

## Communication 034/2024

12 July 2024

### **Healthier barbecuing: How to avoid food infections and the formation of substances that are harmful to health**

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Whether purely vegetarian with vegetable skewers and cheese or classic with meat and sausage - barbecuing is a welcome change from cooking in the kitchen, especially in summer, and also gives everyday food a special flavour. If you pay attention to a few things, you can easily avoid health problems due to undesirable effects of barbecuing.

For example, infections caused by bacterial pathogens such as *Salmonella* or *Campylobacter* can be avoided by maintaining good hygiene, especially when handling raw animal-source foods. The use of suitable grill trays or slow roasting of the food can reduce the formation of harmful substances.

Below, the German Federal Institute for Risk Assessment (BfR) has compiled some tips for a healthier barbecue.

#### **Avoid charring**

If meat and sausages products are grilled at high temperature for too long, substances that are harmful to health can be formed, such as heterocyclic aromatic amines (HAA). To prevent this, the food should be cooked slowly over a low heat (not directly over the glowing charcoals). This ensures that it is cooked on the inside without charring on the outside.

#### **Using barbecue trays**

Steaks, sausages and fish fillets usually lose a lot of fat when cooked on the barbecue. If this drips onto the hot charcoal or the heating coil of the electric grill, carcinogenic substances known as polycyclic aromatic hydrocarbons (PAHs) can form. To prevent this, the food should be prepared on a grill tray.

## Prefer aluminium-free trays

Aluminium barbecue trays are commercially available and aluminium foil is also occasionally used for barbecuing. They are well suited to reducing the formation of PAHs when grilling. However, aluminium ions can dissolve from these products and pass into the food. This happens primarily under the influence of acid and salt, for example when marinated meat comes into contact with the aluminium products. When the meat is eaten, the metal enters the human body. As consumers with their normal diet already ingest high quantities of Aluminium, which is widespread in nature, the BfR believes that such additional intakes should be minimised. This is because frequent and regular intake can cause aluminium to accumulate in the body and, in high quantities, have a detrimental effect on the nervous system, bone development or fertility.

For this reason, if the food is prepared on an aluminium grill tray, it should only be salted and seasoned after grilling. This reduces the transfer of aluminium into the food. If you want to further minimise the transfer of aluminium, use trays made from other materials, such as stainless steel or ceramic.

For the same reason, the BfR recommends not using aluminium foil for wrapping and storing acidic or salty foods such as marinated meat, cheese or sliced fruit. If you do not want to cook food, such as fish, in aluminium foil, you should place a layer of baking paper between the aluminium foil and the food to avoid direct contact between the food and the aluminium foil.

## Thwarting food germs

Pathogenic bacteria in food can cause nausea, diarrhoea or vomiting as well as serious infections. The hazard of foodborne infections is particularly high in summer because bacteria in food can multiply quickly in warm temperatures.

*Salmonella*, for example, can multiply rapidly at temperatures above 7 °C. This is why it is particularly important to ensure compliance with the cold chain for food that is eaten raw. Salads, barbecue sauces and desserts should therefore only be taken out of the fridge shortly before consumption. In the warmer months of the year at least, it is also advisable to avoid using raw eggs for homemade fresh mayonnaise or desserts such as tiramisu.

Bacteria on meat or fish, for example, are usually killed by the high temperatures during grilling. However, pathogens like *Campylobacter* can be transferred from the meat, chicken or fish to the marinade, hands, cutlery or surfaces even before the actual grilling, for example during preparation. This means they can also contaminate other foods. If this contaminated food is not reheated before consumption, it can pose a hazard to health.

For this reason, raw animal foods should be stored and processed separately from other foods. Good hygiene (e.g. washing hands and cleaning utensils and surfaces between individual preparation stages) helps to prevent the transfer of bacteria to food that is to be eaten raw, such as salads or other side dishes. When barbecuing, two sets of barbecue cutlery should also be used if possible: one for handling the raw, marinated meat or fish on the barbecue and a second for serving the cooked food.

**Further information on the BfR website on barbecuing and aluminium in food**

Selected questions and answers about barbecuing:

[https://www.bfr.bund.de/en/selected\\_questions\\_and\\_answers\\_about\\_barbecuing-60851.html](https://www.bfr.bund.de/en/selected_questions_and_answers_about_barbecuing-60851.html)

Questions and answers about aluminium in food and products intended for consumers

<https://www.bfr.bund.de/cm/349/faqs-about-aluminium-in-food-and-products-intended-for-consumers.pdf>

## About the BfR

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*This text version is a translation of the original German text which is the only legally binding version.*

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Responsible according to the German Press Law: Dr Suzan Fiack



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