CHEMTEX
INTERNATIONAL CHEMTEX CORPORATION

Technical Topics

Regulations Governing Chemical Treatment in Food Processing Plants

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For years, water treatment chemical use in food processing plants was regulated by one of two Federal agencies. The United States Department of Agriculture (USDA) regulated the use of chemicals in plants that produced or processed poultry, meat, rabbit or egg products. The USDA's regulatory authority over chemical use also extended to plants that produced or processed seafood products. Chemical use in plants that processed all other food or food products, e.g., vegetables, fruits, beverages, etc., was regulated by the United States Food and Drug Administration (FDA).

Prior to 1999, the USDA regulated the products used in plants they inspected through the Food Safety and Inspection Service (FSIS). The FSIS used a formal approval process for all nonfood compounds and proprietary substances to be used in USDA plants. The approved compounds, which included water treatment chemicals that had passed the approval process, were included in the "List of Proprietary Substances and Nonfood Compounds," which was updated and published annually by the USDA. This list is no longer published.

The USDA now places the responsibility on individual plants they regulate for determining that chemicals used within the facility are safe and effective. The USDA plants, in turn, require chemical companies to "self-certify" that the chemicals they provide are safe for their intended use.

The FDA takes a different approach to regulating chemical use in food processing plants under their jurisdiction. Instead of approving individual products, FDA approves ingredients that may be used in the formulation of boiler water additives that will be used in boiler systems in which treated steam contacts food. The FDA publishes this "List of Substances" in Title 21, part 173.310 of the Code of Federal Regulations (21 CFR § 173.310).

The FDA List of substances is now used as the source for determining the suitability of boiler water additives for use in *all* systems in which treated steam contacts food, regardless of the type of food produced.

21 CFR § 173.310 (c) List of substances

- **Acrylamide-sodium acrylate resin** (contains not more than 0.05 percent by weight of acrylamide monomer.)
- **Ammonium Alginate**
- **Acrylic acid/2-acrylamido-2-methyl propane sulfonic acid copolymer [As defined -total not to exceed 20 parts per million (active) in boiler feedwater]**
- **Hydroxythylidene Diphosphonic Acid and Na or K salts**
- **Cobalt Sulfate** (as catalyst)
- **Cyclohexylamine (not to exceed 10 ppm in steam and steam must not contact milk and milk products.)**
- **Diethylaminoethanol** (not to exceed 15 ppm in steam and steam must not contact milk and milk products.)
- **Hydrazine (zero in steam)**
- **Lignosulfonic Acid**
- **Monobutyl Ethers of polyethylene-polyproylene glycol (as defined)**
- **Morpholine** (not to exceed 10 ppm in steam and steam must not contact milk and milk products.)
- **Octadecylamine (not to exceed 3 ppm in steam and steam must not contact milk and milk products.)**
- **Poly** (**acrylic acid-co-hypophosphite**), sodium salt
- **Polyethylene glycol**
- **Polymaleic Acid** and/or Na salt (not to exceed 1 ppm in boiler feedwater)
- **Polyoxypropylene Glycol**
- **Potassium Carbonate**
- **Potassium Tripolyphosphate**
- **Sodium Acetate**
- **Sodium Alginate**
- **Sodium Aluminate**
- **Sodium Carbonate**
- **Sodium Carboxy** - methylcellulose (as defined)
- **Sodium Glucoheptonate (less 1 ppm cyanide)**
- **Sodium Hexametaphosphate**
- **Sodium Humate**
- **Sodium Hydroxide**
- **Sodium Lignosulfonate**
- **Sodium Metabisulfite**
- **Sodium Metasilicate**

- **Sodium Nitrate**
- **Sodium Phosphate (mono-, di-, tri-)**
- **Sodium Polyacrylate**
- **Sodium Polymethacrylate**
- **Sodium Silicate**
- **Sodium Sulfate**
- **Sodium Sulfite** (neutral or alkaline)
- **Sodium Tripolyphosphate**
- **Tannin** (including quebracho extract)
- **Tetrasodium EDTA**
- **Tetrasodium Pyrophosphate** (d) "Substance to be used alone or in combination with substances above."
- **Trisodium Nitrilotriacetate** (not to exceed 5 ppm in boiler feedwater and steam must not contact milk and milk products.)

Note: In poultry, meat, rabbit and egg processing plants, only decharacterized sodium sulfite may be used. Sodium sulfite used in any other type of food processing plant does not need to be decharacterized.

In milk plants where steam may contact milk or milk products and a return line treatment is necessary, ammonium hydroxide may be used. This ingredient is classified as such in 21 CFR §184.1139 of the Federal Regulations.

International Chemtex Corporation has a number of products that are formulated for use in food processing plants. Contact Chemtex for detailed information regarding the use of its products in food processing applications.