DIY GUIDEBOOK: DETOX YOUR HOME

Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP
BINGO! DIE UMWELTLOTTERIE
NONHAZCITY

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Chapter 1: Introduction

1.1 About this guidebook

Hazardous substances are ubiquitous in our homes: Most articles, and products we use in our households every day are composed of synthetic substances. These substances give the products their special characteristics: Cosmetics last longer due to preservatives, food plastic packaging is soft and smooth due to softeners and the curtains in the living room do not catch fire due to flame retardants. Unfortunately, some of these substances are hazardous and harmful to our health and the environment.

We come into contact with these substances every day. We eat them when we consume food wrapped in plastic. We drink them when we drink water from a plastic water bottle. We even breathe them in when we are exposed to PVC flooring and absorb them through our skin when we touch certain textiles and yoga mats. These are only a few examples that make up the sum of all contact we have with hazardous substances on an average day. Consider that this exposure continues every day, every week, every month - year after year. All of this adds up to a remarkable amount of exposure time. This does not mean that we all are becoming sick. But some of us do!

In fact, as the methodology to study these topics and the problems arising are relatively new the consequences of this long-term exposure and the complex composition and mixture of many different chemicals found in a household is not a very well researched field. Relevant studies must take place over several decades and they generally have to contend with a big problem: Demonstrating a link between cause and effect can be very difficult.

That being said, many of the substances are suspected to be extremely harmful. They are said to cause cancer, allergies, reproductive issues, and developmental disorders in babies and children. In their molecular structure some substances (so-called endocrine disrupters) are so similar to hormones that they may be misinterpreted by the body and disbalance our hormone systems even when in very low concentrations.

New chemicals are constantly being developed and the research cycle investigating the harmful effects on these chemicals takes a long time. Often products go on sale before appropriate scientific studies can be completed. This means that national and EU laws currently lag behind and are unable to protect citizens from exposure to potentially harmful substances.

Therefore, we as citizens and consumers must act!

We must minimize our use and contact with potentially hazardous products and materials as much as possible and set a sign that we want a system change towards toxic-free solutions.

The first step is to become aware and to detoxify our own homes. This guidebook will lead you room by room through your house and will show you how to do that.


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1.2 About NonHazCity

This guidebook was developed within the Interreg Project NonHazCity (nonhazcity.eu). The project team consists of partners around the Baltic Sea with scientific experts, NGOs, municipalities and businesses. The project demonstrates that there are real possibilities to reduce the emissions of hazardous substances into the Baltic Sea from sources upstream: from our daily lives at homes and at work. NonHazCity promotes municipalities setting reduction targets and developing chemical action plans to minimise emission sources. The project aims to reduce emissions not only within the municipalites own properties and operations but also within private companies and consumers.

Hazardous substances are invisible to people's eyes, but they are used everywhere: in many products, materials and goods. NonHazCity has highlighted the multitude of these uses. It now campaigns for concrete reduction plans and safer alternatives to be used by the different actors in our cities where possible. NonHazCity strives for gaining societal visibility and transparency for the topic and put it on political agendas of municipal decision makers. It wants to make chemical risk management an issue for everyone – starting in our homes and work places and eventually to all activities in town.

Visit the project website for further informations: www.nonhazcity.eu

1.3 How to use this guidebook

This guidebook is a step-by-step manual to detoxify your home by walking you through the process room by room.

Chapter 2 provides information about what to look for, remove or substitute to avoid hazardous substances in all the different rooms of your home. It provides checklists that you can fill out and repeat periodically (e.g. after 6 months). This will help you see the progress you have made and what challenges you need to prioritize.

In most rooms, the checklists starts with counting how many products and articles you use. Most of us own a much larger amount of articles and products than we need or use. Hence, to detoxify our homes, the first step is to clear those items out. If you live in a family ask for support and start by clearing out your own property first. Before you throw out things for the whole family check you have their permission and support – step by step is the motto!
Chapter 3 will give you in-depth information about hazardous substances and their effects on health and the environment.

Chapter 4 provides information about the most common eco-labels with pictograms.

Chapter 5 gives useful recipes for Do-It-Yourself (DIY) cleaning agents and cosmetics.

Chapter 6 presents key recommendations and checklists that help you to detoxify your home quickly. This method might be less thorough but the lists can be easily taken out of the guidebook and can be placed in an easy to reach place (e.g. the fridge door) as a nice reminder to live a life with less harmful chemical exposures..

https://youtu.be/Y99PedwEKKs

Chapter 2: Checking your house room-by-room

2.1 Wardrobe

It doesn‘t matter whether it‘s expensive or cheap: during production clothing is in contact with a variety of chemicals. Over 20,000 different chemicals are used in the textile and fashion industry. That is about 30 % of the used chemicals worldwide! A lot of these chemicals are harmful to human health and the environment, such as azo dyes, many solvents and flame retardants. So, the journey to a chemical smart wardrobe begins in the store. Consider asking the store manager about hazardous substances before making a purchase.

Check: How many of your clothes do you still wear?

It is up to you if you count every single sock or piece of underwear from your whole household or if you should instead just focus on one person and/or just outerwear. This is not about finding the largest number but for developing a realistic feeling about which textiles you wear and need.

Remove all clothes and shoes you don’t wear regularly. How about giving them to your friends or donating them to non-profit organizations?

Check: How many of your clothes have an (eco)label and which one?

If your clothes are eco-labeled, you can usually find this information in the small labels stitched onto them.

Label	Check (make a tally)
EU Ecolabel	
Nordic Ecolabel	
Der Blaue Engel	
Naturtextil	
Global Organic Textile Standard GOTS	

Label	Check (make a tally)
cradle to cradle	
Confidence in Textiles	
OEKO-TEX Standard 100	
OEKO-TEX Made in Green	
bluesign	

Check: Which materials are your clothing made of?

You can usually find this information in the small labels stiched onto your clothes.

Material	Fiber type	Check (make a tally):
Cotton	Natural fiber (plant)	
Linen	Natural fiber (plant)	
Wool	Natural fiber (animal)	
Leather	Natural fiber (animal)	
Viscose	Partly natural, partly synthetic	
Polyurethane	Synthetic fiber (plastic)	
Synthetic leather	Synthetic fiber (plastic)	
Polyamide (Nylon)	Synthetic fiber (plastic)	
Polyester	Synthetic fiber (plastic)	
Acrylic	Synthetic fiber (plastic)	
Elastane	Synthetic fiber (plastic)	

- Use clothes and shoes made of natural instead of synthetic materials. But pay attention to leather: leather is often tanned and dyed by using hazardous chemicals.
- Avoid clothing and shoes that emit strong chemical smells.
- Look for the labels „PFOA-free“, „PFC/PFAS-free“ and „Fluorocarbon-free“ for swim wear and outdoor clothing. The substances PFOA and PFC are used to make surfaces water and dirt repellent (especially waterproofing agents in outdoor clothing) and as a side effect, they can damage the hormone system. More information about these substances can be found in Chapter 3.
- Avoid sports clothing made from plastic textile fibers (polyamide, polyester, acrylic etc.) and instead favour organic cotton. Sports clothes made from plastic textile fibres can release microplastic into the washing water. These fabrics also promote sweating and to counter act this many companies add biocides or nanosilver to their plastic textile fibres. Biocides are substances that kill bacteria and other microorganisms. Nanosilver can accumulate in the body.
- Choose clothing without prints. Prints may contain harmful substances in the printed motives, such as various softeners, PVC or polycyclic aromatic hydrocarbons (PAHs).
- Buy products that are labeled with eco-labels. For more information about eco-labels, visit chapter 4.
- Instead of buying new clothes, visit second-hand shops, clothes-swapping parties or use online second-hand platforms. Second-hand clothes have often already been washed so many times that hazardous substances are washed out.
- Avoid laundry refreshers and shoe deodorants because they may contain unnecessary biocides and/or artificial fragrances. Soda powder is just as effective when applied to your shoes and wiped out after a night.
- Try upcycling. Create new favorites from your old clothes or bring broken ones to the tailor or repair cafes.
- Avoid clothing that is labeled: „non-iron“, „crease-resistant“ or „wash before wearing“. They often contain harmful chemicals!
- Wash in an environmentally friendly way: only start the washing machine when full and be sure to use ecocertified detergent or a washing ball. Avoid fabric softeners since they are harmful for the environment and also because the fragrance and colorants are allergens. Use a temperature of 30 °C as it is completely sufficient to wash an average load of dirty laundry.
- Instead of using mothballs and other synthetic insecticides use natural products instead, such as lavender and cedarwood.
- Don’t buy cheap jewelry because it sometimes contains allergens such as nickel or lead which can cause neurological damage in foetuses and young children.

2.2 Living room

Living rooms can contain various sources of hazardous chemicals. These can, for example, be flame retardants and plasticizers, that are released from furniture, flooring, wall paints, electronics, cables, and also textiles like curtains, carpets and pillows. The constant gradual emission of these chemicals usually means constant exposure and hazardous substances uptake through skin contact and breathing.

