Inside Food Contact Materials

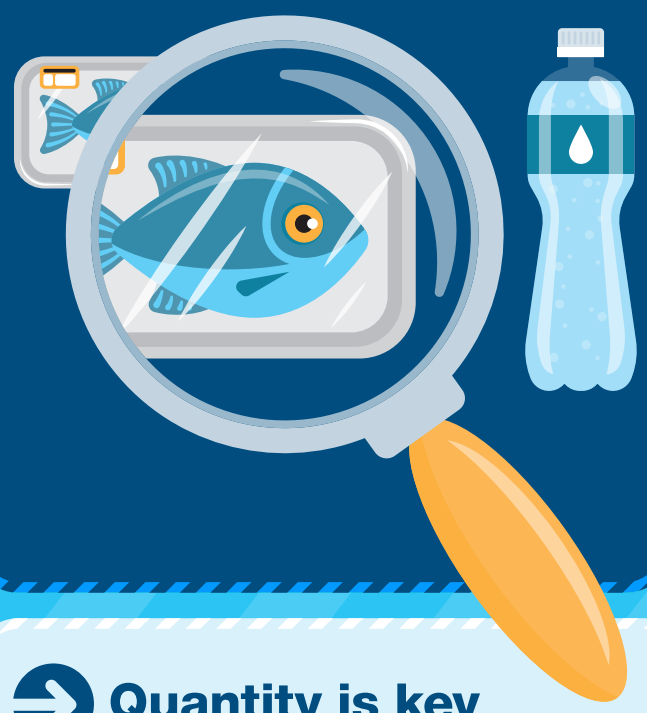
PlasticsEurope
Association of Plastics Manufacturers
FCA Food Contact Additives

WHAT YOU NEED TO KNOW

Plastic Food Contact Materials play a crucial role in preserving food from contaminants and **preventing food waste**. Yet, some worry about the chemicals that are required in the production of these important materials.

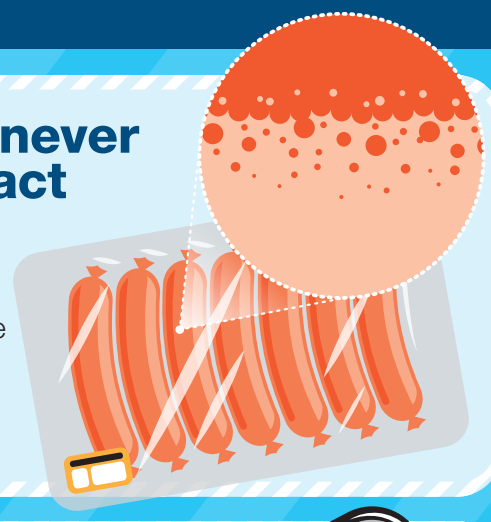
What are Food Contact Materials?

"Food Contact Materials", or FCMs for short, refers to all *materials* that come into contact with food.



Natural migration occurs whenever two materials come into contact with each other

Migration is a natural and unavoidable phenomenon that occurs **in all materials.** Whenever two materials come into contact with each other, substances can migrate from one material into another. This also happens with food packaging and food.



Risk assessments make sure that Food Contact Materials are safe

A risk assessment is based on different elements to assess potential health risks associated with exposure to substance migration into the food.

HAZARD IDENTIFICATION:
Identifies potential health effects in humans and/or environment, caused by chemicals.

EXPOSURE ASSESSMENT:
Evaluates the potential chemical exposures to humans and the environment from the production, distribution, use, disposal and recycle of a chemical substance.

RISK CHARACTERIZATION:
Integrates those identification and assessment results to determine the probability of occurrence of health and/or environmental effects in a given population.

THE RESULT ENSURES SAFE USE OF PRODUCTS

EFSA
The European Food Safety Authority performs a risk assessment of the substance to ensure a high level of human health protection. The safety limit is based on the toxicological profile of each substance.

Quantity is key

Even natural substances can interact with the body but would only cause adverse effects from a certain dose. It is the **quantity** which **sets the risk**.

