



NO WITCHCRAFT IN THE KITCHEN

DETOXIFY THE KITCHEN AND PROTECT FOOD FROM POISONS



EUROPEAN
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NonHAZCITY

ABOUT US

Baltic Environmental Forum Germany was founded in Hamburg in 2003 as a non-profit organisation. We are part of an international network with offices in Riga (Latvia), Tallinn (Estonia) and Vilnius (Lithuania) that has existed since 1995 – which is also where our name comes from.

As a non-profit organisation, we carry out many environmental projects where bridging society, politics and science is one of our main goals. Currently, we focus mainly on chemicals management, consumer protection, climate change and sustainable lifestyles.

Facilitating communication and dialogue is very important for us. We work with individuals, businesses and municipalities to raise awareness about plastics and hazardous substances and to change shopping, consumption and usage behaviour towards greater sustainability. We offer information materials, events, consultations, checks (in households, offices and facilities) and hands-on activities.

Are you interested in becoming a chemical ambassador? Then, please contact us! We are looking forward to meeting you.



WHY IS TAKING CARE ABOUT HAZARDOUS SUBSTANCES IN FOOD CONTACT MATERIALS SO IMPORTANT?

Our daily food can contain substances that harm our health. These substances can come from various materials that our food has been in contact with during harvest, production and packaging, and in our own kitchen.

Chemicals used in agriculture and the food production chain may either be contained in food as residues (e.g., pesticides) or be intentionally added (e.g., preservatives). Although these chemicals are an important source of hazardous substances in food, they are not further discussed here.

This leaflet focuses on those hazardous substances, which are contained in the materials that food comes into contact with before being eaten. The most common food packaging materials are plastics, paper, cardboard, glass and metal. During the contact phase between food and packaging materials, hazardous substances may migrate into the food and eventually – bite by bite – end up inside of us.

In our daily lives we are exposed to many different hazardous substances that have migrated from food packaging into our food – and the total amount may be so high that it could harm our health. Possible health effects can include inflammation, reproductive issues, cancer and developmental disorders especially in children und (unborn) babies¹.

We believe that the existing legislation for food contact materials at the EU² and national³ level, is not sufficient to protect us from harm. However, until governments respond and introduce stricter rules and controls, we must protect ourselves – and we can do that by knowing which food contact materials we should avoid.



WHY IS FOOD PACKAGED?

The material food is in contact with for the longest time is the packaging – during transportation and storage in the stores and in our own kitchens.

Packaging food is a protective measure against contamination and spoilage, which usually leads to longer shelf lives⁴ and reduces food waste. Additionally, packaging can support proper dosing, portioning and food handling, and is used for advertising. However, to ensure that packaging materials can perform these functions they usually contain numerous – sometimes toxic – additives, such as softeners or antioxidants or are surface treated with, for example, inks or protective coatings. Furthermore, contamination may occur from chemicals such as lubricants used during food processing or packaging. Therefore, food protection by packaging materials and the protection of our health and environment are often two sides of the same coin.

WHAT CAN WE, AS PRIVATE CONSUMERS, DO TO PROTECT OURSELVES?

There is a lot we can do! We can reduce hazardous substances in our own kitchens, and we can be especially cautious about the materials used for packaging our food.

This brochure informs you and shows easy options to ban toxic chemicals from your kitchen – for the protection of your health and the environment.



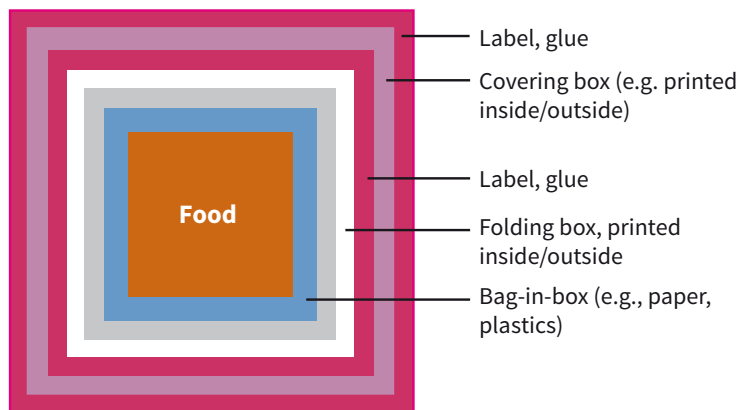
FOOD CONTACT MATERIALS AT ONE GLANCE

WHAT ARE FOOD CONTACT MATERIALS MADE OF?

