UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND INSPECTION SERVICE
WASHINGTON, DC

FSIS DIRECTIVE

7120.1
Rev. 45

1/19/18

SAFE AND SUITABLE INGREDIENTS USED IN THE PRODUCTION OF MEAT, POULTRY, AND EGG PRODUCTS

I. PURPOSE

This directive provides inspection program personnel (IPP) with an up-to-date list of substances that may be used in the production of meat, poultry, and egg products. It also lists the approved On-Line Reprocessing (OLR) and Off-Line Reprocessing (OFLR) Antimicrobial Intervention Systems.

II. CANCELLATION

FSIS Directive 7120.1, Revision 44, *Safe and Suitable Ingredients Used in the Production of Meat, Poultry, and Egg Products*, 12/27/17

III. REASON FOR REISSUANCE

This revision includes updates to the list of substances and list of approved OLR/OFLR antimicrobial intervention systems since the December 27, 2017, issuance of the directive. Updates to this directive appear in Table 1. Changes are in **bold** in Table 2, Table 3 and Table 4.

Table 1: Summary of Updates to list of substances

Substance	Page Number	Category	Type of Update
Acetic acid, as an antimicrobial agent in chicken livers	7	Antimicrobial	New

IV. REFERENCES

9 CFR Chapter III
Final rule published in Federal Register notice "Food Ingredients and Sources of Radiation Listed and Approved for Use in the Production of Meat and Poultry Products" (78 FR 14636).
Final rule published in Federal Register notice, "Modernization of Poultry Slaughter" (79 FR 49566)
Final rule published in Federal Register notice, "Mandatory Inspection of Fish of the Order Siluriformes and Products Derived From Such Fish" (80 FR 75589)

V. BACKGROUND

The Table of Safe and Suitable Ingredients (Table 2) identifies the food grade substances that have been approved in 21 Code of Federal Regulations (CFR) for use in meat, poultry, and egg products as food additives, generally recognized as safe (GRAS) notices and pre-market notifications, and approved in letters conveying acceptability determinations. Prior approved substances are listed in 9 CFR 424.21.

B. The final rule, "Modernization of Poultry Slaughter" (79 FR 49566) permits establishments to use approved OLR (Table 3) and OFLR (Table 4) antimicrobial intervention systems provided that an establishment incorporates procedures for OLR or OFLR into its Hazard Analysis Critical Control Points (HACCP) plan or Sanitation standard operating procedures (Sanitation SOP) or other prerequisite program (9 CFR 381.91(b)(1) and (2)).

C. The final rule amended the regulations to remove the restrictions against using OLR and to remove the requirement that establishments use free available chlorine at 20 ppm to remove visible specks of contamination by OFLR. New or modified OLR/OFLR antimicrobial intervention systems are approved by the Agency prior to establishment use. Information on how to submit a request for new OLR/OFLR or modified OLR/OFLR antimicrobial intervention systems can be found in Guidance Procedures for Notification and Protocol Submission of New Technology.

D. Users of Tables 2- 4 should be aware that some of the ingredient mixtures listed may be considered proprietary even though the components are either approved food additives or GRAS. This information is also available on the USDA websites at:

http://www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/labeling/Ingredients-Guidance

http://www.fsis.usda.gov/wps/portal/fsis/topics/regulatory-compliance/labeling

VI. QUESTIONS

A. Refer questions regarding this directive to the Policy Development Staff through askFSIS or by telephone at 1-800-233-3935. When submitting a question, use the Submit a Question tab, and enter the following information in the fields provided:

Subject Field:	Enter **Directive 7120.1**
Question Field:	Enter question with as much detail as possible.
Product Field:	Select General Inspection Policy from the drop-down menu.
Category Field:	Select New Technology as the main category then select either Ingredients or Processing Aides from the drop-down menu.
Policy Arena:	Select Domestic (U.S.) Only from the drop-down menu.

B. For labeling questions enter the following information:

Subject Field:	Enter Ingredient Labeling
Question Field:	Enter question with as much detail as possible.
Product Field:	Select Labeling from the drop-down menu.
Category Field:	Select Ingredients/Additives or other applicable category from the drop-down menu.
Policy Arena:	Select Domestic (U.S.) Only from the drop-down menu.

When all fields are complete, press **Continue** and at the next screen press **Finish Submitting Question.**

NOTE: Refer to FSIS Directive 5620.1, *Using askFSIS*, for additional information on submitting questions.

Assistant Administrator
Office of Policy and Program Development

Table 2: Table of Safe and Suitable Ingredients

1) The use of the substance(s) is consistent with FDA's labeling definition of a processing aid., 2) Generally Recognized as Safe (GRAS), 3) Secondary Direct Food Additive, 4) Direct Food Additive, 5) Color Additive, 6) Food Contact Substance (FCS) subject to food contact notifications (FCN) is defined as any substance that is intended for use as a component of materials used in manufacturing, packing, packaging, transporting, or holding food if such use is not intended to have any technical effect in such food.