Water:

Water is vital for leading a healthy lifestyle. We need water to remain hydrated and energised.

Adequate Daily Intake: around 2.5 litres[1]

Water intoxication can occur when a person drinks so much that the water dilutes the concentration of sodium in the blood, creating an electrolyte imbalance. Water intoxication, known as hyponatremia, is mostly a risk for endurance athletes.

Coffee:

Coffee has antioxidants and nutrients that contribute to good health. Coffee increases your focus and can improve energy levels.

ADI: 400 milligrams[2]

Too much caffeine can cause insomnia, restlessness, nausea, irregular heartbeat, muscle tremors, anxiety and headaches.

Soy sauce:

Soy sauce has some great health benefits: it is low in calories and very high in natural antioxidants.

ADI: 2 tablespoons (32 grams)[3]

If consumed in too large a portion, it increases blood sodium levels, potentially leading to neurological problems.

Why is packaging so important?

Food waste is a huge problem, in Europe and beyond...

16%[4] — the amount of food that the average EU consumer wastes

According to the WHO, in the less developed world up to **50%** of all food is wasted between harvest and home[4].

... and food poisoning is a massive problem as well...

351.000[5] people have globally **died** per year as a result of food poisoning.

In the UK, more than **1 million people** per year have been poisoned by deteriorated food, leading to **500 deaths**[6].

... But adequate food packaging could change this!
Packaging plays an important role in ensuring the freshness of food, extends its shelf life and helps to improve the quality of products for consumers.

In a **sustainable society**, using modern packaging and storage systems, wastage is reduced dramatically to around **3%**[4]

[1] EFSA (2009), "Dietary reference values for water": https://www.efsa.europa.eu/en/efsajournal/pub/1459
[2] EFSA, "Caffeine":http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/efsaexplainscaffeine150527.pdf
[3] Calculated based on EFSA (2005), "EFSA provides advice on adverse effects of sodium": https://www.efsa.europa.eu/en/press/news/050622. 1 tbsp. (16g) of soy sauce contains 0.9g of sodium.
[4] European Commission (2015), 'Average EU consumer wastes 16% of food; most of which could be avoided': https://ec.europa.eu/jrc/en/news/average-eu-consumer-wastes-16-food-most-which-could-be-avoided?r=dnl
[5] Time (2015), "351,000 People Die of Food Poisoning Globally Every Year": http://time.com/3768003/351000-people-die-of-food-poisoning-globally-every-year/
[6] UK government (2011), FOODBORNE DISEASE STRATEGY: https://www.food.gov.uk/sites/default/files/multimedia/pdfs/fds2015.pdf

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HOW CAN WE BE SURE THAT THEY ARE SAFE?

A SCIENCE-BASED ANALYSIS IS PERFORMED TO ENSURE THE SAFE USE OF AN ADDED SUBSTANCE

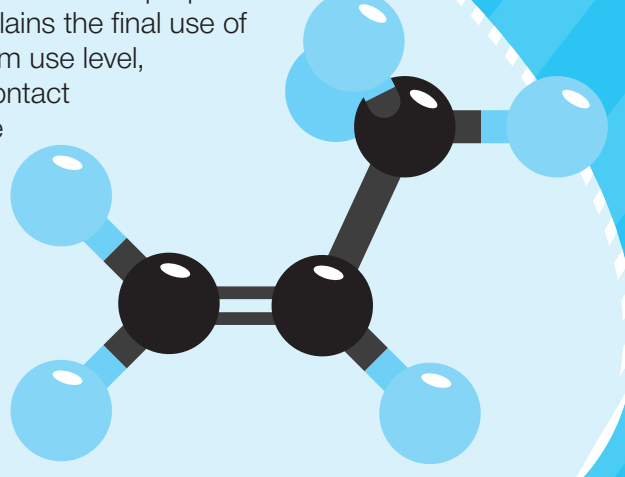
EFSA

Technical dossier

The technical dossier is part of a scientific and regulatory process which determines the safe use of an added substance