The most common food contact materials are plastics, ceramics, paper and cardboard, wood, glass and metal. Other frequently used materials are textiles, silicone, rubber and waxes. Paint, ink, glue and coatings are often used to further modify these materials, and they also come into contact with our food.

Food contact material may consist of a single material, such as an untreated wooden plate. However, most materials consist of several layers of different materials and add-on mixtures – for example, boil-in-bag packages for rice or cartons for beverages and milk products.

A large amount of food is packed in multiple layers of different materials, either tightly glued together, or loosely stacked: just think of our morning cereals that are often packed in a plastic bag which is surrounded by an ink-printed cardboard box.



HAZARDOUS SUBSTANCES IN MY FOOD AND IN MY BODY?

WHY CAN FOOD CONTACT MATERIALS CONTAIN HAZARDOUS SUBSTANCES?

Food contact materials must fulfil various requirements: some must be soft and flexible; some must withstand high pressures over long time scales and others must stand up to high temperatures without melting.

There are two ways hazardous substances can end up in food contact materials:

- a) **Accidentally** - they leak in from production machines and processes or are formed from reactions of the substances included in the materials OR
- b) **Intentionally** - substances are added by the manufacturers of food contact materials to give them certain properties.

On the one hand, hazardous substances in food contact materials could stem from the production process, because processing aids such as solvents or lubricants may come in direct contact with the food or leach from machinery. In addition, hazardous substances may be generated during the production process because the various materials and chemicals interact. Chemicals entering food contact materials on this route are called non-intentionally added substances (NIAS)^{5,6}.

On the other hand, to guarantee that they meet the needs they are designed for, food contact materials often contain additives such as fillers, plasticizers, stabilizers. Food contact materials may also be surface treated with additives such as inks or coatings.

You can find descriptions and possible health effects of the most common additives in the chapter **Spotlighting hazardous substances and health effects**.



HAZARDOUS SUBSTANCES CAN MIGRATE FROM THE MATERIALS INTO FOOD

Additives within food contact materials (softeners, stabilizers, etc.) as well as chemicals applied to their surfaces, such as adhesives to merge layers, colors (containing, e.g., mineral oils) or inks are frequently not chemically bound in the molecular structure of the food contact material itself (e.g., the polymers of a plastic packaging). One can imagine the main food contact material, for example, plastics or paper as a three-dimensional grid of molecules, where additives are “woven around the individual grid poles” and the coatings are laid onto the outmost layer of the grid. Both can be detangled from the grid and then move through or escape from it. This process is called “migration”. Additionally, hazardous substances can also migrate from food contact materials by evaporation (e.g., when a frozen meal is heated in a microwave).

The possibility of migration and potential health risks are known for some substances, such as Bisphenol A⁷ as well as many plasticizers⁸. Therefore, the EU has developed risk assessment guidelines which are applicable to all materials and substances and defined threshold values for some hazardous substances. These guidelines refer to migration limits for lead and cadmium in ceramics, limitations on what substances may be used in regenerated cellulose film and migration limits for substances used in plastic materials⁹⁻¹³. As you can see, not all materials and substances are regulated thoroughly. For example, to date, there are no harmonized EU Directives on chemicals for paper, cardboard, coatings, inks and adhesives^{1,14}.