Substituting living room items such as curtains or shelves is obviously not as easy as removing those old running shorts you don't wear anymore. So here are a few recommendations for what you can do in your living room without buying new furniture and some ideas if you do decide to give your living room a new look.

Check: Where are your electronic devices located?

- Are there any cables next to a heater? If so, be sure to place them somewhere else where they are not exposed to heat. Cables are often made of PVC which can contain additives such as phthalates. If the cables and devices are heated up, harmful chemicals may be emmited.
- Frequently clear away dust from your electronic devices and ensure to ventilate your living room very frequently. Chemicals accumulate in dust. It is especially important to vacuum near electronic devices as they release both flame retardants and phthalates. Avoid flushing dust down your sinks as this would burden sewage treatment plants with the added need to deal with this source contamination. Instead throw the dust into your garbage bag directly.
- Reduce indoor air temperature below 21 °C (at this temperature or less it has been shown that less hazardous substances are emmited from household appliances and products).

Check: How many electronic devices do you have?

- Remove all electronic devices you don't need and use at least weekly.
- Switch the electronic devices off that you do not use at the moment but want to keep in the room. Otherwise the devices may still give off harmful substances.

Check: Which materials are your furniture and textiles made of?

- Check if you find eco-labels (see Chapter 4 for more details) on your furniture and textiles and in the future buy eco-labeled furniture and textiles: By demanding eco-labeled goods, you are helping to drive the market in the right direction. High demand provides greater supply and better prices for the most chemically and environmentally smart alternatives.
- If you want to substitute furniture and textiles, think of buying second-hand items. Furniture that contains chipboard often contain allergy-causing formaldehyde – which has likely already been emitted from the product when bought second-hand.
- Check how old your furniture is before you buy it. In 2005 a new EU legislation (POP´s regulation (EU) 2019/1021) prohibited some of the worst flame retardants which are frequently found in furniture and cushions with foam rubber produced before 2005.
- Ask about a product's "surface treatments": Textiles in sofa covers can be treated with PFC/PFAS (e.g. with PFOA), that make them dirt and water repellent. They can also be treated with chemical flame retardants. If you buy new sofas, curtains, carpets and other textiles, you should avoid these substances. Ask at the store for „PFOA-free", „PFC-free" and „Fluorocarbon-free" products.

Important to know when doing renovations.

- Regularly ventilate the apartment during and after renovation by opening all windows and allowing complete air exchange. However, before doing this please check all product recommendations (e.g. for paints) and with your renovation team so as to not interfere negatively with the renovation work.
- When purchasing paint look out for eco-labels like the Blue Angel as paints often contain harmful substances such as plasticizers, preservatives and solvents. Also consider using water-based, clay, silicate or lime paints instead of conventional paints.
- After painting: Allow a drying time of at least 24 to 36 hours. Do not enter the rooms during this time because large quantities of the volatile and potentially hazardous chemicals evaporate and can accumulate in the indoor air. Natural paints (for example lime and clay paints) and eco-labeled paints can also contain volatile chemicals but in much lower concentrations.
- Avoid washable wallpapers. They contain PVC and plasticizers that can disrupt the hormonal system.
- Dispose of the remains of paints, varnishes and building materials in the recycling centers of the public cleansing service. Do not dispose of varnishes and paints in the sink or toilet!
- Avoid spray paint because aerosols may negatively impact your respiratory system. Better use brushes and rollers to apply lacquer and paint.
- Avoid many adhesives releasing toxic formaldehyde into the room air by ensuring that your interior fittings are processed with solvent-free adhesives (marked on the product) or fixed with nails or plug-in systems.
- Always pay attention to information for allergy sufferers.
- When choosing your floor covering ask the supplier or producer how it was treated. If you choose wood flooring make sure it comes from sustainable forestry sources (FSC or PEFC certified). Typical options from these sources are bamboo, cork, linoleum or natural rubber.
- Keep in mind that parquet is better than laminate flooring only when it comes to solid parquet. Parquet board glued from several layers of wood may contain hazardous components in binders and protective waterproofing (phenol, toluene, formaldehyde) in quantities exceeding those in laminate flooring.
- Avoid products that contain volatile organic compounds (VOC). Pay attention to the label or ask for advice. Pay attention to the marking “Emission Scale” - choose products marked A +.

- Always seek advice in the store and make sure that the products for renovation do not contain formaldehyde, mineral solvents, plasticizers or volatile organic compounds.
- In general, aim to use construction materials with type I eco-labels: EU Ecolabel, Nordic Ecolabel, Blue Angel, Vitality Leaf, because they guarantee the smallest release of harmful substances into the environment at all stages of the product life cycle. For more details, check out Chapter 4 and the website www.ecolabelindex.com.
- Follow the manufacturer‘s recommendations for the use and disposal of materials and make sure to use protective equipment to cover your skin.

2.3 Kitchen

Single-use plastics, cutting boards, non-stick items and aluminum foil: items you use every day in your kitchen can be sources of hazardous substances that you may take into your body by inhalation, skin contact and food. The good news is with only a few simple and cheap activities you can reduce your exposure to these substances quickly and easily.

Check: Which kind of materials do you have in your kitchen?

In the list below, you find only materials that potentially contain hazardous substances.

Plastic:	**Check (make a tally):**
Single-use plastic (e.g. straws)	
Food container	
Kitchen utensils (e.g. cutting board)	
Styrofoam	

Non-stick coating:	**Check (make a tally):**
Kitchen utensils (e.g. Pans)	
Single-use (e.g. baking paper)	

Other:	**Check (make a tally):**
Bamboo composites	
Aluminum	

- Glass, ceramic, stainless steel, untreated wood and cotton (eco-certified) are materials that are healthy to use in contact with your food.
- Generally, avoid plastic items. That does not mean that you have to throw out all plastics immediately, as that would not be sustainable. Rather think of plastic-free alternatives once an item should be replaced due to breakage.
- Do not heat your food in plastic items. Due to heating, harmful chemicals can migrate into your food more easily.
- Most bamboo items, such as coffee mugs or children's plates are pressed and glued into shape using the hazardous glue melamine. Especially if the bamboo tableware is exposed to heat above 70 ° C, formaldehyde can be dissolved from the melamine. Better avoid such products! However, plain bamboo wood is not a problem.
- Avoid aluminum. Aluminum in contact with your food can be unhealthy, especially when your food is acidic (most sour flavours).
- Silicone is safe, as long as it has been tempered (heated 4 hours at 200 °C) before its first use. Many manufacturers avoid this money-intensive step, so you should temper your items in the oven before you use them.
- To obtain a grease, water or dirt-repellent non-stick surface, PFOA, PFC/PFAS and fluorocarbons are added to the coatings of kitchen items or food packaging (e.g. pans, in-bag microwave popcorn, cardboard take-away pizza boxes). PFAS can be carcinogenic and cause liver damage. Avoid PFAS-coated materials and use stainless steel, cast iron or ceramic utensils instead.
- Prefer eco-labeled baking paper and cupcake molds over non-stick alternatives.

Check: What materials are used to package your food?

Observe your shopping behavior for a week and make a tally for the packaging you bring home.

Material:	Check (make a tally):
Unpackaged	
In single-used plastics	
In multi-used plastics	
In paper, cardboard	
In glass, ceramics, stainless steel	
In wood	
In aluminum	
Other	

- Every time you do your grocery shopping, you decide which materials end up in your kitchen and which hazardous substances potentially end up in your body.
- Avoid packaged food as much as possible, especially when it is packaged in plastics. For vegetables and fruits, you can easily use your own reusable (cotton) bags. Cheese and meat can be bought unpacked at the counter. Simply ask the salesperson to place it in your stainless-steel container for a safe and hygienic trip home.
- Do not buy food in cans! The interior coatings of food and soda cans made of metal usually contain Bisphenol A (for more information visit Chapter 3).

Check: In which materials do you store your food?

Make a tally below for storage packaging you use for your food items at home.

Material:	Check (make a tally):
Unpackaged	
In single-used plastics	
In multi-used plastics	
In paper, cardboard	
In glass, ceramics, stainless steel	
In wood	
In aluminum	
Other	

- Preferably store your food in glass, ceramic or stainless steel containers.

Check: In which materials do you freeze or heat your food?

Follow your freezing and heating behavior for a week and make a tally.

Material:	Check (make a tally):
In plastics	
In paper, cardboard	
In glass, ceramic, stainless steel	
In aluminum	
Other	
Anderes	

Do not use any kind of plastic for hot, greasy and acidic food as hazardous substances can migrate from plastics into your food under these conditions.

Avoid aluminum! Aluminum in contact with your food can be unhealthy, especially when your food is acidic.

Check: What is the estimated percentage of BLUESEAL lids in your kitchen if available in your country?

The BLUESEAL was founded in Germany and is becoming more and more common elsewhere. Check if your country also offers glass jars with a BLUESEAL lid.

Check	%

Make sure screw caps have a BLUESEAL layer (blue inner layer), as those are PVC-free. Most eco-labeled food is stored in glass jars with BLUESEAL lids, and of course, they can be re-used many times.

