

Contamination In Supplements

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Contamination - The Problem

- Supplements and their ingredients have been found to contain controlled chemical contaminants at levels above those permitted by legislation.
- Since 2000 a considerable amount of product has been rejected due to non-compliance with contaminant controls.
- This has been a particular problem in the 25 countries that now comprise the European Union. However, the problem is not exclusive to the EU.

Week 2006/11

TABLE 1: ALERT NOTIFICATIONS

DATE:	NOTIFIED BY:	REF.:	REASON FOR NOTIFYING:	COUNTRY OF ORIGIN:
13/03/2006	Cyprus	2006.0172	abnormal smell of dried sultanas	GREECE
13/03/2006	Denmark	2006.0173	histamine in tuna chunks in brine	THAILAND VIA GERMANY
13/03/2006	Italy	2006.0174	too high content of sulphites in cooked prawns (<i>Penaeus vannamei</i>)	BRAZIL VIA SPAIN
13/03/2006	Germany	2006.0175	Diarrhoeic Shellfish Poisoning (DSP) toxins in mussels meat	NORWAY GERMANY
14/03/2006	Italy	2006.0177	cadmium in vacuum packed rice	ITALY
14/03/2006	Czech Republic	2006.0178	cadmium in parsnip	POLAND
14/03/2006	United Kingdom	2006.0179	dioxins in concentrated fish body oil	UNITED KINGDOM
15/03/2006	Germany	2006.0180	unauthorised colours Sudan 1 and Para Red in spices for georgian cooking	THE RUSSIAN FEDERATION
16/03/2006	Germany	2006.0181	too high content of E 452 - polyphosphates in alaska pollock (<i>Theragra chalcogramma</i>)	CHINA VIA DENMARK
16/03/2006	Norway	2006.0182	norovirus in raw oysters	FRANCE
16/03/2006	Belgium	2006.0183	fumonisin in mixed cereals (baby food)	THE NETHERLANDS

Week 2006/14

TABLE 1: ALERT NOTIFICATIONS

DATE:	NOTIFIED BY:	REF.:	REASON FOR NOTIFYING:	COUNTRY OF ORIGIN:
05/04/2006	Italy	2006.0227	Salmonella anatum and Salmonella Derby in frozen pig meat preparations	SPAIN
05/04/2006	Denmark	2006.0228	Salmonella cubana in soy protein powder	DENMARK
05/04/2006	Germany	2006.0229	benzo(a)pyrene and heavy polycyclic aromatic hydrocarbons in canned sprats in oil	ESTONIA
05/04/2006	Germany	2006.0230	migration of cadmium and of lead from drinking glass	GERMANY
06/04/2006	Finland	2006.0231	aflatoxins in almonds crushed and brown	SPAIN VIA SWEDEN
06/04/2006	The Netherlands	2006.0232	carbendazim in parsley	THAILAND
07/04/2006	Estonia	2006.0233	too high content of E 200 - sorbic acid in dried black prunes	MOLDOVA VIA LITHUANIA
07/04/2006	Denmark	2006.0234	insufficient labelling of frozen prepared pasta dish with spinach and ham	BELGIUM
07/04/2006	Estonia	2006.0235	too high content of sulphites in dried pears	CHINA VIA LATVIA
07/04/2006	Germany	2006.0236	norovirus in oysters (<i>Ostrea</i> spp)	FRANCE
07/04/2006	France	2006.0237	Salmonella in kebab of turkey and veal	GERMANY
07/04/2006	United Kingdom	2006.0238	dioxins in fish oil capsules	SWITZERLAND

The Contaminants

- Chemical contamination can either be from environmental sources (heavy metals, dioxins, polycyclic aromatic hydrocarbons etc) or
- from microbiological action (mycotoxins).

The Contaminants

- The chemical contaminants for which there is legislation in at least one major economic area of the world, and which affect supplements are:
 - Heavy metals, particularly lead, cadmium, arsenic and mercury.
 - Dioxins, furans and dioxin-like Polychlorinated Biphenyls. These are environmental contaminants polluting soil and water courses.
 - Polycyclic Aromatic Hydrocarbons. These are by-products of certain combustion processes.

The Contaminants

- Chemical contaminants continued:
 - Mycotoxins. These are toxic substances produced as metabolites by certain species of fungi (moulds) on biological matter.
 - Pesticides. A very large group of mainly man-made agricultural chemicals used chiefly to eliminate insects and other pests affecting crops. Legislation contains lists of permitted pesticides and maximum levels of pesticide residues.

Microbiological Contaminants

- The microbiological contaminants that can affect certain supplement ingredients (such as gelatin) are the potentially pathogenic bacteria.
- Other microbiological tests for non-pathogenic bacteria, yeasts and moulds are indicators of general quality.

Processing Contaminants

- Processing of ingredients can leave residues of substances such as:
 - Solvent residues from solvent extraction processes.
 - Ethylene oxide, previously used as a gaseous sterilant for ingredients, particularly botanicals. Now illegal in many countries.
 - Veterinary drug residues.

Other Detectable Forms of Contamination

- Radioactivity in foods due to nuclear fall-out as a result of the Chernobyl disaster.
- Irradiation by the use of ionising radiation.

Moving Towards a Solution

- Assessment of the extent of the problem.
- Formation of the IADSA International Working Group on Contaminants (Prague 2004).
- Meetings of the IWG in Las Vegas (July 2005) and Greenwood S.C., USA in February 2006.
- Development of Contaminant Templates.

Objective of the International Working Group

The primary objective of the International Working Group was to:

‘Help facilitate free trade in supplements across national borders by reducing the possibilities of rejection of product due to contamination’.

Development of Contaminant Templates

- The process followed by the IWG was to:
 - Agree relevant contaminants for different categories of supplement ingredients.
 - Agree relevant marker substances/parameters for the contamination.
 - Advise on maximum levels for each contaminant.
- Decisions on contaminants/maximum levels were based on current legislation in major economic areas.

Development of Contaminant Templates

Originally, four templates were proposed:

- Botanical powders and extracts.
- Botanical concentrates and isolates.
- Animal derived ingredients.
- Fish oils.

Development of Contaminant Templates

Subsequently it was agreed that the two botanical templates could be merged so first the first three templates completed are:

- Botanicals for direct use in Consumer Products.
- Animal Derived Ingredients for Dietary/Food supplements (excluding fish oils).
- Fish Oils for use in Consumer Products.

Use of the Templates

- The Contaminant Templates are intended as guides to best practice when developing or agreeing raw material specifications.
- They are NOT intended to be prescriptive, obligatory or imply legal obligations.
- It is recommended that they be used as the basis for discussion between supplier and customer when agreeing raw material specifications.
- It is particularly important that they are given serious consideration where the supplement products are destined for markets outside the country of manufacture.