1 Identity and physico-chemical properties of the substances

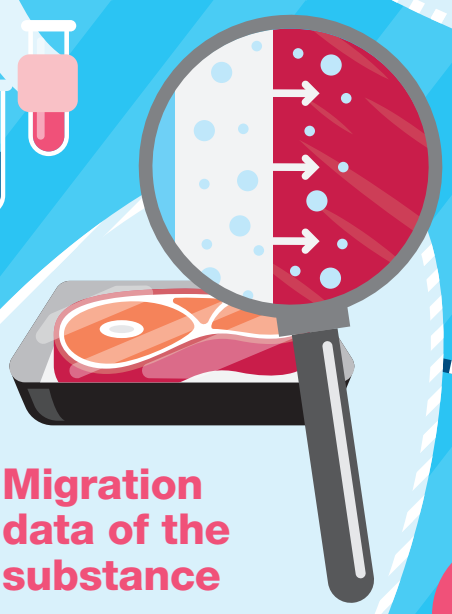
The goal is to understand the substance and how it migrates. The applicant provides information on the basic properties (e.g. solubility and stability) and explains the final use of the substance, including: maximum use level, function, in which plastic(s), in contact with which foods, what are the contact conditions (time, temperature…), etc.



2 Data on the residual content of the substance in the Food Contact Material

The objective is to understand how much of the substance is present and what type of specific migration can be expected.

Residual content is the actual content in the final material placed on the market.

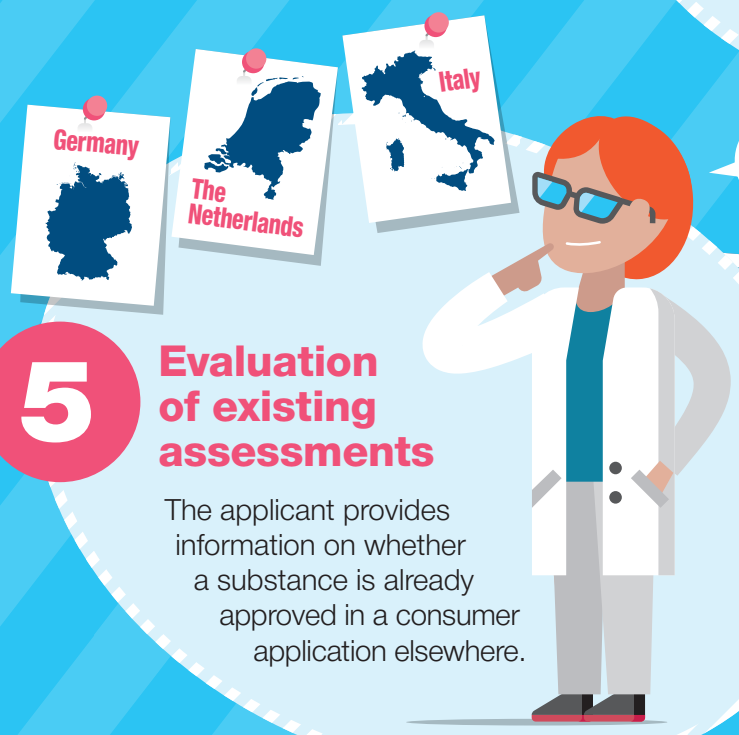


3 Migration data of the substance

The purpose is to comprehend how much of a substance is migrating into food. This is done by testing different types of food and real storage conditions (time/temperature).

4 Toxicological data and microbiological properties of the substance

The applicant needs to demonstrate that, in case of microbiological properties of a substance, these have no effect on the food. To demonstrate that levels of migration into food are safe for human consumption, the applicant provides the adequate toxicological reports.



5 Evaluation of existing assessments

The applicant provides information on whether a substance is already approved in a consumer application elsewhere.

Conclusions

EFSA reports its conclusions to the European Commission. If approved, the substance can be used in FCMs. The substance is safe and suitable to be used in food contact according to the descriptions included in the technical dossier.

