

Chapter 24: Food and Color Additives

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Potential Food Safety Hazard

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Certain food and color additives can cause an allergic-type reaction (food intolerance) in consumers. Examples of such food and color additives that are used on fish and fishery products include: sulfiting agents and FD&C Yellow #5. Sulfiting agents are mostly used during on-board handling of shrimp and lobster to prevent the formation of "black spot." They are sometimes used by cooked octopus processors as an antioxidant, to retain the red color of the octopus skin. FD&C Yellow #5 is used during in-plant processing. These food and color additives are permitted for use in foods, with certain restrictions, but their presence must be declared on the label. This label declaration is particularly important to sensitive individuals.

Certain other food and color additives are prohibited from use in food because of a determination by FDA that they present a potential risk to the public health. Examples of such food and color additives include: safrole and FD&C Red #4.

Additionally, a number of foods contain allergenic proteins that can pose a health risk to certain sensitive individuals. Appendix 6 contains a list of such foods that account for most of all food allergies. While the controls in this chapter are not directly applicable to the hazard of allergenic proteins, if these foods are part of or are directly added to your fishery product, you may use the principles contained in this chapter to ensure that the product is properly labeled. However, these controls are not designed to prevent the unintentional introduction of allergenic proteins from such foods into your fishery product because of cross-contact (e.g. use of common equipment, improper production scheduling, or improper use of rework material). Unintentional introduction of allergenic proteins must be controlled through a rigorous sanitation regime, either as part of a prerequisite program or as part of HACCP itself. The Seafood HACCP Regulation requires such a regime (FDA, 2001).

Control Measures

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Control measures for allergic-type reactions that can result from the presence of certain food and color additives (e.g. sulfiting agents and FD&C yellow #5) could include:

- Declaring the presence of food and color additives that can cause an allergic-type reaction on finished product labeling;
- Testing incoming shrimp or lobster for residues of sulfiting agents at or above 10 ppm;
- Receiving a supplier's certification of the lack of sulfiting agent use on incoming lots of shrimp or lobster (with appropriate verification – see Step #18);
- Reviewing the labeling (or accompanying documents, in the case of unlabeled product) on shipments of shrimp or lobster received from another processor for the presence of a sulfiting agent declaration

A control measure for the presence of prohibited food and color additives could include:

- Testing incoming lots of fish for the presence of prohibited food and color additives which there is reason to believe may be present.
- Receiving a supplier's certification that prohibited food and color additives were not used on the incoming lot of fish (with appropriate verification) (FDA, 2001).

FDA Guidelines

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FDA guidelines for food and color additives in fish and fishery products.

Food Additive	Guideline	Reference
Cyclamate and its derivatives, safrole, FD&C Red #4, and other prohibited food and color additives	Incoming lots of fish and fishery products must not contain a detectable level of prohibited food and color additives; or Incoming lots fish and fishery products must be accompanied by a supplier's lot-by-lot certificate that prohibited food and color additives were not used.	FDA, 2001
Sulfiting agents	All finished product labels must contain a sulfiting agent declaration; or Incoming lots of fish and fishery products must not contain a detectable level of sulfite; or Incoming lots of fish and fishery products must be accompanied by a supplier's lot-by-lot certificate that sulfiting agents were not used; or Finished product labels for product processed from sulfite-containing raw materials must contain a sulfiting agent declaration.	FDA, 2001
FD&C Yellow #5	All finished product labels must contain a FD&C Yellow #5 declaration; or Incoming lots of fish and fishery products must not contain a detectable level of	FDA, 2001

	<p>FD&C Yellow #5; or</p> <p>Incoming lots of fish and fishery products must be accompanied by a supplier's certificate that FD&C Yellow #5 was not used; or</p> <p>Finished product labels for product processed from FD&C Yellow #5-containing raw materials must contain a FD&C Yellow #5 declaration.</p>	
Astaxanthin	All finished product labels for salmonid fish fed astaxanthin to enhance the pink to orange-red color of the flesh must contain an astaxanthin declaration.	21 CFR 73.35
Canthaxanthin	All finished product labels for salmonid fish fed canthaxanthin to enhance the pink to orange-red color of the flesh must contain a canthaxanthin declaration.	21 CFR 73.75

Analytical Procedures

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Sulfiting agents

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- Sulfites in foods, Optimized Monier-Williams method (AOAC, 1995a).
- EM Quant Sulfitest Strips (Center Laboratories, Port Washington, New York; Nordlee et al., 1988).
- Ion chromatography (Cooper et al., 1985; Cooper et al., 1986).
- Alkali titration method (Yamagata and Low, 1992a).
- Colorimetric method (Yamagata and Low, 1992b).
- Determination of sulphites and borates in imported frozen prawns, frozen shrimps and salted jellyfish (Ogawa et al., 1978).
- Comparison of sulfite methods (DeWitt and Finne, 1985).

Commercial Test Products

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Commercial test products for sulfites.

Test	Analytical Technique	Approx. Total Test Time	Supplier
Alert for Sulfites [identifies sulfite level in ppm]	chemical reaction with color change indicator	< 2 min	Neogen Corporation Contact: Jennifer Baker 620 Leshner Pl. Lansing, MI 48912 Phone: 800/234-5333; 517/372-9004 E-mail: neogen-info@neogen.com

			Web: www.neogen.com/alertsulfite.htm
Sulfite (E0725854)	Enzymatic	85 min	R-Biopharm, Inc. Contact: Sean Tinkey 7950 US 27 South Marshall, MI 49068 Phone: 877/789-3033 E-mail: sales@r-biopharm.com Web: www.r-biopharm.com/

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