Check: What is your estimated proportion of ecological (organic), regional or seasonal food you buy and eat?

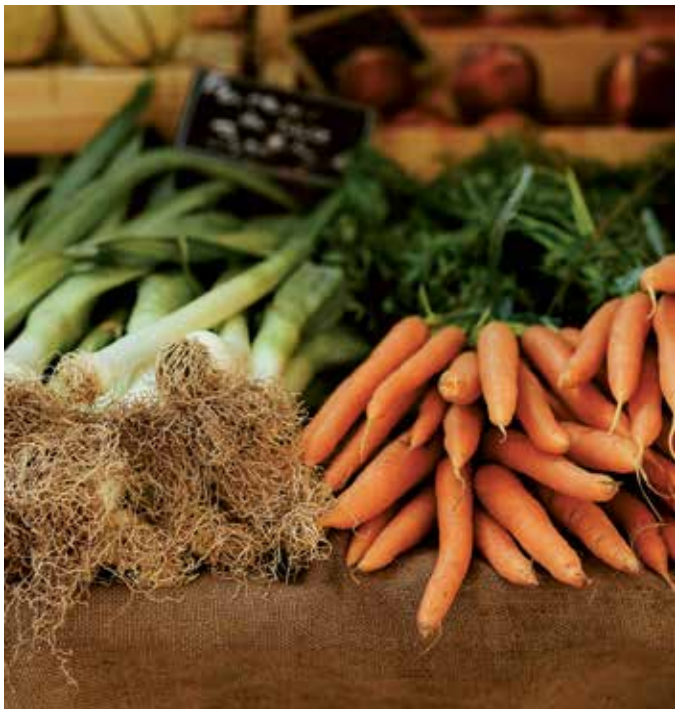
Observe your shopping behavior concerning ecological and conventional food for a week and estimate the proportion.

Check	%

Choose ecologically certified food to reduce the amount of pesticide residues. Especially consider coffee, dairy products, meat, apples, bananas, citrus fruits, grapes, potatoes, onions and peppers. These foods often use lots of pesticides in their cultivation. Choosing ecological food is not only good for your health, but also benifits the farmers, animals and ecosystems your food comes in contact with. Pay attention to country specific eco-labels for food.

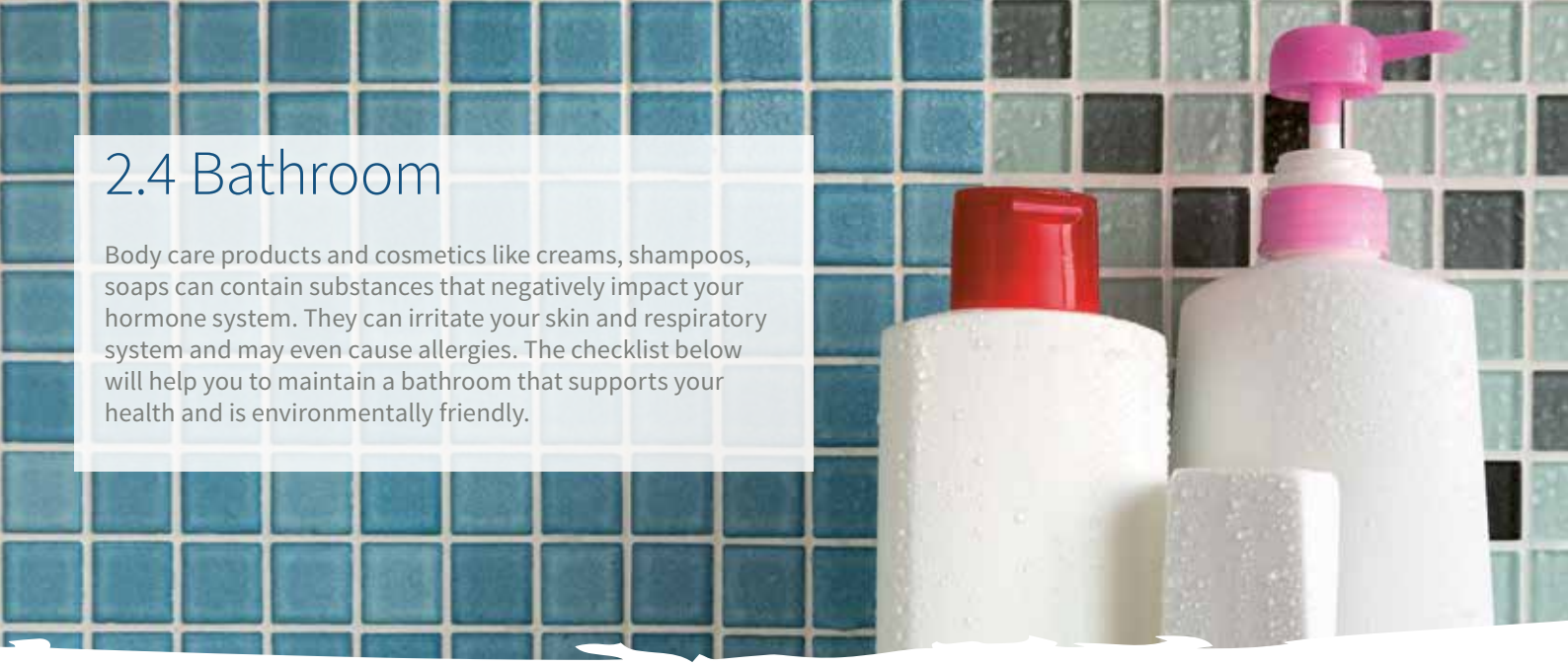
In case you are not sure if the food has been treated with pesticides or not, clean it with a baking soda water solution or a citric acid water solution.

Buy locally grown food that is in season. Locally grown food does not need to be transported over long distances and is typically not grown in green-houses that are heated both of which require vast quantities of fossil fuels.



2.4 Bathroom

Body care products and cosmetics like creams, shampoos, soaps can contain substances that negatively impact your hormone system. They can irritate your skin and respiratory system and may even cause allergies. The checklist below will help you to maintain a bathroom that supports your health and is environmentally friendly.



Check: How many products do you use?

- Sort out products that have passed the expiration date and dispose of them properly according to local regulations. Generally you should aim to reduce the amount of non-vital body care and cosmetic products you use.
- Avoid spray products as they can negatively impact your respiratory system.

Check: How many of your body care products are eco-labeled?

- Choose products with type I eco-labels like the EU Ecolabel, Nordic Ecolabel, Blue Angel, Vitality Leaf, or others like NaTrue, ICEA, Ecocert because they guarantee the smallest release of harmful substances into the environment at all stages of the product life cycle. For more details, check out Chapter 4 and the website www.ecolabelindex.com.
- Don't trust manufacturers' „green claims" like "ecological", "natural" or "organic". The internet makes it easy to verify the producers' company policy and "green claims" which can help in choosing products that are certified by trustworthy, independent third parties.

Check: How many chemicals listed on product labels are hazardous?

Check the ingredient lists on your body care products: do you find any of the below listed hazardous chemicals in them?

- Attention: This list presents the most common chemicals, but cannot be complete due to the vast amount of chemicals on the market. We therefore suggest that if you find a chemical on your care product that is not listed here to empower yourself and do some research. Explore the internet for the chemical, try using Apps to scan products that check for harmful substances (e.g. ToxFox (Germany only) or Codecheck).
- The sequence of ingredients on the list has a meaning: according to their portion of the total product in decreasing order. In other words: the more of a substance is contained in the product, the higher up the list it appears.
- Of special concern are the so-called "endocrine-disrupting chemicals" that can bring chaos into our delicately tuned hormone system and harm hormone-driven processes such as our metabolism, growth, immune system functionality and organ development, e.g. Triclosan (found in some toothpastes).
- Avoid hair straightening products, hair dyes, skin lighteners, perfumes and nail polish, as they usually contain high amounts of harmful chemicals!
- Avoid deodorants with aluminum salts and spray packaging. Sprays may negatively effect the respiratory system and aluminium salts can clog the pores.

Substances*	Risks	Check: Make a tally for each of your products
Parabens: Methylparaben, Ethylparaben, Propylparaben, Butylparaben (biocide)	EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem)	
Formaldehyde releasers: DMDM Hydantoin, Quaternium-15, Imidazolidinyl Urea, Diazolidinyl Urea	Strong skin irritants, allergens	
Fragrances, Parfume	Allergen	
Methylisothiazolinone (preservative)	Allergen	
Methylchloroisothiazolinone (preservative)	Allergen	
Ethylhexyl Methoxycinnamate (Octinoxate, Octyl methoxycinnamate) (UV filter)	EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem)	
Butylated Hydroxytoluene (BHT) (preservative)	EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem)	
Zinc pyrithion	Environmentally hazardous substance	
Oxybenzone (Benzophenone-3) (UV filter)	EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem)	
Triclosan (antiseptic and deodorant properties)	EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem)	
Resorcinol (dyes hair)	EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem)	
Cyclotetrasiloxane	Probably EDC (Endocrine Disrupting Chemical; negative effect on hormonsystem) substance	
4-methyl benzylidene camphor (UV filter)	Very toxic to aquatic life with long-lasting effects and is suspected of damaging fertility and/or causing harm to an unborn child	

* Listed are the 20 most common hazardous substances – Warning: the list is not complete.