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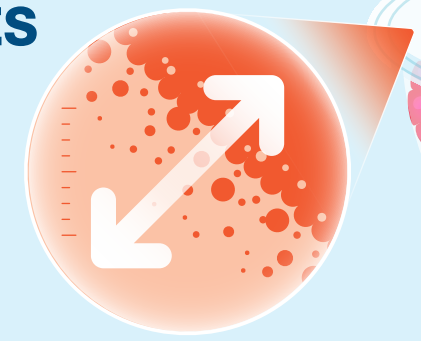
HOW CAN WE MAKE SURE THAT MIGRATION IS SAFE?

MIGRATION OF SUBSTANCES INTO FOOD OCCURS WITH ALL PACKAGING

Migration happens whenever packaging — of any type — comes into contact with food. It is a natural physical process. The key point is that the level of migration is safe.



PLASTICS ARE RIGOROUSLY TESTED TO MAKE SURE THAT MIGRATION - IF ANY - IS SAFE

Testing conditions are specified legally, and need to be used by all actors performing tests in the value chain (from raw materials, packaging producers and to food packers). Tests are done at several stages in the value chain to ensure that the plastic sample is suitable in its end-use.

Variables can include:

- Temperature
- Time
- Contact surface
- Food type

Take a sample of the plastic

Test in contact with a food simulant

Food simulants - as prescribed by law, (e.g. olive oil) - mimic the properties of different food types under typical / worst case conditions.

Monitor migration under standardised conditions

Analyse the results to verify that safety limits are met

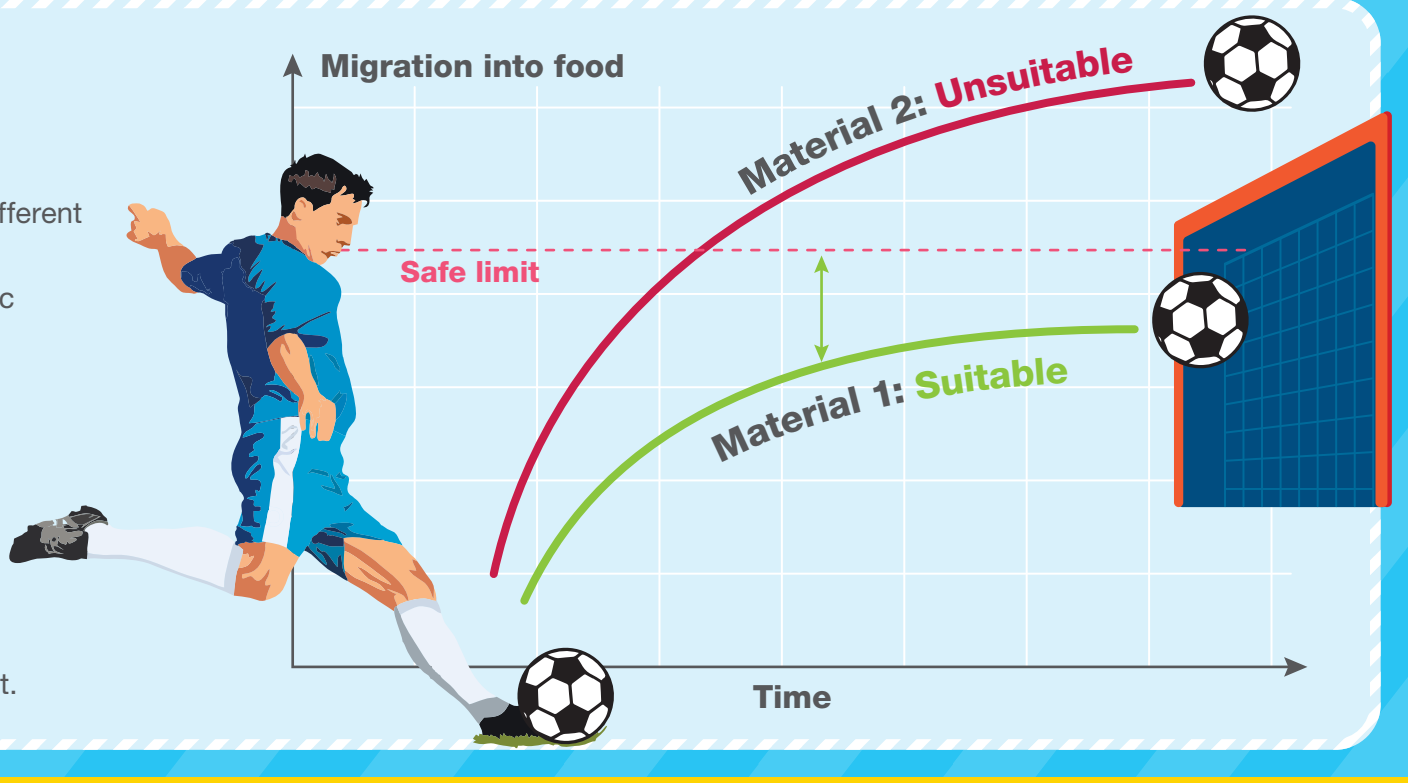
WHAT DO THE TESTS SHOW?