TOXIC CHEMICALS MAY ACCUMULATE AND INTERACT

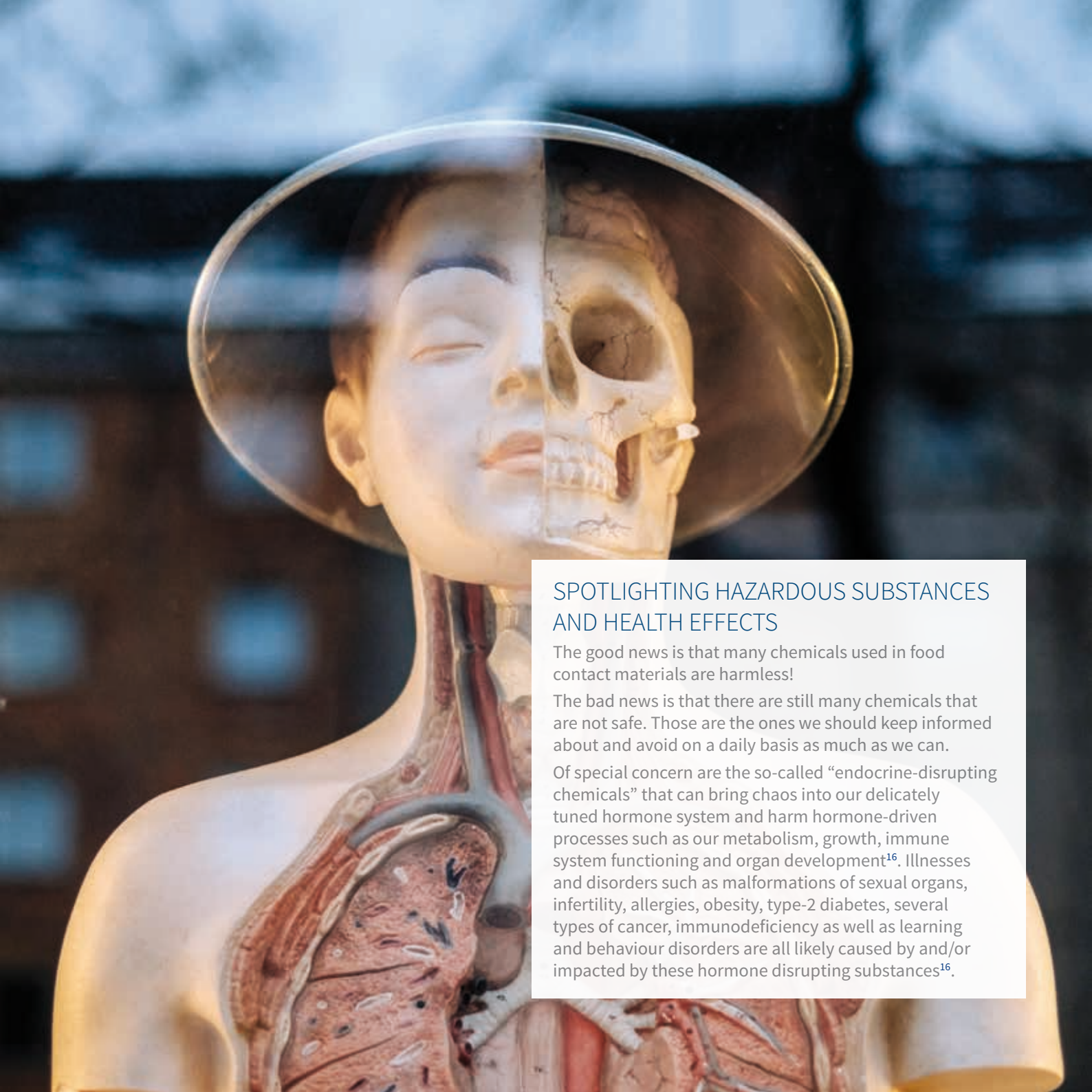
Some toxic chemicals that we take up into the body are neither destroyed nor excreted with urine and feces. Hence, they build up inside our bodies, frequently in the liver or in fatty tissues. This accumulation is particularly worrying, as concentrations of toxic substances may add up to levels at which are known to cause health damage. In addition, toxic chemicals are also found in breast milk, from where they reach very young children, who are even more sensitive to them than adults¹⁵.

If different substances occur at the same place, as may be the case for toxic chemicals accumulating inside the body, they may interact and increase each other's hazardous effects. This effect is commonly known, for example, for the combination of some medicines and alcohol.

Even low amounts of individual hazardous substances that are taken up into the body from food contact materials could cause health damage, even if the material as such complies with all legal requirements (i.e., all known and regulated toxic chemicals in the food packaging material remain below the defined concentration or migration limits).

How much do we know about how these processes and effects function? Unfortunately, health science is just at the beginning of its thorough investigations, and it may still take decades until we have clarity. More than enough reason for us as private consumers to better play safe than sorry!





SPOTLIGHTING HAZARDOUS SUBSTANCES AND HEALTH EFFECTS

The good news is that many chemicals used in food contact materials are harmless!

The bad news is that there are still many chemicals that are not safe. Those are the ones we should keep informed about and avoid on a daily basis as much as we can.

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 functioning and organ development¹⁶. Illnesses and disorders such as malformations of sexual organs, infertility, allergies, obesity, type-2 diabetes, several types of cancer, immunodeficiency as well as learning and behaviour disorders are all likely caused by and/or impacted by these hormone disrupting substances¹⁶.