2.5 Children's room

The children's room is often the most polluted room in the home. Chemicals are released from furniture, toys and electronics and can affect both air quality and health. At the same time, children are more sensitive to hazardous substances than adults. If you have children then their room is a good place to start their chemical-smart education.

Check: How many toys does your child play with regularly?

(at least once per week)

Remove all the toys your child does not play with regularly and dispose of them properly according to local regulations.

Check: How many electronic toys and devices are in your child's bedroom?

Avoid electronics in the bedroom because of the emmision of hazardous substances previously discussed in Chapter 2.2!

Avoid electronic toys! Toy phones, „talking" toys, etc. can contain hazardous substances and heavy metals and should not be left in children's hands.

Check: Which materials are your child's toys made of?

Sort your child's toys according to materials: (1) plastic, (2) wood and (3) textiles.

Material	Check (make a tally)
Plastic	
Wood	
Textiles	
Other	

Sort out items that are not meant to be toys which are probably not safe for children (e.g. mobile phones). Exceptions are natural materials, untreated wood and textiles without surface treatment.

Check: Can you estimate the age of the toys or if they were produced before 2013?

The legislation regarding toys has been tightened in recent years (last updated in 2013). Therefore, older toys are usually more hazardous than newer ones.

Production year	Check (make a tally)
Produced before 2013	
Produced after 2013	
Unknown production date	

If possible, remove old toys. Be careful with second-hand toys, if you don't know when they were produced.

Check: How do the toys look and smell?

Properties	How many?
Feel greasy and/or sticky?	
Broken	
Flaking paint	
Artificial smell	

- Dispose of any soft plastic toys that smell artificial, feel sticky and/or greasy on the surface. Also remove old wooden toys with flaking paint, old or broken (electronic) toys. Those toys may not be safe for your children anymore.
- In general, prefer toys with eco-labels FSC, Blue Angel, Nordic Ecolabel.

Check: How many soft toys are filled with foam? Were they produced before 2013?

- Older stuffed animals with foam rubber may contain chemical flame retardants that are now banned. If you buy new soft toys, ask the manufacturer or the store about flame retardants to avoid them.

Check: Do your children use hobby materials such as paints?

- Avoid cernit clay, artist's clay (lead) and modeling clay containing PVC due to a risk of phthalates and other plasticizers. Choose water-based children's paints and child-friendly adhesives that are solvent-free.
- Be cautious with felt pens and crayons! They can contain substances that can cause allergies and can be carcinogenic. Ask the manufacturer before you buy them or read the tests published by independent testing insitutions.

Check: Investigate your children's furniture and textiles for hazardous substances.

- Avoid PVC / vinyl mattress covers. PVC / vinyl can come in many different forms. Plasticized vinyl plastic can contain harmful phthalates and is often found in mattress covers or so called "plastic towels". A double-weight bath towel is usually sufficient to protect against minor accidents otherwise consider investing in mattress covers. If you do this ask the manufacturer if their mattress covers contain phthalates (plasticizers).
- Remove old foam rubber. Older foam rubber may contain chemical flame retardants that are now banned. Replace old pillows, mattresses and furniture from the 70s, 80s, and 90s that are padded with foam rubber. If you buy new products, ask the manufacturer or the store about new chemical flame retardants.
- Buy mattresses with cotton or polyester filling. Mats to romp, play and rest should be made of natural rubber.
- Buy furniture with type I eco-label: EU Ecolabel, Nordic Ecolabel, Blue Angel, Vitality Leaf as they guarantee the smallest release of harmful substances into the environment at all stages of the life cycle. For more details about eco-labels, check out Chapter 4 and the website www.ecolabelindex.com.
- Do not use wood that was treated or waterproofed with synthetic substances or used tires for construction of playground equipment, sandboxes and playgrounds in the garden.

2.6 Storage room and cleaning

Many household cleaning products contain hazardous substances. These substances may cause skin irritation, damage to the respitory system, cause allergies or simply be corrosive. Using these products may put your health at risk - so be careful! The following list shows you how to develop hazard free cleaning habits.

Check: How many cleaning products do you use regularly?

- Reduce the number of cleaning products. You only need a handful of cleaning products to keep your home clean. With one all-purpose cleaner, you can clean almost the entire house!
- Using soap and water is usually enough to clean your house. Additionally, you can produce your own set of cleaning agents using baking soda, washing soda, vinegar, salt, lemon juice and vegetable oil. You can find recipes In Chapter 5.
- Choose products with type I eco-labels EU Ecolabel, Nordic Ecolabel, Blue Angel, Vitality Leaf or others like NaTrue, ICEA, Ecocert as they guarantee the smallest release of harmful substances into the environment at all stages of the life cycle. For more details about eco-labels, check out Chapter 4 and the website www.ecolabelindex.com.

Check: How many of your cleaning products have pictograms (hazard symbols)?

Pictograms on the products inform users about the dangers of their product on their own health and the environment. Check if you find pictograms on the packaging of your cleaning products.

Pictograms	Risks	Check: Make a tally
	**TOXIC** **May be fatal if inhaled or swallowed. If this happens, seek medical attention immediately!**	
	**HARMFUL, IRRITANT** The product is harmful if it comes into contact with the skin, is swallowed or inhaled and can cause allergies and the irritation of skin or eyes. **Can be also found on eco-labeled products.**	
	**CORROSIVE** The product is caustic: it causes corrosion of metal (do not use on metal surfaces). If it comes into contact with eyes or skin, it causes chemical burns and permanent damage. **Avoid cleaning agents that are labeled with this pictogram.**	
	**HAZARDOUS FOR THE ENVIRONMENT** The product is extremely toxic to aquatic systems, and if it enters a water source, it will lead to the death of living organisms. **Avoid cleaning agents that are labeled with this pictogram.**	

- Avoid cleaning agents that are labeled with the above-listed pictograms. Products marked with (!) as a HARMFUL, IRRITANT are exceptions. It is ok to use these products but act with caution as they may cause less serious health effects.
- Consider throwing away cleaning products that you don't use and dispose of them properly according to local regulations.

Check: How many cleaning products you use from this list of no-go products?

Products	Check (make a tally):
Air fresheners	
Products with fragrances	
Products in spray form	
Disinfectants and products claiming anti-bacterial action	

- Fragrances and air fresheners can cause allergies, headache or other intolerances. In general, you should avoid products in spray bottles as these can release aerosols into the air which can be easily inhaled.
- Disinfectants should not be used at home because they can promote resistant bacteria and cause allergies. They are also known to irritate the skin and/or mucous membranes along with being flamable. In rare cases when mixed with other household cleaners dissinfectants can release deadly chlorine gas. Our zero tolerance on this matter does have some exceptions; products like hand sanitizer may be necessary at times.

Check: How many of your cleaning products are eco-labeled?

- Products with eco-labels guarantee a certified good environmental quality and less or no hazardous substances, as the certification process is a thorough test procedure by third-party institutions.
- Choose cleaning products with type I eco-label: EU Ecolabel, Nordic Ecolabel, Blue Angel, Vitality Leaf. These labels guarantee the smallest release of harmful substances into the surrounding environment at all stages of the product life cycle. For more details about eco-labels, see Chapter 4 and the website www.ecolabelindex.com.
- Don't trust manufacturers' „green claims" like "ecological", "natural" or "organic". The internet makes it easy to verify the producers' company policy and "green claims" which can help in choosing products that are certified by a trustworthy, independent third party.

