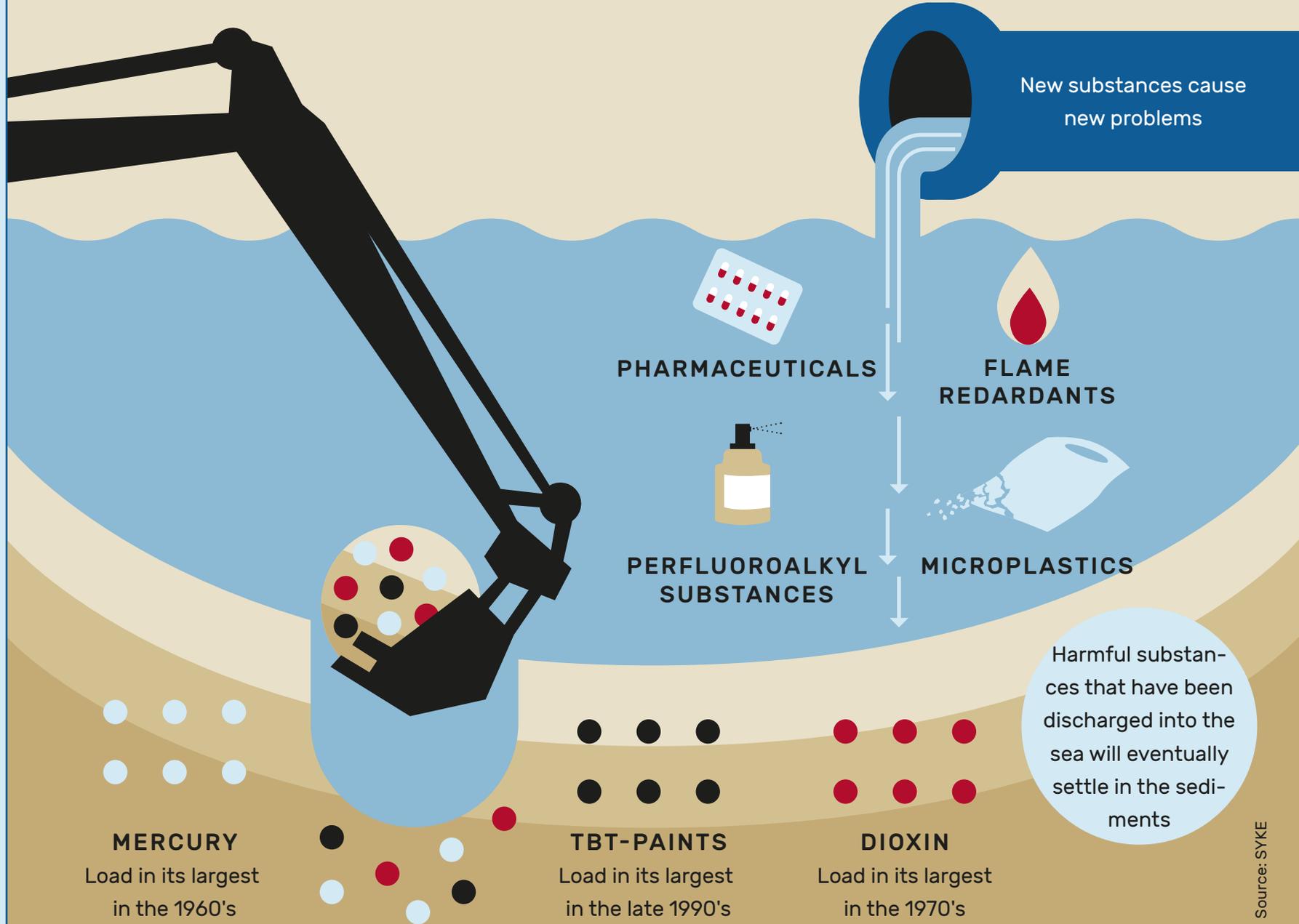
S Y K E

Sediments: archives of harmful substances

Harmful substances have accumulated in the sediments during past decades.

Classic environmental toxins are gradually stored deeper in the sediments.

Dredging operations may release these toxins back to the water, and further, to the food chain.