PHTHALATES (PLASTICIZERS)

Several phthalates are endocrine-disrupting chemicals. They can be found in plastic articles (such as flipflops, shower curtains, toys) and food contact materials. Some types of plasticizers are amongst the most common migrating substances found in food contact materials¹ and they are often contained in PVC-films used for meat packaging and twist-off lid gaskets used for glass containers¹⁷.

Phthalates can harm the liver, the hormone system and the reproductive system⁸. Some phthalates are known to be harmful for the environment because they reduce the reproduction and/or interfere with the hormone systems of wildlife⁸.

WHERE TO DETECT PHTHALATES AND HOW TO AVOID THEM¹⁷?

- In some supermarkets, fresh food counters use PVC foils for the packaging of fresh meat. Better bring your own glass or steel containers.
- Sealing rings of glass containers can contain PVC. PVC-free alternatives exist. You can recognize them by a blue coloration of the sealing ring (e.g. for organic food).



BISPHENOL A (BPA)

BPA is one of the most produced and used chemicals in the world¹⁸. It is used to produce polycarbonates and synthetic resins and is found in, e.g., inner coatings of food cans and as a coating for the thermographic paper used to print sales receipts. BPA is constantly released from these products, especially when they come into contact with heat, acids and fats.

Although BPA has a low potential to bioaccumulate, over 90% of western world citizens have the substance in their blood, urine, and tissues. BPA is suspected of causing irreversible changes in the nervous and hormone systems and is likely causing and/or contributing to developmental and behaviour disorders, brain damage, premature sexual maturity and female infertility¹⁸. 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.

WHERE TO DETECT BPA AND HOW TO AVOID IT¹⁷?

- The interior coatings of food and soda cans made of metal usually contain BPA. Better avoid them, if possible.
- Some household appliances with plastic containers (e.g. kettles) contain BPA. Ask yourself: can you use glass and metal containers instead?
- Avoid reusable plastic dishes.



BISPHENOL S AND F

Due to the documented negative effects of BPA, bisphenol S (BPS) and bisphenol F (BPF) were developed and are currently used in food contact materials: These alternative bisphenols are often advertised as “safe”, but indeed they are not – they also can have endocrine disrupting properties, similar to BPA¹⁹.

HOW TO DETECT BPS AND BPF AND AVOID THEM?

- Generally, avoid the same items as for BPA: canned food and soda and plastic-containing household items. Better use dishes made from ceramic, metal or wood instead of plastic.
- Be especially cautious about articles that are marked as “BPA free”. They often contain BPS or BPF²⁰.



GLUE

Many food contact materials are produced using glue, which can be composed of up to 15 different chemical compounds²¹. Glues can often be found in resealable bags such as cheese and nut packages. These bags can have a more intense migration of hazardous substances than comparable bags without glue. Improper manufacturing processes can cause the production of carcinogens such as primary aromatic amines that are harmful even in small doses.

HOW TO DETECT AND AVOID GLUE?

- Avoid resealable packages and use pressure seal packaging
- Avoid plastic packaging if at all possible



MINERAL OILS

Did you know that each of us can incorporate up to 13 g mineral oil during our lives²²? Several components of mineral oils can migrate into food, either after evaporation or directly through the packaging materials²³. Once mineral oil has entered our body, it can cause inflammations in the liver, lymph system and heart valves²³. Currently, mineral oils are not yet regulated in food contact materials by legally binding threshold values.

Indeed, mineral oils in food contact materials have been detected many times in recent years, often in recycled cardboard and paper^{22,23}. Mineral oils are derived from recent inks and printing materials, but also end up in food due to contact with lubricating and hydraulic oil during harvest, food production and transportation^{22,23}.

HOW TO DETECT AND AVOID MINERAL OILS?

- If you cannot get your food unpackaged, then choosing paper and cardboard over plastic packaging is the most environmentally friendly solution. Do your health a favour and unpack the paper and cardboard packaged food at home and store it in glass and metal.



PER- AND POLYFLUORINATED ALKYL SUBSTANCES (PFAS)

PFAS add water and oil repellent properties to items, such as in non-stick coating of pans and oil repellent food packaging. The substances are also widely used in non-plastic packaging such as cardboard take away pizza boxes and microwave popcorn bags¹. The most common PFAS are perfluorooctane (PFOA) and perfluorooctane sulfonic acid (PFOS). They may cause various health issues, such as increased cholesterol, chronic gut inflammations, thyroid diseases, testicular and kidney cancer and pregnancy-induced hypertension¹. Many PFAS are chemically inert, biologically not degradable and can accumulate in our bodies, the environment, food and animals over long time periods¹.