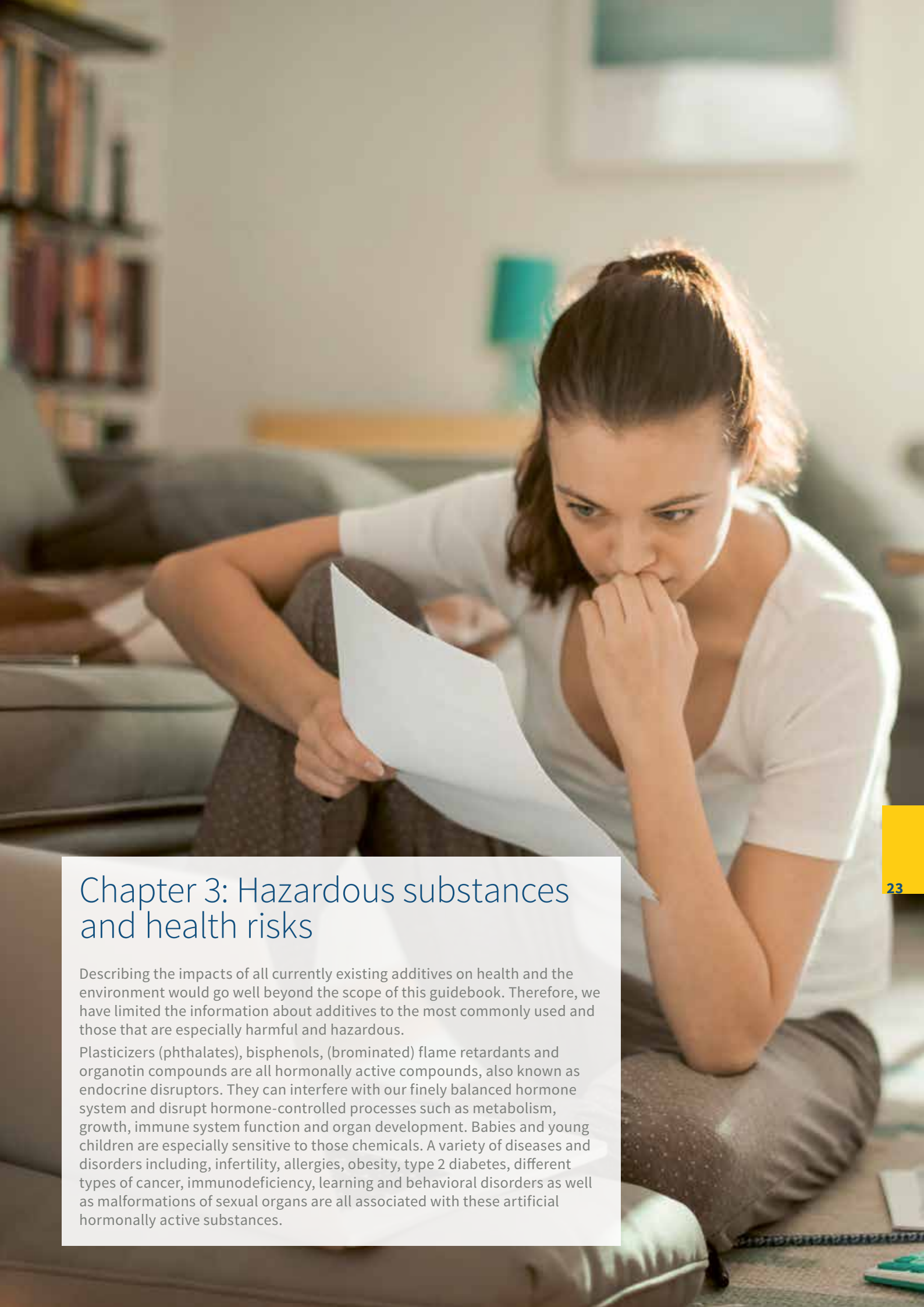
Check: How many cleaning products contain hazardous substances?

Find out whether the chemicals listed on your products are hazardous! For that purpose check the list of unwanted and hazardous chemicals below and avoid them.

Substances	Risks	Check: Make a tally
Alkylphenol ethoxylates (APEO)	EDC substance (= negative effect on hormone system); toxic for aquatic organism	
Methylisothiazolinone Methylchloroisothiazolinone Benzisothiazolinone	Allergen	
Chlorine	Respiratory tract irritatant; skin-irritatant	
Sodium hypochlorite	Corrosive; skin and respiratory tract irritatant	
Sodium chlorate	Irritatant; Toxic for aquatic organisms	
Perchloroethylene	Probable carcinogen; toxic to reproduction; harmful to liver and kidneys	
Octamethyl cyclotetrasiloxane	Respiratory tract irritant; toxic	
Triclosan	EDC substance (= negative effect on hormone system); probably carcinogenic	
Formaldehyde releasers: DMDM Hydantoin, Quaternium-15, Imidazolidinyl Urea, Diazolidinyl Urea, 5-bromo-3-nitro-1,3-dioxane, Sodium Hydroxymethylglycinat	Strong skin irritants, allergens, probably carcinogenic	
Musk Xylene	Probably carcinogenic	
Ethylenediaminetetraacetic acid (EDTA)	Persistent organic pollutant	
Fragrances (linalool, limonene, amyl cinnamal, hexyl cinnamal, benzyl alcohol, coumarin, benzyl benzoate, geraniol, eugenol, citronellol, citral)	Allergen	

Notice: Make sure that your cleaning products are stored safely so that they can't be reached by children and animals.

Do not store cleaning agents or any other chemicals in food containers and bottles, as children and adults, may mistake them as food.



Chapter 3: Hazardous substances and health risks

Describing the impacts of all currently existing additives on health and the environment would go well beyond the scope of this guidebook. Therefore, we have limited the information about additives to the most commonly used and those that are especially harmful and hazardous.

Plasticizers (phthalates), bisphenols, (brominated) flame retardants and organotin compounds are all hormonally active compounds, also known as endocrine disruptors. They can interfere with our finely balanced hormone system and disrupt hormone-controlled processes such as metabolism, growth, immune system function and organ development. Babies and young children are especially sensitive to those chemicals. A variety of diseases and disorders including, infertility, allergies, obesity, type 2 diabetes, different types of cancer, immunodeficiency, learning and behavioral disorders as well as malformations of sexual organs are all associated with these artificial hormonally active substances.

3.1 Plasticizer (Phthalates)

Phthalates are used as plasticisers in numerous products such as flip-flops, shower curtains, baby changing mats, floor coverings, children's toys, and synthetic leather. Soft PVC can contain up to 50% phthalates.

Since phthalates are not chemically bound to the plastic matrix, they can easily escape from products or dissolve due to contact with liquids or fats. Due to their diverse applications, we are almost constantly exposed to phthalates.

Phthalates can damage the hormone system and be toxic to human reproduction (reprotoxic). Phthalates can also be damaging to the environment. Phthalates tend to bind to particles and are consequently found in the environment wherever products with plasticizers are manufactured or used. Dust particles in the air transport phthalates over large distances. Phthalates can also end up in wastewater during the cleaning of PVC floors or PVC printed textiles and are constantly present in sediment and organisms and aquatic ecosystems. If contaminated sludge from sewage treatment plants is spread on fields, soil and food are also consequently contaminated.

3.2 Bisphenol A, S and F (BPA, BPS and BPF)

BPA is one of the most produced and used chemicals in the world. It is used to produce polycarbonates and synthetic resins and can be found in the inner coatings of food cans (epoxy), many plastic articles or as the coating of thermographic paper (sales receipts). BPA is constantly released from these products, especially in contact with heat, acids and fats.

Although BPA has a low potential to bioaccumulate, over 90% of citizens from the western world are predicted to have the substance in their blood, urine, and tissues. BPA is suspected to cause irreversible changes in the nerve and hormone system and is likely causing and/or impacting developmental and behavior disorders, brain damage, premature sexual maturity and female infertility. Since 2011, BPA has been banned in baby bottles throughout the EU.

BPA has been substituted with other Bisphenols, e.g. Bisphenol B, S and F. Bisphenol B, S and F are often advertised as "safe", however they are not. Their molecular structure is very similar to BPA and so they also can have similar endocrine-disrupting properties.

3.3 Brominated and chlorinated flame retardants

Brominated flame retardants serve to delay the ignition of flammable plastics, textiles or wood and to slow down flame propagation. They are inexpensive and combine well with a wide range of plastics, which is why they are found in countless plastic items such as electronic devices, cuddly toys, upholstery and mattresses. During a products entire life cycle (production, use and disposal), flame retardants can give off and wash out from plastics and textiles. In a fully developed fire, even flame-retardant objects will burn and may release highly toxic brominated dioxins and furans into the atmosphere.

Brominated flame retardants can disrupt hormone system functions and have neurotoxic effects. Due to their chemical stability and good fat solubility (lipophilicity), there is a risk that these substances will accumulate in the environment and bioaccumulate in animal tissues and as they move up the food chain eventually end up in human tissues. Brominated flame retardants have already been identified in sediment, dust and countless animal species worldwide.

3.4 Organotin compounds

Organotin compounds are used as stabilizers in PVC, as catalysts in the manufacturing of silicone sealing compounds, polyesters and polyurethanes, and as biocides (e.g. for wood preservative). They are often found in inflatable water toys and as bactericides in plastic shoes (flip-flops) as well as in food contact material (packaging). They have various different toxicological properties depending on the compound.

Some organotin compounds damage the immune system, the liver and the nervous system. They can also disrupt the hormone system and impair fertility. Organotin compounds pollute the environment by accumulating in sediment in bodies of water and organisms. Due to their toxicity to many aquatic organisms and their effects on the hormone system, they can impair biodiversity.

3.5 Perfluorinated alkylated substances (PFAS)

There are about 4500 subjects in this group. PFC / PFAS gives surfaces, water and oil-repellent properties (e.g. waterproof clothing, non-stick coatings on kitchen utensils and grease-repellent food packaging). Two of the most well-known highly fluorinated substances are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). They are extremely stable, non-biodegradable, accumulate for a very long time in soil and surface water and pollute drinking water and many foods through the groundwater. They accumulate in organisms, which means that no safe level of exposure can be determined.

PFC / PFAS cause many health problems such as high cholesterol levels, chronic inflammatory bowel disease, testicular and kidney cancer and pregnancy-induced hypertension (high blood pressure). In the EU, PFOA is classified as carcinogenic and toxic to reproduction. But there is some good news: PFOS and PFOA have been banned globally since 2020, but there are still transition periods for certain products. Once a product is banned, it is often replaced by other PFAS.