***** *Substances identified in* ***bold*** *print in the table are substances that have been added to the directive since it was last issued on May 12, 2017.*

SUBSTANCE	INTENDED USE OF PRODUCT	AMOUNT	REFERENCE	LABELING REQUIREMENTS
Acidifiers/Alkalizers				
A combination of sulfuric acid, ammonium sulfate, copper sulfate, and water	Used as an acidifier in poultry processing water	A combination of sulfuric acid, ammonium sulfate, copper sulfate, and water, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Ammonium hydroxide	pH control agent in brine solutions for meat products	Ammonium hydroxide, sufficient for purpose to achieve a brine solution with a pH of 11.6	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of acidic calcium sulfate	pH control agent in water used in meat and poultry processing	An aqueous solution of acidic calcium sulfate, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (3)
An aqueous solution of citric acid, calcium sulfate and water	pH control agent in water used in meat and poultry processing	An aqueous solution of citric acid, calcium sulfate and water, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (3)
An aqueous solution of citric acid, hydrochloric acid, and phosphoric acid	To adjust the pH in processing water in meat and poultry plants	An aqueous solution of citric acid, hydrochloric acid, and phosphoric acid, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of hydrochloric and acetic acid	pH control agent in water used in poultry processing	An aqueous solution of hydrochloric and acetic acid, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (3)
An aqueous solution of citric and hydrochloric acids	pH control agent in water used in poultry processing	An aqueous solution of citric and hydrochloric acids, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)

An aqueous solution of hydrochloric acid, phosphoric acid, and lactic acid	As a pH control agent on raw and ready- to-eat (RTE) meat products and in water used in poultry processing	Hydrochloric acid and phosphoric acid-sufficient for purpose; lactic acid not to exceed 5.0 percent	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	As an acidifier in poultry scald tanks	The level of peroxyacetic acid will not exceed 220 ppm, hydrogen peroxide will not exceed 110 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 13 ppm	21 CFR 173.370	None under the accepted conditions of use (3)
An aqueous solution of sodium bisulfate and sulfuric acid	pH control agent in water used in poultry processing	An aqueous solution of sodium bisulfate and sulfuric acid, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of sulfuric acid, citric acid, and phosphoric acid	To adjust the pH of PAA for use on poultry carcasses as a spray or dip.	A blend of sulfuric (35 percent), citric (1 percent) and phosphoric acid (1percent) solution that is injected into a diluted water stream of peroxyacetic acid (PAA) [100 PPM or less], hydrogen peroxide , acetic acid, and 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) (FCN 993) - to lower the pH of the PAA water stream from approximately 4.5 to under 2.5.	Sufficient for Purpose	None under the accepted conditions of use (1), (2), and (6)
An aqueous solution of hydrochloric, citric and phosphoric acid	To adjust the pH of PAA for use on poultry carcasses as a spray or dip.	A blend of hydrochloric (13 percent), citric (14 percent) and phosphoric acid (1.6percent) solution that is injected into a diluted water stream of peroxyacetic acid (PAA) [100 PPM or	Sufficient for Purpose	None under the accepted conditions of use (1), (2), and (6)

		less], hydrogen peroxide , acetic acid, and 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) (FCN 993) - to lower the pH of the PAA water stream from approximately 4.5 to under 2.5.		
An aqueous solution of hydrochloric and citric acid	To adjust the pH of PAA for use on poultry carcasses as a spray or dip.	A blend of hydrochloric (14.6 percent) and citric acid (5.5 percent) solution that is injected into a diluted water stream of peroxyacetic acid (PAA) [100 PPM or less], hydrogen peroxide , acetic acid, and 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) (FCN 993) - to lower the pH of the PAA water stream from approximately 4.5 to under 2.5.	Sufficient for Purpose	None under the accepted conditions of use (1), (2), and (6)
An aqueous solution of sulfuric acid and sodium sulfate	As an acidifier agent on meat (beef and pork) and poultry products in the form of a spray, wash, or dip.	An aqueous solution of sulfuric acid and sodium sulfate, sufficient for purpose	GRAS Notice No. 000408	None under the accepted conditions of use (1)
An aqueous solution of sulfuric acid, citric acid, and phosphoric acid	To adjust the pH in poultry chiller water and the processing water in meat and poultry plants	An aqueous solution of sulfuric acid, citric acid, and phosphoric acid, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of sulfuric acid and sodium sulfate	As an acidifier agent on meat and poultry products in the form of a spray, wash, or dip.	An aqueous solution of sulfuric acid and sodium sulfate, sufficient for purpose	21 CFR 170.36	None under the accepted conditions of use (1)
A blend of citric acid, hydrochloric acid, and phosphoric acid	To adjust the acidity in various meat and poultry products	A blend of citric acid, hydrochloric acid, and phosphoric acid, sufficient for purpose	Acceptability determination	Listed by common or usual name in the ingredients statement (2)

