There is little that can be done from a technological point of view to reduce the high levels of acrylamide in coffee and coffee substitutes, according to a leading scientist at the Institute for Reference Materials and Measurements (IRMM).

Last week a European Food Safety Authority (EFSA) survey indicated that 2008 levels of acrylamide in European food were lower than those observed in 2007 but that coffee and coffee substitutes were exceptions. Not only did acrylamide levels in these products appear to increase but they were particularly high at the outset.

EFSA suggested that this may reveal the limitation of the voluntary 'toolbox' approach that has seen industry associations provide guidance to manufacturers on reducing acrylamide levels in certain products. The European regulator said: "It may be appropriate to assume that the application of the acrylamide toolbox was effective only in a limited number of food groups."

Reduction strategies

Giving his verdict on the persistently high levels of acrylamide in coffee and substitute products like chicory, Thomas Wezel, a senior scientist at the IRMM told BeverageDaily.com that few reduction strategies are available.

Acrylamide is formed during high temperature cooking by a heat-induced reaction between sugar and an amino acid called asparagine. Coffee beans contain both asparagine and reducing sugars and so when roasted can become high in acrylamide.

One potential strategy for cutting acrylamide levels is to reduce either the sugar or the asparagine content. This can be done in dough products by introducing an enzyme that reduces the level of asparagine but Wezel said it is not feasible in the case of coffee because the reactants are located largely in the coffee bean and are therefore not accessible from the outside.

Another option would be to change the cooking conditions, as has been done to some extent in potato products, but again this is not a suitable strategy for coffee. Wezel said changing roasting conditions create products that would not be accepted by the consumer.

He therefore concluded that: "Little can be done for reducing acrylamide levels in coffee from

the technological point of view.”

Agronomy approach

However, the scientist did suggest that solutions may be found in agronomy – coffee plants could potentially be bred that contain low asparagine levels.

Should we be worried about the persistently high levels of acrylamide in coffee and certain substitutes?

An EFSA statement in 2005 suggests that we should be. It declared that acrylamide is both carcinogenic and genotoxic (which means it can cause damage to the genetic material of cells). But despite being a carcinogen in the laboratory, many epidemiological studies have reported that everyday exposure to acrylamide in food is too low to be of concern.

EFSA itself plans to conduct an assessment next year to evaluate exposure levels based on the latest data on the levels observed in different foods. Giving his view on the voluntary approach taken so far and the progress made until now, Wezel said: “In my opinion there is little reason to worry. We should rather stay patient and wait for the data.”