3.6 Polycyclic aromatic hydrocarbons (PAH)

PAHs are natural components of crude oil and coal that arise from the incomplete combustion of organic materials (coal, heating oil, fuel, wood). Cheap contaminated extender oils are used in some soft plastics and rubbers to save on costs, which leads to an increased concentration of PAHs in numerous consumer products. These can be absorbed through the skin and can damage our health because they are carcinogenic, harmful to development and reprotoxic. Black plastics are frequently contaminated with PAHs because untreated carbon, which has a high concentration of these chemicals, is used for coloration (such as the rubberized handles of tools and handlebars).

3.7 Mineral oils

Did you know that a human being incorporates up to 13 g mineral oil during the lifetime? Several components of mineral oils can migrate into food, either after evaporation or directly through packaging materials. Once, they have entered the body, some of these compounds may cause inflammation in the liver, lymph system and heart valves. At the moment, mineral oils are not yet regulated in food contact materials.

Mineral oils in food have been detected many times in recent years, all of which originate from recycled cardboard and paper. They derive from inks and prints but also end up in food due to contact with lubricating and hydraulic oil during harvest, food production, and transportation.

Chapter 4: Information about pictograms, eco-labels and codes

4.1 Pictograms for the classification of hazardous substances

Hazard pictograms visualize the hazardousness of a substance and are part of the international "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)".
The rule of thumb is easy: avoid all substances that are labeled with one of the symbols below:

Pictograms	Risks
	TOXIC Can cause death or toxicity even with brief exposure to small quantities.
	HARMFUL, IRRITANT Corrosive or irritant. Most detergents, including ones with eco-labels have this symbol. It is ok to use these products but act with caution as they may cause less serious health effects.
	CORROSIVE Corrosive damage to metals; harmful for skin and eyes.
	HAZARDOUS FOR THE ENVIRONMENT May cause damage to the aquatic environment.

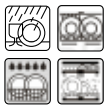
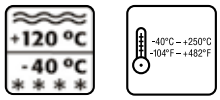
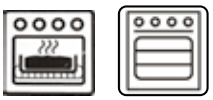
4.2 Recycling codes

Plastic food containers and packages are usually (but not always) marked with a triangle symbol and a number: this is the Recycling or Resin Identification Code. The code numbers 1 to 6 indicate specific pure plastic polymers, while number 7 covers all other types of plastics and mixtures. Polyvinyl chloride (PVC, code 3) and polystyrene (PS, code 6) always contain many hazardous additives and production aids/by-products. Therefore, they should be avoided, especially in contact with food. The other polymers are generally healthier, but again: that is strongly dependent on the individual production processes.

Code	Name Typical products	Potential health effects	Recycling and incineration
1 PET	**Polyethylene terephthalate** Drinking bottles, food and health care packaging, polyester in numerous textiles	PET bottles can, especially in the presence of heat, leak small amounts of the toxic metalloid antimony (below the legal thresholds). Single-use PET bottles can contain acetaldehyde, a substance that can alter the taste of the water and has been suspected to be carcinogenic by the EU. That's why single-used PET bottle should be used only one time – do not refill!	Recyclable.
2 HDPE	**High-density polyethylene** Coating for milk, water and juice containers, and food and cosmetic packaging	SAvoid exposure to direct sunlight, as that may cause leakage of the endocrine-disrupting substance nonylphenol.	Recyclable.
3 PVC	**Polyvinyl chloride** Hard PVC: Drains, window profiles, oil/vinegar bottles Soft PVC: Floor coverings, hoses, synthetic leather, vinyl carpets, swimming rings, toys	**Avoid: extremely unsafe!** PVC can leak a variety of toxic chemicals throughout the product life cycle (bisphenol A, lead, mercury, cadmium and phthalates) and can cause serious health and environmental problems. The raw material vinyl chloride is a known carcinogen.	Recycling is very difficult due to the common use of hazardous plasticizers, and its incineration and disposal may produce numerous toxins (carcinogenic, persistent organic pollutants).
4 LDPE	**Low-density polyethylene** Tissue paper packaging, cling film, inside coatings of milk containers	Avoid exposure to direct sunlight, as that may cause the leakage of the endocrine-disrupting substance nonylphenol.	Recyclable.
5 PP	**Polypropylene** Food containers, straws, baby bottles, microwave dishes	Relatively stable and heat resistant. Over longer periods, stabilizers (e.g. oleamide) can leak from the material.	Recyclable.
6 PS	**Polystyrene** Styrofoam for transporting meals, disposable cups/lids/cutlery, bicycle helmets, clothes hangers.	**Avoid: very unsafe!** In the manufacturing process, benzene, a known carcinogen is used. It may contain hormone-disrupting phthalates. The harmful styrene can migrate from the food packaging into the food, especially when the food is greasy, hot or acidic.	Recycling is difficult and incineration very problematic due to harmful substances.
7 OTHER	**Other** Water coolers, drinking bottles, microwave dishes, kitchen appliances, contact lenses, thermal paper	**Avoid!** Layered or mixed plastics with unknown polymers. Better avoid.	Not recyclable.
7 OTHER	**Other: Polyurethane (PU)** Insulations, often soft/foamed products	Occasionally, the toxic substance isocyanate is used during production.	Recycling is difficult and incineration very problematic due to harmful substances. During disposal, harmful substances (e.g. isocyanate, hydrocyanic acid and dioxins) can be released.
7 OTHER	**Other: Polylactic acid (PLA)**	Type of polyester produced from renewable resources (e.g., corn starch) and often named "bioplastics"; often as blends with petroleum-based polymers and numerous additives.	Partly biodegradable in industrial composters (NOT in private composters!)

4.3 Pictograms for proper handling of cookware and kitchen utensils

The law requires that for the safe and correct handling of kitchen utensils, instructions and information (e.g. pictograms) must be provided. The used pictograms must be „well visible, clearly legible and indelible“. The material information is usually placed on the outer package. Here you can find descriptions of the most common pictograms:

Pictogram	Description
	This EU wide valid symbol indicates materials that are suitable for food contact.
	These symbols mean that the product is suitable for cleaning in the dishwasher. The symbols may differ depending on the manufacturer.
	This symbol stands for “dishwasher safety”. It is only found on items that have been tested according to DIN standards. The number above the water jets reflects the maximum number of rinsing cycles that the item has survived without damage.
	These icons tell you which minimum and maximum temperatures your household items may be exposed to. The symbols may differ depending on the manufacturer.
	This symbol indicates how cold-resistant a product is, indicating to which minimum temperatures the article can be used.
	These symbols show how heat resistant a product is. Sometimes, the symbols also indicate how long an object may be in contact with the hot pan.
	Items with the snowflake symbol are freeze-resistant and frost-resistant. Kitchen utensils with a snowflake symbol can be kept in the fridge or freezer. However, the minimum temperature remains unclear.
	Items with such symbols are safe to be used in the microwave. However, the maximum temperature and heating period remains unclear.
	These symbols indicate that the item is suitable for cooking food in the oven. However, the maximum temperature and heating period remains unclear.
	Objects with this symbol must not be heated whilst empty in the oven.
	Items with this symbol may not be placed directly in the oven and should only be used on a wire rack.
	This symbol indicates that the item must not be placed on the hotplate.
	These symbols indicate whether a product is suitable for acidic foods.
	This symbol is intended to convey that the object should be rinsed with a cleaning agent before the first use.
	Items with this symbol have a sensitive surface. Knives should not be used as they may damage the surface and, for example, cause the coating to peel off.

4.4 Ecolabels

„Eco-labelling“ is a voluntary method of environmental performance certification and identification that is practiced around the world. An eco-label identifies products or services proven environmentally preferable overall, within a specific product or service category. In direct contrast to “green” symbols, or claim statements developed by manufacturers and service providers, the most credible labels are awarded by an impartial third party for specific products or services. These Eco-labels have been independently determined to fulfill transparent environmental leadership criteria, based on entire product life-cycle considerations as well as chemical and climate criteria for the specific article or material.