Citric acid	To adjust pH in egg products	Citric acid, sufficient for purpose	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Encapsulated Sodium diacetate	pH control agent in fresh and ready-to-eat (RTE) comminuted and whole muscle meat and poultry added as a component in seasoning blends and meat and poultry sauces	Encapsulated Sodium diacetate at a level not to exceed 1.0 percent (total formula weight) in combination with other GRAS acids at a level sufficient to achieve a pH of 4.8 – 5.5	Acceptability determination	Listed by common or usual name in the ingredients statement. Comminuted product must be descriptively labeled. (2)
Magnesium hydroxide	pH control agent in poultry processing water	Magnesium hydroxide, sufficient for purpose	21 CFR 184.1428	None under the accepted conditions of use (1)
Potassium carbonate or potassium bicarbonate	pH control agents in egg products, meat and poultry products, processing meat and poultry products and processing fish of the order Siluriformes	Potassium carbonate or potassium bicarbonate, sufficient for purpose	21 CFR 184.1619 21 CFR 184.1613	None under the accepted conditions of use (1)
Potassium hydroxide	pH control agent in water used in poultry processing	Potassium hydroxide, sufficient for purpose	21CFR 184.1631	None under the accepted conditions of use (1)
Potassium hydroxide and sodium hydroxide	To adjust pH in egg products	Potassium hydroxide and sodium hydroxide, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Sodium carbonate or sodium bicarbonate	To adjust pH in egg products	Sodium carbonate or sodium bicarbonate, sufficient for purpose	21 CFR 184.1736	None under the accepted conditions of use (1)
Sodium carbonate or sodium bicarbonate	pH control agent in meat and poultry products and for processing meat and poultry products	Sodium carbonate or sodium bicarbonate, sufficient for purpose	21 CFR 184.1742 21 CFR 184.1736	None under the accepted conditions of use (1)
Sodium hydroxide	pH control agent in water used in poultry processing and in red meat processing	Sodium hydroxide, sufficient for purpose	21 CFR 184.1763	None under the accepted conditions of use (1)
Sodium hydroxide and potassium hydroxide	pH control agent in water used in poultry processing and red -meat processing	Sodium hydroxide and potassium hydroxide, sufficient for purpose	21 CFR 184.1763; 21CFR 184.1631	None under the accepted conditions of use (1)

Sodium bisulfate	pH control agent in water used in meat and poultry processing	Sodium bisulfate, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Sodium bisulfate	pH control agent in meat and poultry soups	Sodium bisulfate not to exceed 0.8 percent of product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium bisulfate	Added to sauces used as separable components in the formulation of various meat products	Sodium bisulfate, sufficient for purpose	GRAS Notice No. 000003	Listed by common or usual name in the ingredients statement (2)
Sodium metasilicate	Poultry chiller water	Sodium metasilicate, sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Sulfuric acid	pH control agent in water used in poultry processing	Sulfuric acid at levels sufficient for purpose	Acceptability determination	None under the accepted conditions of use (3)
Sulfuric acid, phosphoric acid, citric acid, and hydrochloric acid	To adjust the pH in poultry chiller water	Sulfuric acid, phosphoric acid, citric acid, and hydrochloric acid, sufficient for purpose	Acceptability determination; 21 CFR 184. 1095; 21 CFR 182.1073; 21 CFR 184.033; 21 CFR 182.1057	None under the accepted conditions of use (1)
Sulfuric and Hydrochloric acid	pH control agent in poultry processing water	Sulfuric and Hydrochloric acid, sufficient for purpose	21 CFR 184.1095; 21CFR 182.1057	None under the accepted conditions of use (1)
Anticoagulants				
Sodium tripolyphosphate	Sequestrant/anti-coagulant for use in recovered livestock blood which is subsequently used in food products	Sodium tripolyphospate not to exceed 0.5 percent of recovered blood	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Antimicrobials				
Acetic acid	Dried and fermented sausages, prosciutto	Use of up to 4 percent acetic acid solution measured prior to application applied as a spray	Acceptability determination	None under the accepted conditions of use (1)
Acetic acid	**As an antimicrobial agent in chicken livers**	**For use as an antimicrobial immersion dip at a concentration of up to 5 percent and not to exceed two minutes**	**Acceptability determination**	**None under the accepted conditions of use (1)**

