

Az UV LED-eknek nincs szükségük bemelegedési fázisra, mivel azonnal elérik maximális teljesítményüket, nagy mechanikai stabilitással rendelkeznek, és alacsony feszültséggel működtethetők. A technológia már elérhető a piacon.

A gyakorlati teszteket követően a kutatók közvetlenül a vízben tudják működtetni az UV LED-eket anélkül, hogy egy csőbe kéne zájni őket. Ez kiküszöböli a visszaverődést, ami növeli a sugárforrások hatékonyságát.

A Fraunhofer IOSB-AST szakértői kifejlesztettek egy olyan modult, amely képes a söröskupakok belséjének fertőtlenítésére a gyártási folyamat során, mielőtt a palackokat megtöltenék sörrel a Purion GmbH számára. Ez biztosítja, hogy a gyártási folyamat során ne kerüljenek baktériumok a palackokba.

EFSA News

Pesticide residues in food in the EU

The latest edition of the annual EU report on pesticide residues in food is now available. Just under 96% of food samples were found below the detection limit, or to contain traces that fall within legally permitted levels. EFSA analysed the results of around 88,000 samples collected from the 28 EU Member States plus Iceland and Norway. (*Figure 1.*)

Sugars opinion rescheduled to assess wealth of data

EFSA has updated the timeline for its scientific advice on dietary sugars due to the high volume of datasets and studies to be collected, analysed and assessed. EFSA has agreed a deadline extension with the five European countries that requested this scientific advice and aims to have a draft ready for public consultation in late 2020, with a view to finalising the work in 2021.

EFSA was asked to provide scientific advice on added sugars in 2017 and developed a scientific protocol – a detailed plan for the conduct of the assessment. Following a public consultation on the protocol in 2018, the breadth of studies to include in the assessment was expanded. Significant progress has been made, but numerous additional studies require assessing and some data owners are being contacted to request additional information.

EFSA's nutrition experts will attempt to set a tolerable upper intake level for the total, added and free sugars if the available data allow it. Otherwise, other values could be used to characterise the risk.

This will help national authorities to establish recommendations on the consumption of dietary sugars and to plan food-based dietary guidelines.

EFSA issues new advice on phosphates

Estimated total intake of phosphates from food may exceed the safe level set by EFSA after re-evaluating their safety. EFSA's scientists also recommend the introduction of maximum permitted levels to reduce the content of phosphates when used as additives in food supplements as those who take them regularly may be at risk.

Phosphates are essential nutrients (a form of phosphorus), which are present naturally in the human body and are an essential part of our diet. A group of substances commonly referred to as "phosphates" are authorised as food additives in the European Union. They are added to a wide range of foods for "technological" functions (e.g. as emulsifiers, antioxidants). Some of them can be used in foods for infants and young children.

Dr Ursula Gundert-Remy, Chair of the working group on phosphates, said: "The panel has reassessed the safety of phosphates and derived, for the first time, a group acceptable daily intake [ADI] of 40 milligrams per kilogram of body weight [mg/kg bw] per day. "Because phosphates are also nutrients and essential to our diets, in our approach we defined an ADI which considers the likely phosphorus intake from various sources, including natural sources and food additives."

The ADI corresponds to an intake of 2.8 grams of phosphorus per day for an average adult weighing 70kg.

Dr Maged Younes, Chair of EFSA's expert Panel on Food Additives and Flavourings (FAF), said: "Importantly, the ADI does not apply to people with moderate to severe reduction in kidney function, which is considered a vulnerable population group. This conclusion is based on the recognised effect of high phosphate intake on the kidney."

Dietary exposure was calculated from the total amount of phosphorus from all dietary sources and not limited to the levels in food additives reported by manufacturers. The experts estimated that food additives indicatively contribute between 6 to 30% of the total average intake of phosphorus.

Existing maximum permitted levels of these additives in food range from 500 to 20,000 milligrams per kilogram (mg/kg) of food depending on the food type.

EFSA's scientific advice will inform risk managers in the European Commission and Member States who regulate the safe use of phosphates as food additives in the EU.

Currently phosphates as additives in food supplements can be used at *quantum satis* (i.e. as much as technologically needed). EFSA's experts found that for those above the age of 3 years who take such supplements regularly, estimated dietary exposure may exceed the ADI at levels associated with risks for kidney function.

Food Safety News

Research shows *Campylobacter*, *E. coli* found at many Dutch cattle farms

Campylobacter was found at most beef cattle farms and a quarter of them had Shiga toxin-producing *E. coli*, according to a Dutch study.