Eco-labels can include different characteristics of the product. For example, TYPE I eco-labels are the most reliable because they rely on life-cycle considerations. There are other eco-labels that do not evaluate the entire product life cycle, but they can also indicate that the product does not exceed the defined maximum amount of hazardous substances. You can find even more information on eco-labels on the website www.ecolabelindex.com. Below you see a list of TYPE I eco-labels and other trustworthy labels:

Labels for cleaning agents, cosmetics and other products	
	The **EU-Ecolabel** serves as a cross-border environmental label, helping consumers to identify products and services that are less polluting. Here, the entire product life cycle is considered, from the extraction of raw materials to production, use and disposal. The relevant product groups include paints and varnishes, detergents, clothing and footwear, paper products and soil improvers. The underlying criteria are updated continuously.
	The **Blue Angel** was initiated by the German government. It identifies products that are more environmentally friendly than others. The Blue Angel considers both the concerns of environmental and consumer protection. Therefore, it is awarded to products and services that are not only particularly environmentally friendly but also meet the high standards of occupational safety and serviceability. Many product groups (more than 12,000 products and services from around 1,600 companies) can be certified with the Blue Angel, e.g., paints, coatings, furniture, technical equipment, building materials, wood treatment products, detergents, paper products as well as clothing and footwear.
	The „Nordic Swan“ is the official environmental label of the Nordic countries. Similar to the EU Eco-label, the impact of a product on the environment is assessed throughout the products entire lifecycle. So far, products from 61 product groups are covered; amongst others these include cosmetics, detergents, office and hobby products, toys for children, furniture, flooring products, hotel, restaurant products, conference facility products and textile services
	Referred to as „Good Environmental Choice“ in English. This label focuses on fairly widely used products and services that have a major impact on the environment. The Nature Conservancy began with campaigns for unbleached paper, mercury-free batteries, and environmentally-adapted laundry detergent and has expanded to several other products and services. Before a product or service is allowed to display the Good Environmental Choice ecolabel it must meet certain criteria.It is not just consumer goods that affect the environment. Since factors such as travel and electricity consumption also have major environmental consequences, the Swedish Society for Nature Conservation has included services in its eco-labelling program. It has criteria for passenger transport, goods transport and electricity supplies.
	The Ecolabel „Vitality Leaf“ is the only Russian ecolabel recognized at the global level. It is a member of the Global Ecolabels Association (GEN) and operates in accordance with ISO 14024. It is a Type I ecolabel. Such ecolabels are the most reliable because they involve a comprehensive assessment of the entire product life cycle. The „Vitality Leaf“ on the product guarantees that the raw materials, the finished product, its packaging, as well as the entire production process have been independently verified for compliance with eco-standard requirements. Vitality Leaf was created in 2001 under the patronage of the Ecological Union, one of the leading Russian non-profit organizations in the field of environment.
	Ecocert is a certification body for sustainable development. It is an inspection and certification organisation established in France by agronomists aware of the need to develop environmentally friendly agriculture. It strives to offer some form of recognition to those committed to this method of production. From its creation, Ecocert is specialized in the certification of organic agricultural products. Ecocert has contributed to the expansion of organic farming.
	The **Natrue** label is a guarantee for cosmetic products. Their goal is to promote and protect natural beauty and skincare products. Any product with the Natrue label is intended to be as natural as possible, using natural and organic ingredients, soft manufacturing processes and environmentally friendly practices..
	The makers of products marked with the **BDIH „Certified Natural Cosmetics“** label use natural raw materials such as plant oils, fats and waxes, herbal extracts and essential oils and aromatic materials from controlled biological cultivation or controlled biological wild collection. In addition to the careful selection of raw materials, the ecological impact of each product plays an important role in the criteria for this label.

Labels for sustainable wood

The **Forest Stewardship Council® (FSC)** promotes environmentally appropriate, socially beneficial, and economically viable management of the world's forests.
The Programme for the Endorsement of Forest Certification (PEFC) is an international non-profit, non-governmental organization dedicated to promoting Sustainable Forest Management (SFM) through independent third-party certification. It works throughout the entire forest supply chain to promote good practice in the forest and to ensure that timber and non-timber forest products are produced with respect for ecological, social and ethical standards.

Labels for textiles

Naturtextil BEST is a holistic standard. It values environmental and social criteria along the whole textile production chain. The main requirements for this certification are: 100% certified organic fibers, restricted fiber processing methods (bleaching, chlorination, mercerization, etc.), limited range of dyes and auxiliaries, no input of hazardous substances (e.g. formaldehyde, heavy metals and many more), accessories (buttons, pockets, etc.) made with natural raw materials, high-quality parameters, residue tests in the ready garment, ILO conventions plus living wages for employees.

The **Global Organic Textile Standard (GOTS)** was developed to unify the various existing standards and draft standards in the field of eco textile processing and to define world-wide recognized requirements that ensure the organic status of textiles. Processors and manufacturers are able to supply their organic fabrics and garments with one certification accepted in all major selling markets.

Basic Features:

- GOTS requires the use of certified organic fibers.
- GOTS provides both demanding environmental and social criteria
- GOTS criteria apply to all processing stages
- GOTS certification must use independent on-site inspections

MADE IN GREEN by OEKO-TEX® is a traceable product label for all types of textiles and leather articles of all preliminary stages (e.g. clothing, finished and semi-finished leather) including used accessory materials. With the MADE IN GREEN label, proof is provided that an article has been tested for harmful substances. This is done by certification according to STANDARD 100 or LEATHER STANDARD by OEKO-TEX®. It also guarantees that the textile or leather product was manufactured using sustainable processes under environmentally friendly and socially acceptable working conditions. This is ensured by certification according to STeP by OEKO-TEX®. A unique product ID on the label allows you to trace the product back to the country of origin and production plants in which the labelled article was produced.

The **Oeko-Tex Standard 100®** is a globally uniform testing and certification system for raw textile materials, intermediate and end products at all stages of production. The certification covers multiple human-ecological attributes, including harmful substances which are prohibited or regulated by law, chemicals which are known to be harmful to health but are not officially forbidden, and parameters which are included as a precautionary measure to safeguard health. Oeko-Tex Standard 100 is found on millions of products around the world in (almost) all retail segments (based on over 65,000 certificates issued to date).

The **bluesign®** standard brings together the entire textile manufacturing chain to reduce the ecological footprint of a responsibly acting textile industry. Instead of focusing on finished product testing, the bluesign® standard analyzes all input streams –(raw materials and, chemical components)– with a sophisticated "Input Stream Management" process. Before production, components are assessed based on their ecotoxicological impact. Potentially harmful substances can therefore be eliminated before production even begins. A key aspect of the bluesign® standard is never to compromise on product functionality, quality or design. Using "Best Available Technology" (BAT) along the entire textile manufacturing chain ensures that products meet the environmental standards without cutting back on performance requirements.

Other labels

The **Cradle to Cradle** Certified(CM) Products Program gives companies the possibility to prove efforts in eco-intelligent design. Cradle to Cradle Certification is a third-party sustainability label that requires achievement across multiple attributes:

- use materials that are safe for human health and the environment through all use phases
- product and system design for material reutilization, such as recycling or composting
- use of renewable energy
- efficient use of water, and maximum water quality associated with production
- company strategies for social responsibility.

Cradle to Cradle certification is a four-tiered approach consisting of Basic, Silver, Gold, and Platinum levels. This certification program applies to materials, sub-assemblies and finished products.

Fairtrade is an ethical trade system that puts people first. Fairtrade offers farmers and workers in developing countries a better deal, and the opportunity to improve their lives and invest in their future. Fairtrade allows consumers to help reduce poverty and instigate change through everyday shopping.

When a product carries the FAIRTRADE Certification Mark, it means the producers and traders have met Fairtrade Standards. Fairtrade Standards include social, environmental and economic criteria, as well as progress requirements and terms of trade. Standards are designed to support the sustainable development of small-scale producers and agricultural workers in the poorest countries in the world.

Chapter 5: Recipes for cleaning agents

With only a few household remedies, you can produce all the cleaning agents you need, within a few minutes and on a very low budget. They are significantly less harmful to your health and the environment and as an added bonus you reduce your packaging waste.

For example, with an all-purpose baking soda / natron ($NaHCO_3$) or vinegar cleaner, you can fulfill about 80% of your cleaning tasks in the bathroom and kitchen. Check out recipes below and find many more on the internet.

All-purpose natron cleaner (750 mL)

3 Teaspoons	Baking soda / natron ($NaHCO_3$)
3 Teaspoons	grated curd soap
700 mL	Water
2–3 Drops	Essential oil (optional). **Attention:** some essential oils may be allergenic
	Spray bottle
	Pot, heater, egg whisk

How to do it:

1. Heat the grated curd soap and the water slowly in the pot.
2. Stir the mixture with the egg whisk until the soap has dissolved entirely.
3. Let the mixture cool down.
4. Add the natron and the essential oil and shake the mixture. Your cleaner is ready and can be filled into a spray bottle for best use.

Attention: before each use, shake the cleaner a few times. Spray the cleaner onto the dirty surfaces and wipe it off with a sponge or cleaning cloth.

All-purpose vinegar cleaner (750 mL)

500 mL	White wine vinegar
250 mL	Water
2–3 Drops	Essential oil (optional). **Attention:** some essential oils may be allergenic
	Spray bottle

How to do it:

Mix the vinegar, water, and essential oil directly in the spray bottle.
Attention: before each use, shake the cleaner a few times. Spray the cleaner onto the dirty surfaces and wipe it off with a sponge or cleaning cloth.

Window cleaner (500 mL)

250 mL	Water
250 mL	Alcohol (e.g. bioethanol)
2–3 Teaspon	Cider vinegar
	Spray bottle

How to do it:

Put all ingredients in the spray bottle and shake gently. The homemade cleaning agent for streak-free shining windows is ready!