HOW TO DETECT AND AVOID PFAS?

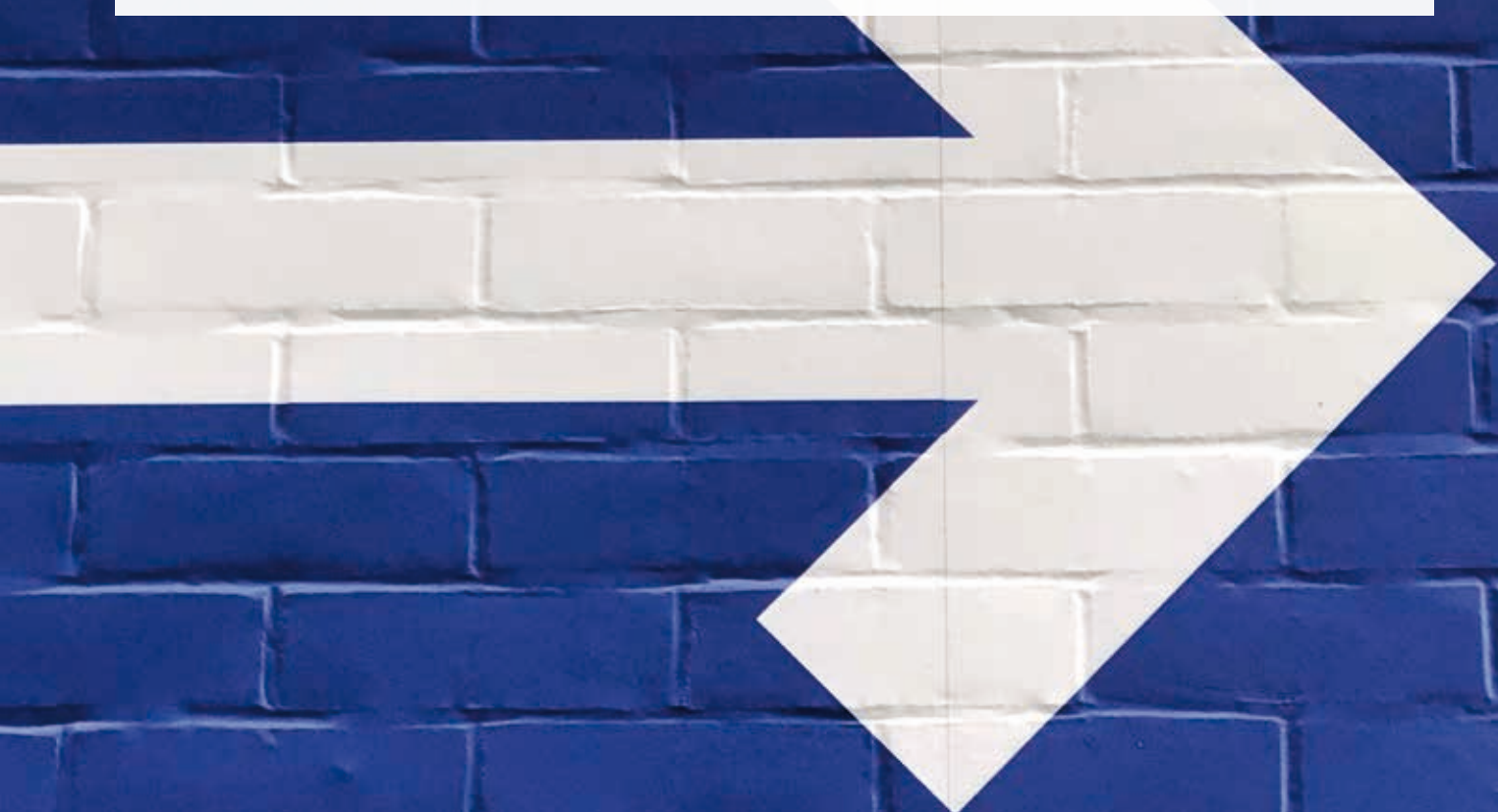
- Choose PFAS-free cookware, for example cast iron pans
- Avoid coated take-away packaging and greaseproof food packaging

TIPS FOR HEALTHY HANDLING OF FOOD CONTACT MATERIALS

You want to avoid exposure to hazardous substances in food contact materials, but you don't know how, yet? Understanding food contact materials is a challenge, especially as it is difficult to know from looking at a material, how it was produced. For example, two plastic yoghurt cups can look the same, but can have different toxicities, depending on how they were manufactured²⁴.