The National Institute for Public Health and the Environment (RIVM) and Netherlands Food and Consumer Product Safety Authority (NVWA) investigated in 2017 how often some pathogens occurred in beef cattle. RIVM assessed whether the same pathogens also occurred in the participants.

RIVM and NVWA advised that people can reduce their risk of infection by only eating beef that has been thoroughly cooked and by preventing other food, utensils and common surfaces from coming into contact with raw meat.

E. coli and *Salmonella*, and a variety of other pathogens sometimes found in beef, pose a risk for consumers when they eat contaminated beef and for farmers and visitors through direct contact with cattle.

Pathogens were frequently found in the studied cattle. They were present in the animals' intestines and manure. Meat can become contaminated in the slaughterhouse if it comes in direct contact with manure.

The study involved cattle at 196 farms as well as 129 livestock farmers plus family members and employees. Manure samples were taken at the farms and analyzed for *Campylobacter*, *Salmonella*, ESBL-producing *E. coli*, Shiga toxin-producing *E. coli* (STEC) and *Cryptosporidium*. Fecal samples from farmers, employees and family members were examined for the same zoonotic pathogens.

Campylobacter was detected at 86 percent of the farms. For livestock farmers and family members, it was found in 2 percent of the research participants. *Campylobacter* is the main cause of food infections in the Netherlands, according to public health statistics with the number of infections in the country was estimated at about 67,000 in 2017.

The presence of *Cryptosporidium* was not confirmed on any of the farms. A third of participants use gloves when performing certain activities on the beef farm and handwashing was more often done when leaving than when entering the stable.

***E. coli* findings** STEC and Extended Spectrum Beta-Lactamase (ESBL)-producing bacteria were less prevalent in cattle and were found at 25 percent and 15 percent of the farms, respectively. A total of 393 STEC patients were registered in 2017.

Salmonella was present in cattle at 4 percent of the farms. Mostly these were types of *Salmonella* which can cause diarrhea in people. Strains included Montevideo, Typhimurium monophasic 1,4,[5],12:i:- and Dublin.

It was not found in livestock farmers and family members. *Salmonella* causes an estimated 32,000 illnesses each year and about 1,000 are admitted to hospital.

Fraunhofer Institut works on disinfection using UV light

Scientists at a German institute are investigating use of ultraviolet light-emitting diodes (UV LEDs) to destroy bacterial DNA. Fraunhofer researchers looked at replacing conventional lamps containing mercury with ultraviolet light-emitting diodes. The technology is suitable for disinfecting brewing water, caps for bottled beer, soft drinks, and mineral water during the filling process.

UV light can inactivate germs in drinking water. The disinfection process relies on mercury-vapor lamps, which emit light in the UV spectrum but the heavy metal may affect human health and the environment. To ensure clean water for beer, brewing companies install ultraviolet (UV) systems upstream of brewing equipment. The genetic material (DNA) of bacteria, viruses and germs is destroyed by UV rays.

The technology project involving researchers at the Advanced System Technology (AST) part of

the Fraunhofer Institute for Optronics, System Technologies and Image Exploitation IOSB and Purion GmbH was supported by the German Federal Ministry of Education and Research.

Brewing water is disinfected by being pumped through stainless steel tubes in which UV lamps have been fitted. UV light with a wavelength of 265 nanometers is suitable for the task. Currently, UV light has been generated using mercury-vapor lamps, which emit light at 254 nanometers. The lamps also have long warm-up phases, short service lives and cannot be used flexibly due to bulky design. UV LEDs emit at a maximum wavelength of 265 nanometers.

Thomas Westerhoff, a scientist at Fraunhofer IOSB-AST, said conventional mercury-vapor lamps performance lies below the wavelength of 265 nanometers so the disinfection performance is not optimal.

“Of particular interest are UV-C LEDs, because their radiation destroys the DNA of the pathogens much more effectively. The UV rays generate resonances in the nucleic acids of the DNA and break the bonds of the molecules open. This changes the cell nuclei of the microorganisms in a way that renders cell division impossible. Consequently, the pathogens can no longer multiply,” he said.

UV LEDs do not require any warm-up phase as they reach full power instantly, they offer high mechanical stability and can be operated at low voltage. Such technology is already available on the market.

Following practical tests, researchers are able to operate the UV LEDs directly in water without the need for a tube to encase them. This eliminates reflections to increase the performance yield of radiation sources.

Experts at Fraunhofer IOSB-AST have developed a module that can disinfect the insides of beer caps during the production process before bottles are filled with beer for Purion GmbH. This ensures no germs get into bottles during the production process.