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Standards set for food contaminants

UN body spells out rules for melamine levels in food, salad and seafood production



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A standard for maximum levels of the industrial chemical melamine allowed in foods and animal feed was adopted this week by the **Codex Alimentarius Commission**. In a meeting still underway in Geneva, Switzerland, food-safety experts have also agreed on a standard for aflatoxins in Brazil nuts, and defined hygiene measures that producers should follow to avoid microbial contamination in salads and seafood.

Experts advising the food-safety body are planning to revisit melamine safety rules once data on cyanuric acid, a chemical that may enhance its toxicity, become available.

As part of the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) for 50 years, Codex Alimentarius formulates health-protective food standards on the basis of scientific advice provided by international experts. It is then up to individual countries to implement them.

Aflatoxins and food-borne pathogens

Aflatoxins, fungal toxins that grow on nuts, cereals and other crops, are **estimated to cause** more than a quarter of cases of hepatocellular carcinoma worldwide. Aflatoxin limits have already been established for some crops, and this week the Commission has set a maximum level of 10 mg/kg for Brazil nuts and 15 mg/kg for shelled Brazil nuts.

For fresh salads and seafood, the Codex Commission outlines safe methods that producers should follow when growing and harvesting. Certain types of shellfish, such as oysters typically eaten raw, carry a high risk of infection with bacteria or **viruses** filtered out of the water in which they grow. "The guidelines are defining how you should monitor whether the oysters are harvested in dangerous waters and how you should make sure that the oysters are not kept at high temperatures," said Jørgen Schlundt, Director of the WHO's Food Safety and Zoonoses department, in a press briefing.

Similarly, fresh salad leaves may end up contaminated with faecal material because growers often use unsafe water on the fields. "[This] makes sense in a number of different production systems but when you are producing fresh salad, that will be eaten without heat treatment, there is a problem if you don't do it the right way," explains Schlundt.

Ezzeddine Boutrif, Director of the Nutrition and Consumer Protection Division at FAO, points out that as a result of urbanisation, fresh vegetables are being grown increasingly in cities and peri-urban areas — where many producers use untreated wastewater generated in urban households.

The need to ensure the safety of these foods is also becoming more important because people are being encouraged to eat more fresh produce as part of a healthy diet, says Schlundt.

"Unavoidable" melamine

According to the rules adopted this week, just 1 mg of melamine will be allowed in every kilogram of powdered infant formula. In other foods and animal feed the maximum level is 2.5 mg/kg. "It's important to point out... that these maximum levels apply to levels of melamine resulting from non-intentional and unavoidable presence in feed and food," noted Angelika Tritscher, from the WHO Department of Food Safety and Zoonoses, in the press briefing.

Melamine made headlines in 2008 when more than 300,000 children fell ill and at least six died in China after the chemical was added illegally to milk powder. Exposure to melamine at high-enough concentrations can be toxic to the kidney. At low concentrations, which might result from 'natural' contamination, the body can get rid of the chemical so it poses no risk to health.

Studies have suggested that the toxicity of melamine can be enhanced when **mixed with cyanuric acid** — a substance whose use in food is also prohibited, but can be found in cattle feed or as a by-product of chemicals used to disinfect water. Speaking to EHTF News, Tritscher explained that the standard adopted this week is based on tolerable levels for the daily intake of melamine, **established by the WHO in 2008**, which take into account this potential interaction.

But more toxicological studies are underway, she added, and once these data are available experts will meet to re-evaluate the need for "an additional standard" to protect against a combination of these chemicals. For now, Tritscher said, it's important to have a standard for melamine alone, even if the levels normally seen in food are very low.

"There are really only three main sources for these very low levels that can occur in food," explained Tritscher in the press briefing: the use of the approved insecticide cyromazine, which can leave melamine residues in food; 'migration' of the chemical after contact with food packaging and other materials, including some hard plastics; and its release in small amounts from tabletop surfaces with which food comes into contact when processed.

Asked about bisphenol A (BPA) — another chemical found leaching from certain plastics, raising strong concerns over health risks — Tritscher told EHTF News that Codex will evaluate the need for any standards later this year. The WHO is currently organising a **meeting** due to take place in November, where experts will examine the available data and perform a human health risk assessment before deciding whether to recommend that Codex takes action against exposure to the chemical.

Measuring public health impact

But enough useful information about food safety can be hard to come by. The real burden of food-borne illness is still unknown, according to Tritscher. "We don't really have very good data," she says, pointing to both microbial and chemical substances that can pose a health risk. "And there are still a number of chemical contaminants that are causing... a very significant burden."

Current estimates suggest that each year at least one third of the world's population is affected by illness caused by contaminated food. The burden is probably higher in developing countries, said Schlundt, but large outbreaks of food-borne illness have occurred in the USA and some European countries — where having good surveillance systems means they are detected more easily.

Scientists are working to improve these estimates, and are hoping to produce a global atlas of food-borne disease burden by 2013, according to Tritscher. The WHO began this project in 2007, she noted, and it's "moving slowly but in a good direction".

The experts concede that the public health impact of the new standards will also be difficult to quantify. A reduction of contaminant levels in food and lower exposure levels in consumers can be indirect measures of this, explains Tritscher. But "it always takes at least five years to see an effect," she says.

Boutrif says that the effect of these rules can also be seen in the economy, because unsafe production practices can hit countries hard when exported goods become responsible for outbreaks of illness. "When governments take the application of these [guidelines] seriously, the impact can be seen on export business — it grows very rapidly."

Nevertheless, the certifications and other compliance processes required by Codex standards can be demanding, added Boutrif, and this can harm producers in both developed and developing countries. The Commission "will be exchanging ideas" on how to deal with this problem, he said.

Reference and link

1. Joint FAO/WHO Food Standards Programme, Codex Alimentarius Commission — 33rd session, Geneva, Switzerland. **Provisional agenda WHO information** on food safety

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