

Information Sheet: Relative Risk of Colours and Dyes in Food

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Overview

It can be difficult to know where to start when designing a Due Diligence testing schedule for food fraud if you do not have visibility of every stage of the supply chain. The key risk driver is the financial incentive for fraud, but this information is not always available. One example is disguising the adulteration or mislabelling of food by illegally adding coloured dyes. At an extreme, you could test every batch of every distinctively-coloured ingredient for a host of different dyes. There have been times when food manufacturers have tested every red Raw Material for the presence of Sudan Dyes on a positive-release basis at great expense.

In fact, history shows that reported incidents have been biased towards products and ingredients sourced from relatively few countries. It makes sense to focus testing upon these, with less frequent checks on the majority of sources with no history of issues.

There is a gradation in severity of incidents, from the unlabelled use of permitted additives, to the use of food-grade dyes in unpermitted applications, to the deliberate use of non-food grade dyes. Testing should be targeted towards issues with the highest consumer risk or brand risk; non-food grade dyes, or undeclared "Southampton 6" dyes which legally should trigger a warning label for Attention Deficit Hyperactivity Disorder in the EU. Over 2014 and 2015, the majority of global reported incidents and recalls regarding food colours have been for Southampton 6 dyes (E110 Sunset Yellow, E104 Quinoline Yellow, E122 Carmoisine, E129 Allura Red AC, E102 Tartrazine, E124 Ponceau 4R)

Higher risk products are sweets, soft drinks, and raw materials where a strong colour infers a high quality, attractiveness or premium variety; natural food colourant concentrates, palm oil, custard powder, spices and seasoning mixes.

Illegal non-food grade dyes detected predominantly have been Reds that have a US FDA approval for drugs and cosmetics but not for food ("DC-" rather than "FDC-" prefix), or dyes with previous food approval which has since been rescinded (particularly Butter Yellow).

The conclusion from recent trends is to focus supply-chain controls and verification testing on ingredients from Mexico, South East Asia, and palm oil from sub-Saharan Africa. Analytical test suites should particularly include "DC" Reds, the Southampton 6, and Butter Yellow, with Sudan Reds still being a risk in palm oil despite intensified EU border controls. The risk from ingredients produced within the EU is extremely low.

References

Incident data sourced from Horizonscan, <https://horizon-scan.fera.co.uk>