How to find the healthy way through the jungle of food contact materials?

Here are easy, step by step tips for how to reduce hazardous substances in your kitchen and your life:





PLASTICS

Plastic usually contains a cocktail of additives including softeners, stabilizers, dyes and antioxidants and can release persistent, bio-accumulative, toxic and endocrine disrupting chemicals. Besides the issue of hazardous substances, plastics are also a garbage problem. More than 1/3 of marine plastic pollution consists of food packaging²⁵. Aren't those enough reasons to cut down our plastic consumption and avoid the use of (potentially) toxic items in our everyday lives?

HOW TO?

- Pay attention to recycling codes and pictograms (see table in the appendix).
- Substitute plastics with glass, metal and textiles, for example, organic cotton bags instead of plastic bags, beeswax wraps as alternatives to cling films and pan spatulas made of wood.
- Avoid disposable plastic if at all possible, but if you must use it, only use it once.
- Use plastic items only for the purpose they were designed for. Do not heat plastics that were intended for freezing and the other way around. Do not fill ice packs with hot food.
- Avoid using plastics for hot, greasy and sour food – those types of food can enhance the migration of hazardous substances from food packaging material.



CARDBOARD AND PAPER

Cardboard and paper frequently contain mineral oils from printing inks and other sources. Notably, packaging consisting of a large share of recycled paper and cardboard may be very contaminated. The darker the cardboard is, the larger is the percentage of recycled materials. On the other hand boiling/cooking food causes mineral oils to evaporate and thereby leave the food²³.

HOW TO?

- Transfer food packed in cardboard to ceramic, glass or stainless-steel containers.
- Freezing diminishes migration. Frozen goods that are packed in cardboard and paper are safe if they are in the freezer, but thawing should take place without the packaging.
- If you need to use cardboard in contact with your food, then prefer light-colored cardboard and paper as they are usually made from fresh fiber and contain less mineral oil²³.



GLASS AND SCREW CAPS

For protecting your health and the environment, glass jars closed with screw caps are one of the best alternatives to plastics. The downside is that glass is energy intensive during production, heavy to transport and breaks easily.

HOW TO?

- Make sure screw caps have a Blueseal layer (blue inner layer), as those are PVC-free. Most eco-labelled food is stored in glass jars with those type of lids, and of course, they can be re-used many times.
- Protect glass bottles from breaking with padded covers.



ALUMINUM

Bringing food into contact with aluminum may be unhealthy if the aluminum migrates into the food which is then consumed. Aluminum may damage the nervous system, decrease fertility and bone development²⁶. Aluminum can especially be released and migrate into acidic and fatty foods²⁶.

HOW TO?

- Aluminum coffee pots: during coffee brewing, an oxide layer is built up that prevents the release of aluminum into the coffee. Hence, don't scrub the pot or wash it in the dishwasher to leave the oxide layer on²⁷ or substitute against cast iron and stainless steel alternatives.
- Substitute aluminum foil against healthy alternatives, such as beeswax wraps or stainless-steel boxes and containers.



ANTI-STICK COATINGS

Anti-stick coatings are applied to many types of food packaging. They are also found on kitchen utensils such as frying pans or baking dishes. Many non-stick pans and pots are coated by polytetrafluorethylene (PTFE, also known as Teflon) and they should not be heated up too much because they can release toxic fumes (PFAS; when temperatures rise above 360 °C). This could happen if you heat up a PTFE-coated frying pan without any food in it. The vapor can cause flu-like symptoms, when it is inhaled in high concentrations: the so-called polymer or Teflon fever²⁸.

HOW TO?

- Avoid buying (and using) anti-stick coatings on food packaging or kitchen utensils
- Cast iron, stainless-steel and ceramic pans and pots are excellent choices! Before the first use of cast iron pans, a non-stick layer must be burned in (e.g. with oil, guidance can be found online).



BAMBOO

Bamboo plates, cutlery and other tableware are not only made of bamboo, but also from fillers such as melamine resin and corn starch²⁹, and glues which give items their desired shapes. Melamine glue can release carcinogenic formaldehyde which can migrate into food. Melamine can damage the bladder and kidneys, as well as cause allergies (respiratory system, skin)²⁹. The hazardous substances are more rapidly released when bamboo items are heated above 70° C²⁹.