Washing powder (500 g)

100 g	Curd soap
150 g	Washing soda
150 g	Baking soda / Natron ($NaHCO_3$)
100 g	Dishwater salt for hard water (optional)
2–3 Drops	Essential oil (optional). **Attention:** some essential oils may be allergenic

How to do it:

Grate the soap with the smallest slicing holes. Mix all solid ingredients thoroughly, in a bowl or directly in a jar, so that unnecessary swirling of the ingredients is avoided and waste reduced. Use 1-2 tbsp. of the powder for washing!

Dishwashing powder (1125 g)

300 g	Citric acid
300 g	Washing soda
300 g	Baking Soda / Natron ($NaHCO_3$)
125 g	Dishwater salt (optional for hard water)

How to do it:

After weighing your ingredients mix them together by placing them in a mason jar and shaking. Use only 1-2 tsp. of the powder for washing!

Chapter 6: Key recommendations & short checklists

6.1 Key recommendations

Generally, buy and use fewer products and articles. Avoid items that were produced for single use.

Avoid buying and storing stuff you don´t need. This counts for all sorts of things: clothes, body care products, cleaning agents, furniture, etc. If possible, choose multi-use items and simplify. For example, you don't need more than a handful of cleaning agents to clean your entire house. As you have seen in the previous chapter, you can even make your agents with just a handful of household remedies. By thinking twice about what you need before you purchase it, you will probably realize that you need much less than originally thought – and as a bonus you will save quite a bit of money.

Items that are made to be used once, are usually not preferable in terms of sustainablility and energy use. Try not to buy things designed for the trash bin.

Choose products and articles with eco-labels and with (mainly) natural ingredients.

You do not need to become a chemical expert to detoxify your home. Trustworthy eco-labels (e.g. type I eco-labels) exist, which already do the job for you. Check them out and try to buy products and articles carrying those labels. Be aware of marketing tricks: Greenwashing is very common nowadays so products that have terms such as "eco" or "organic" written on them are not automatically eco-certified. They must carry a trustworthy eco-label like those seen in chapter 4.

Ventilate and vacuum your house often. Keep the room temperature below 21 °C.

Hazardous substances accumulate in indoor air and dust. Opening the windows 2-3 times per day and vacuum cleaning once per week removes a large number of hazardous substances. Also keeping the room temperature below 21°C is a healthy habit to develop. Below this temperature, hazardous substances are released much less frequently from articles and products in your house.

Avoid plastic items – especially toys - that smell, are sticky and feel greasy.

Your senses are your best friend. If a piece of plastic smells, it emits substances that are probably not good for you. The same counts for sticky- and greasiness. Keep those items away from your household. Be especially critical when it comes to smelly, sticky and greasy toys. Keep them away from your babies and children. Please do not let your children play on soft plastic playing carpets.

Sort out body care and cleaning products that have passed the expiration date.

Using your favorite body milk a few days after the expiration date, will not cause you harm. However, ingredients do go bad over time and if you respect the expiration date, you will remain on the safe side.

Avoid disinfectants at your home.

Your home is not a hospital, so it is very unlikely that you are endangered by deadly bacteria. In contrast, disinfectants can cause allergies and can support the growth of resistant bacteria. Our zero tolerance on this matter does have some exceptions; products like hand sanitizer may be necessary at times.

Avoid PVC and Styrofoam, especially in your kitchen and in contact with your food.

PVC and Styrofoam are two plastic types that usually contain vast quantities of additives that can be released from the articles and products. The healthiest thing you can do is just to avoid them.

Reduce plastics, aluminum and non-stick items in the kitchen.

During grocery shopping, storage, and the preparation of your meals: you are safest if you use containers, dishes and other kitchen utensils that are made of glass, stainless steel, ceramics, cotton, wood and paper. Simply try to avoid plastic packaging. Vegetables and fruits already come with natural skins and most don't need additional plastic wrapping. Even when you get your food at a take-away restaurant, you support your health and the environment by bringing your own glass or stainless-steel containers along.

Do not use any kind of plastic for hot, greasy and or acidic food.

Heat, fat and acid can increase the release of additives from plastic. Naturally when these additives make contact with your food they may end up in your body. Therefore, if you cannot avoid plastics in contact with your food, then avoid heat, fat and acid to those plastics. Do your health a favor.

Choose ecological food to avoid pesticide residues.

Choose eco-labelled food to reduce the amount of pesticide residues. That counts double for coffee, apples, bananas, citrus fruits, grapes, potatoes, onions and peppers as these products usually use lots of pesticides in the cultivation. Choosing ecological food is good for your health, farmers, animals and the entire ecosystem.

Remove electronic devices you don't use.

Don't leave electronic devices in your bedroom and switch them off if you don't use them. Clean away dust very often around electronic devices because hazardous substances accumulate in dust.

Store your chemicals safely.

Don't store your chemicals (cleaning agents etc.) in the bathroom. It would be better to store them in a separate room (a storage room) or wardrobe and out of reach of children.

Use furniture or home textiles without flame retardants.

Make sure you buy furniture or home textiles without flame retardants. Therefore, ask the manufacturer for more information or choose a manufacturer who produces ecologically (with no hazardous substances, wood from sustainable forestry, natural fibers).

Decorate your home with plants.

Several species can filter pollutants from the air and beautify your home at the same time:

- Spider plant (Chlorophytum comosum) neutralizes formaldehyde
- Jade plant, lucky plant or money tree (Crassula ovata)
- Dragon Tree (Dracaena sp.) neutralizes formaldehyde
- Bromeliad (Bromelia sp.)
- Fern (Polypodiopsida sp.)
- Peace lily (Spathiphyllum sp.) absorbs benzene
- Weeping fig (Ficus sp.) absorbs benzene
- Philodendron (Philodendron sp.)
- Devil's tongue (Sansevieria sp.) absorbs benzene

6.2 Short checklist

After checking every room for hazardous substances, you are now ready to recognize and avoid sources of harmful chemicals. For a quick check now and once again in the future (for example in 6 months), you can use the following table as a little helper:

Wardrobe	First check	Second check
I only own clothes I wear regularly		
I mostly wear clothing made from natural fibers		
The new clothes I buy are usually eco-labeled and/or second-hand		
I mostly do my laundry in an ecological way (Consider: frequency of washing, washing detergens and water usage)		

Kitchen	First check	Second check
I buy most of my food without single-use materials/plastics		
I do not buy any single-use utensils, such as plastic straws		
I use glass, ceramic or steel containers and fabric bags for shopping		
I store my food in glass, ceramic or steel containers		
I freeze and heat my food in containers that were especially designed for that.		
I do not eat or drink warm food or drinks from plastic or bamboo dishes.		
I use cast iron pans instead of non-stick or aluminum pans		
I do not use aluminium foil		
Most of the food I buy is ecological, regional or seasonal food		
I get my take-away food in my own stainless-steel, ceramic or glass containers		

Bathroom	First check	Second check
I only own cosmetics and body care products that I use regularly		
I use mainly eco-certified cosmetics		
I do not use deoderant sprays		
I do not use air freshener		
I only use products without the hazardous substances listed above		

Living room	First check	Second check
I ventilate my living room several times every day		
I remove dust regularly (2-3 times per week)		
I only have electronic devices that I use regularly		
I turn off electronic devices if I do not use them		
If I buy new pieces of furniture, they are made of natural fibers (couch, curtains, etc.) and/or solid wood		

Children's room	First check	Second check
My child only has toys around that they play with regularly		
My child does not have electronic devices in their bedroom		
If I get my child new toys, they are usually eco-labeled		
If I get my child new toys, they are without plastics		
My child is not exposed to toys that smell artificially		

Storage room (cleaning)	First check	Second check
I only own cleaning agents that I need		
I mainly use eco-certified cleaning agents and/or agents without hazardous substances.		
I often make my own cleaning agents based on natural ingrediants		
I store the cleaning agents out of reach for children and pets.		
My child is not exposed to toys that smell artificially.		

Appendix

Useful Links

The „Think Before You Buy“ website contains information on hazardous substances, their harmful effects and ways to avoid them, including information on eco-labels, recipes for safe cleaning, cosmetics and more.

https://thinkbefore.eu/en/

The EU-GPP (Green Public Procurement) criteria were developed to facilitate the inclusion of environmentally friendly requirements in public tender documents.

http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

Information about the EU Ecolabel and it’s certified products, article groups and service providers.

https://eu-ecolabel.de/en/

The European Chemicals Agency is an EU agency which manages the technical and administrative aspects of the implementation of European Union regulations. Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

https://echa.europa.eu/home

Search function for ingredients.

https://ec.europa.eu/growth/tools-databases/cosing/index.cfm?fuseaction=search.simple&locale=en

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App: Codecheck ((not available in all countries))

https://www.codecheck.info/

App: Scan4Chem (not available in all countries) Manufacturers and distributors must inform consumers on request about „substances of very high concern“ in articles. The smartphone app Scan4Chem of the Federal Environment Agency was revised within the framework of the EU-LIFE project AskREACH and is available in a total of 14 European countries.

https://www.askreach.lu/consumer/scan4chem-app

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