The tests show how migration occurs in different food types under various conditions.

The tests enable us to determine if a plastic packaging can be used for a given food and its conditions of use.

The tests are designed to exaggerate the real use scenario and therefore to make sure that there is a safety margin. It assumes that all consumed food is in contact with the same packaging material.

These testing conditions ensure that migration — if any — is below the safe limit.



WITH ALL THESE DATA, WE CAN ENSURE THE SAFE USE OF THE PACKAGING

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HOW CAN WE MAKE SURE THAT MIGRATION IS SAFE?

At all stages of the value chain, materials are produced in a controlled, safe and consistent way.

NINE GOLDEN RULES OF ENSURING PACKAGING SAFETY THROUGHOUT THE SUPPLY CHAIN:

Assign management responsibilities for ensuring product safety, and train all operational personnel.

Implement quality assurance systems and policies to ensure compliance with applicable regulations.

Have procedures in place at production level to prevent any product contamination.

Adhere to an appropriate hygiene policy.

Document all relevant information (e.g. product formulation, operating procedures), ensure correct material labelling, and implement traceability procedures.

Conduct internal risk assessment including monitoring of raw materials and finished products. Verify compliance with documented specifications.

Have a system for complaint handling, product recall and incident management in place.

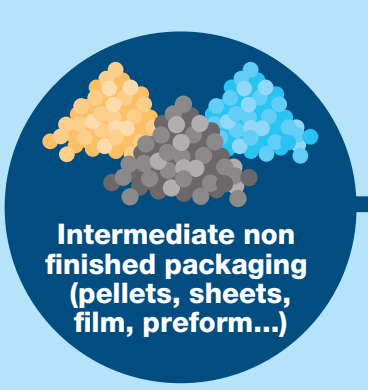
Regularly carry out internal and supplier audits.

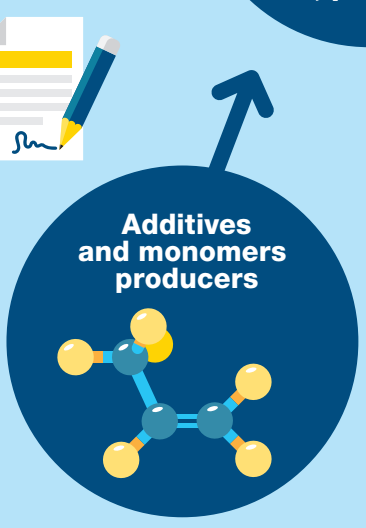
Ensure that procedural changes are managed and implemented properly.

WHO ENSURES THE SAFETY OF FOOD CONTACT MATERIALS?

All of the different parties involved are required to issue a declaration of compliance that states product safety.

PROCESS FOLLOWS: EFSA'S RISK ASSESSMENT PRINCIPLES





ALL THIS ENSURES SAFE FOOD CONTACT MATERIALS