HOW TO?

- Avoid food contact with bamboo tableware that has been formed using glues and resins. Use ceramic, glass and stainless-steel items as healthy alternatives.



SILICONE

Silicone is not hazardous, when items are manufactured in a responsible manner. During manufacturing, silicone must be tempered (heated up to 200°C for 4 hours) in the last production step, so that toxic chemicals can be released. Unfortunately, some manufactures skip this procedure to save money and time³⁰.

HOW TO?

- Heat silicone before its first use (200 °C, 4 hours) and ventilate your kitchen thoroughly.
- Generally, prefer bakeware made of ceramics, clay and glass.



SAFER KITCHEN STEP BY STEP

Detoxifying your kitchen is not as difficult as it appears. Knowing the basics about the most common materials (as described above) is the first step. Becoming conscious about your kitchen inventory, your shopping, cooking and eating habits are the next steps to take.

How? – Try out our tips below:

KITCHEN

- Make an inventory of the materials your kitchen items and the materials they are made from. Compare health risks with our list above.
- Ban Styrofoam and PVC from your household.
- Use plastic items only for the purpose for which they were designed (Pictograms). If you must replace plastic items due to breakage, look for plastic-free alternatives. For example, replace plastic cutting boards with alternatives made from wood or cork.
- For consumables such as plastic wrap and aluminum foil, look for healthy alternatives once the items are used up.
- Store groceries, foods and drinks preferably in glass, stainless-steel and wood containers.

GROCERY SHOPPING

- Prepare yourself before grocery shopping: bring your own bags for fruits and vegetables.
- -If you buy packaged food, try to choose bigger packages rather than smaller ones: the ratio between food and packaging material is to the favor of your health and the environment.
- As part of the Zero Waste Movement, an increasing number of shops are selling unpackaged food. The principle is simple: you bring your own jars and containers and fill your groceries from dispensers. Try it out!



EATING OUT

- Eating out in restaurants, bars and cafés can be a great exercise in saying NO. Say no to plastic straws, single-packed cookies, coffee to go cups and single-use plastic plates and cutlery. For leftovers, you can always bring your own box along.
- Note that many restaurants use pre-cooked single portion side-dishes which they obtain packaged in single use plastics. Choose your restaurants with a view to whether they use fresh vegetables!

TAKE-AWAY

- Bring your own box when you pick up your take-away food. This may feel funny at first, but most vendors will react very positively. Promised! Maybe the situation will even initiate an interesting conversation with the person behind you in the line?

TRAVELLING

- Does the following situation sound familiar to you? While you are getting used to avoiding hazardous substances and reducing waste during your daily lives, you suddenly struggle when travelling. Do yourself a favor: bring along your snacks for travelling (in stainless steel boxes/dishes) and your own water bottle, bring your own bags for shopping.

GREAT CHOICES FOR THE HEALTH AND THE ENVIRONMENT:

COTTON BAGS

(ECO CERTIFIED)

- Cotton bags are reusable over many decades and easy to wash/clean – cotton bags are extraordinarily convenient and healthy helpers during shopping, transportation and storage of foods of all kinds. Just make sure they were produced under environmentally friendly conditions.

STAINLESS-STEEL

- Stainless steel boxes and containers are useful and healthy for shopping and storage of meat and milk products, but also for flour, nuts and whatever else ingredients you like in your kitchen - and to bring your lunch to work. Also look for stainless-steel options when you decide to get new sieves, scoops, graters or other household items.

BEEWAX WRAPS AND BAGS

- For keeping food fresh in the fridge or your lunch sandwich in shape, use beeswax wraps instead of plastic or aluminium foil – you will avoid garbage and protect your food from hazardous substances.

PAPER AND CARDBOARD

(LIGHT COLOURED WITHOUT PRINTS AND INKS)

- Using paper and cardboard is usually more environmentally friendly than using plastics. However, make sure you avoid inks and contact with your food!

WOOD

(UNTREATED OR TREATED WITH ECO-CERTIFIED OIL/WAX)

- Wooden and cork boards to cut your vegetables on are healthier and more sustainable choices than the alternatives made from plastics. Make sure the wood is eco-certified, untreated or oiled/waxed with ecological choices.

GLASS

- Glass jars can be used just like stainless-steel items and have one more advantage: they are usually free, as they contained preserved food that you bought earlier. Collect a selection of glass jars of different sizes and you will never have a shortage of storage options again.