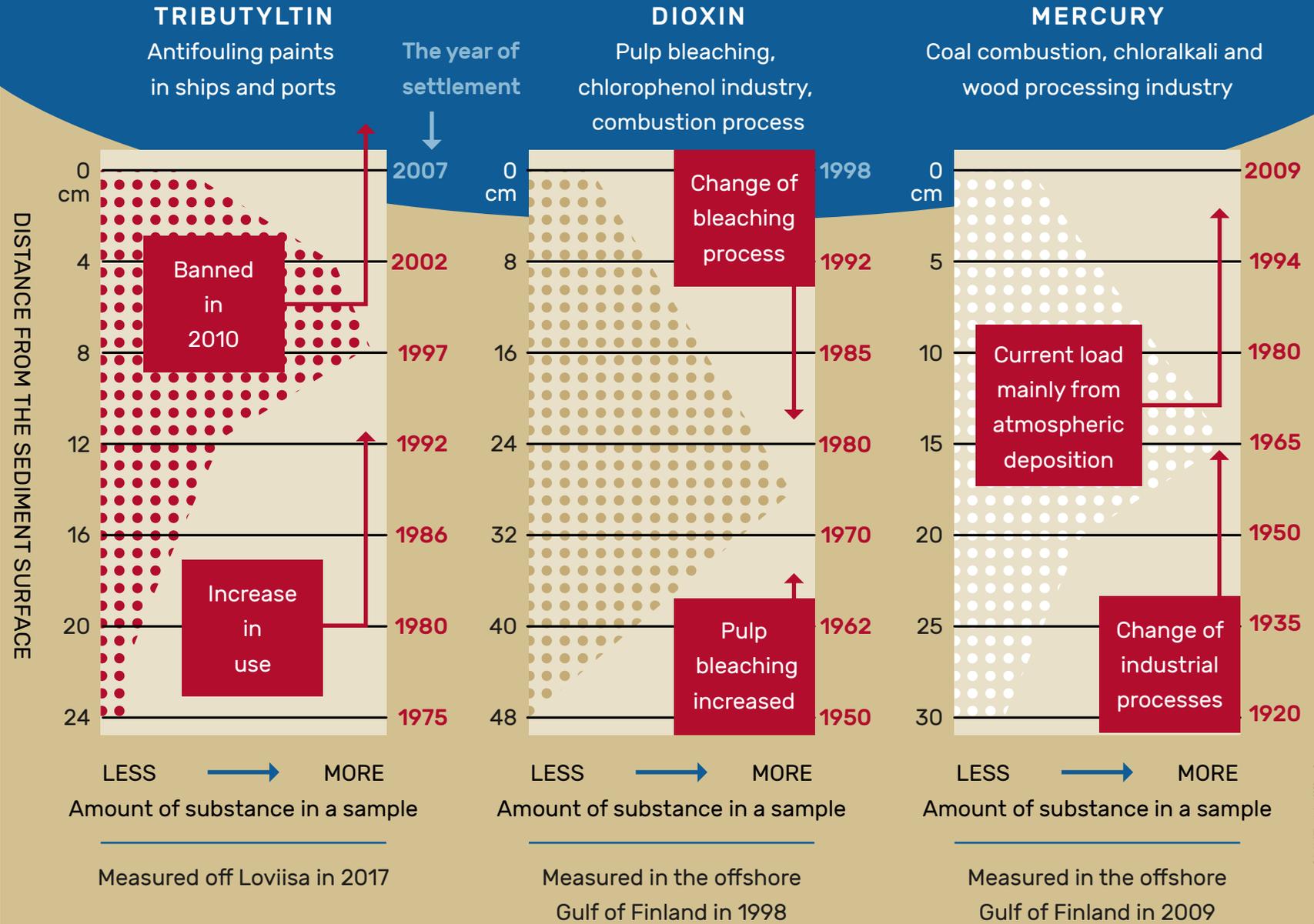
SYKE

Harmful substances settle slowly to the sediment where they no longer affect marine animals.

Restrictions for use concerning harmful substances reduce the amounts of these substances in the water.

Simultaneously, new synthetic substances are introduced in the market. We do not know yet their effects, the effects of their decomposition products or their synergistic effects with other chemicals.

Sediment samples reveal the history



Source: SYKE, Hallikainen and others (2008), Isoaari and others (2002), Vallius (2014)