

## Some cheeses exceed contaminant levels recommended by EU

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The majority of cheese complies with pollutant limits laid down in the legislation. Credit: SINC

Researchers at the University of Las Palmas de Gran Canaria (Spain) have analysed more than 60 brands of cheese commonly available in supermarkets. The concentration of organochloride contaminants in the majority of the samples was lower than levels set by European legislation, but in a few cases it was higher. The scientists recommend that an eye is kept on polychlorinated biphenyls as they are carcinogenic. The majority of these compound concentrations appeared in organic cheeses.

"In general, chloride contaminant residue levels were low in the cheese samples that we analysed, complying with limits set out by Spanish and European legislation, except in a few cases," as explained to SINC by Luis Domínguez-Boada and Octavio Pérez-Luzardo, those in charge of the Environment and Health Research Group (Toxicology Unit) of the University of Las Palmas de Gran Canaria.

For more than a year, a team at the university analysed 61 common brands of cheese (54 conventional and 7 organic) and they found that in a small amount the '[dioxin](#)-like polychlorinated biphenyls' (dioxin-like [PCBs](#) or DL-PCBs) exceeded EU-established levels.

Recommendations state that levels of this contaminant should not exceed 3 picograms WHO-TEQ per gram of cheese fat, but in some samples up to 76 pg WHO-TEQ/g were detected. The TEQ (toxic equivalent) value is a toxicity measurement promoted by the World Health Organisation (WHO).

This organisation also recommends that 'tolerable daily intake' is lower than 2 pg WHO-TEQ of dioxins and dioxin-like compounds per kilogram of body weight. "But if the most contaminated brands of cheese are consumed then this quantity could be exceeded, thus implying an increased possibility of harmful health effects," warns Doctor Domínguez-Boada.

The risks caused by the continued intake of chloride [contaminants](#) have not yet been unequivocally confirmed but their carcinogenicity and mutagenicity are known, or in other words how they can cause cancer and induce DNA mutations, respectively. It is also known that they act as endocrine disruptors that alter our delicate hormonal balance.

These compounds also have a negative effect on the metabolism. In fact they are diabetogenic and obesogenic, which means excess intake

increases the risk of suffering from diabetes and obesity.

## Transferable Results

A total of 100% of analysed samples had quantifiable levels of polychlorinated biphenyls (PCBs). Published in the *'Food and Chemical Toxicology'* journal, the results according to the authors can be extrapolated to cheese in the rest of Spain and Europe since common brands sold in any supermarket were analysed.

But how do these harmful substances end up in cheeses? The organochloride compounds make up the pesticides and contaminating emissions from industry. From here they are then transferred to the environment and end up in the milk of animals.

In the case of the PCBs, their use was prohibited in the 1970s but they are stable molecules that have survived since then. One of the most surprising results of the study is that the highest concentrations of these substances have been found in organic cheeses but are marketed as being more ecological and healthier.

According to the authors, the explanation lies in the fact that they come from very industrialised countries (the Netherlands, Belgium and Germany) where polychlorinated biphenyls are present in the environment despite them being banned.

"Contaminating doesn't come free," reminds Domínguez-Boada, who wonders whether the removal of old devices with PCBs, such as many electrical transformers, is being done in a controlled fashion across the whole world.

In any case, the researcher believes that in the next few years the PCBs will gradually disappear from ecological cheeses, "but this is not the case

for the pesticides in conventional cheeses unless measures are taken."

The authors recommend that an assessment is conducted on the presence of these ubiquitous toxic substances in the environment with the aim of establishing control measures like those outlined in the Stockholm Convention on Persistent Organic Pollutants backed by the United Nations Environment Programme (UNEP).

"Food controls should also be increased, assessing the presence of all harmful chemical residues regardless of whether or not they are banned or used in the dairy sector. Those brands or batches with high pollutant levels that pose a risk to the consumer can then be withdrawn from the market."

The researchers declare that the study has no conflict of interest and that on this occasion they have not concentrated on what brands are the most polluted. "At the moment this consists of a specific study displaying the presence of organochloride toxic compounds in our cheeses," says Pérez-Luzardo. "The results can vary according to batch and over time. A more of a long-term study is therefore required to confirm if the same brand always has the same levels."

In Western countries it is calculated that around 30% of organochloride pollutant intake comes from dairy products due to their high fat content. The rest comes above all from fish but it has also been detected in meat and eggs.

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