CERAMIC CROCKERY, COOKWARE AND CONTAINERS

- No leaching of hazardous substances, reusable and easy to clean!

CAST IRON COOKWAR

- These are healthy and sustainable alternatives to Teflon-coated items.

GLOSSARY

RECYCLING CODES:




PLASTIC IS NOT JUST PLASTIC

Plastic food containers and packages should be marked with an arrow 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.





PVC and polystyrene contain a high number of hazardous and potentially 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.



PLASTIC PACKAGING RESIN IDENTIFICATION CODES

Code	Name/Typical products	Potential health effects	Recycling and incineration
	Polyethylene terephthalate Drinking bottles, food and health care packaging, polyester in numerous textiles.	PET bottles can – especially when heated - leach small amounts of the toxic metalloid antimony (below the legal thresholds). Single-used PET bottles can contain acetaldehyde, a substance that can alter the taste of water and which is suspected to be carcinogenic by the EU.	Recyclable.
	High-density polyethylene Coating for milk, water and juice containers, and for food and cosmetic packaging.	Avoid exposure to direct sunlight, as that may cause the leakage of the endocrine disrupting substance nonylphenol.	Recyclable.
	Polyvinyl chloride Hard PVC: Drains, window profiles, oil/vinegar bottles Soft PVC: Floor coverings, hoses, synthetic leather, vinyl carpets, swimming rings.	Avoid: extremely unsafe! PVC can leach a variety of toxic chemicals throughout the life cycle (bisphenol A, lead, mercury, cadmium and phthalates) and can cause serious health and environmental problems. The starting material vinyl chloride is a known carcinogen.	Recycling is very difficult, and its incineration and disposal may produce numerous toxins (carcinogenic, persistent organic pollutants).

PLASTIC PACKAGING RESIN IDENTIFICATION CODES







Code	Name/Typical products	Potential health effects	Recycling and incineration
	Low-density polyethylene Handkerchief packaging, cling film, inside coatings of milk packages.	Avoid exposure to direct sunlight, as that may cause the leakage of the endocrine disrupting substance nonylphenol.	Recyclable.
	Polypropylene Food containers, straws, baby bottles, microwave dishes.	Relatively stable and heat resistant. Over longer time periods, stabilizers (e.g. oleamide) can leach out.	Recyclable.
	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 toxic vinyl chloride and 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.
	Others Water coolers, drinking bottles, microwave dishes, kitchen appliances, eyeglass lenses, thermal paper.	Avoid! Layered or mixed plastics with unknown compounds. Better avoid, especially when polycarbonate (PC) is included as it can release Bisphenol A.	Not recyclable.
	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.
	Polylactic acid (PLA)	Type of polyester produced from renewable resources (e.g., corn starch), often as blends with petroleum-based polymers and numerous additives.	Biodegradable in industrial composters (NOT in private composters!)










PICTOGRAMS

PROPER HANDLING OF COOKWARE AND KITCHEN UTENSILS

For safe and correct handling of kitchen utensils, the law requires that the utensils hold information, for example as pictograms. The used pictograms must be „good visible, clearly legible and indelible“³¹. The material information is usually placed on the outer package.

Below, you 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 term “dishwasher safe” is not defined as well as the graphical representation of the symbol. It is chosen by the manufacturer based on their own experience and judgment.
	This Symbol stands for “dishwasher safety”. It is found only on items that have been tested according to DIN standards. The number above the water jets reflects the maximum number off rinsing cycles that have 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, that is to which minimum temperatures the article can be used.
	These symbols show how heat resistant a product is, up to which maximum temperatures you can use your kitchen utensils. Sometimes, the symbols also indicate how long an object may be in contact with the hot pan.

Pictogram	Description
	<p>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.</p>
	<p>Items with such symbols are safe to be used in the microwave. However, the maximum temperature and heating time period remains unclear.</p>
	<p>These symbols indicate that the item is suitable for cooking food in the oven.</p>
	<p>Objects with this symbol must not be heated unfilled in the oven.</p>
	<p>Items with this symbol may not be placed directly in the oven, but only on a wire rack.</p>
	<p>This crossed-out oven symbol indicates that the item must not be placed on the hotplate.</p>
	<p>These symbols indicate whether a kitchen utensil is suitable for acidic foods.</p>
	<p>This symbol is intended to convey that the object should be rinsed with a cleaning agent before the first use.</p>
	<p>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.</p>

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