Aqueous mixture of dextrose, triphos-phate, diphosphate fructose, ascorbic acid, citric acid, lactic acid	As an antimicrobial agent to treat poultry, beef, and pork, including whole or cut meat**,** including carcasses, parts, trim, and organs, as a wash, spray, rinse, dip, chiller water or scald water, pre and post chill.	1 percent to 5 percent aqueous mixture of dextrose, triphosphate, diphosphate fructose, ascorbic acid, citric acid, lactic acid by weight along with the equivalent amount of lactic acid	Acceptability determination	None under the accepted conditions of use
An aqueous mixture of peroxyacetic acid (PAA)**,** hydrogen peroxide (HP)**,** acetic acid, 1-hydroxyethylidine-1, 1-diphosphonic acid HEDP), and sulfuric acid (optional)	For use in process water used for washing, rinsing, or cooling whole or cut meat or poultry including carcasses, parts, trim, and organs.	(1) Final poultry process water not to exceed 1000 ppm peroxyacetic acid (PAA), 385 ppm hydorgen peroxide (HP) and 50 ppm 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP); (2) Meat applications as a spray not to exceed 400 ppm PAA, 155 ppm HP, and 20 ppm HEDP; (3) Hide wash applications as a spray not to exceed 400 ppm PAA, 155 ppm HP, and 20 ppm HEDP with a contact time of 5-30 seconds.	Food Contact Substance Notification No. FCN 1132	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)	(1) In poultry process water for spraying, washing, rinsing, dipping, chill water, low-temperature (less than 40°F) immersion baths, or scald water on poultry parts, organs, and carcasses. (2) In process water used for washing, rinsing, or cooling whole or cut meat including carcasses, parts, trim, and organs. (3) In process water or ice for washing, rinsing, storing or cooling of	((1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 750 ppm, and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 136 ppm; (2) Not to exceed 400 ppm PAA, not to exceed 350 ppm HP, and not to exceed 22.5 ppm HEDP; (3) Not to exceed 230 ppm PAA, not to exceed 165 ppm HP, and	Food Contact Substance Notification No. FCN 001247	None under the accepted conditions of use (6)

	processed and pre-formed meat and poultry products.	not to exceed 14 ppm HEDP.D10		
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	As an antimicrobial agent to treat poultry process water or ice as a spray, wash, rinse, dip, chiller water, or scald water for whole or cut poultry including parts, trim, and organs.	Not to exceed use concentra-tions of 2000 ppm peroxyacetic acid (PAA), 728 ppm hydrogen peroxide (HP), and 13.3 ppm of 1-hydroxyethyliden e-1, 1-diphosphonic acid (HEDP).	Food Contact Substance Notification No. FCN 1379	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid (optional) and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	(1) Poultry post-main chiller (air or water) secondary processing of whole birds, parts, pieces, skin on or off; organs, in the washing, rinsing, cooling and processing of poultry products; and, (2) poultry use in pre-air chiller dip tanks and post-main water chiller systems as finishing chillers.	The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 770 ppm, and 1-hydroxyethyliden e-1, 1-diphosphonic acid (HEDP) not to exceed 100 ppm measured prior to application.	Food Contact Substance Notification No. FCN 1419	None under the accepted conditions of use (6)
Aqueous mixtures of peroxyacetic acid (PAA), hydrogen peroxide, acetic acid and 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP)	(1) In poultry process water for spraying, washing, rinsing, dipping, chill water, low-temperature (less than 40°F) immersion baths, or scald water on poultry parts, organs, and carcasses. (2) In process water used for washing, rinsing, or cooling whole or cut meat including carcasses, parts,	(1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 750 ppm, and 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP) not to exceed 136 ppm; (2) Not to exceed 400 ppm PAA, not to exceed 350 ppm HP, and not to exceed 22.5 ppm HEDP; (3) Not to exceed 230 ppm	Food Contact Substance Notification No. FCN 1465	None under the accepted conditions of use (6)

	trim, and organs. (3) In process water or ice for washing, rinsing, storing or cooling of processed and preformed meat and poultry products	PAA, not to exceed 165 ppm HP, and not to exceed 14 ppm HEDP.		
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) and optionally, sulfuric acid	Water, brine, or ice used for washing, rinsing, or cooling whole or cut meat, including carcasses, parts, trim, organs.	The level of peroxyacetic acid (PAA) not to exceed 1800 ppm, hydrogen peroxide (HP) not to exceed 675 ppm and1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 51.4 ppm	Food Contact Substance Notification No.1810	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid (optional) and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), catalyzed with sulfuric acid	(1) In process water used for washing, rinsing, or cooling whole or cut meat including carcasses, parts, trim, and organs. (2) In process water or ice for washing, rinsing, storing, or cooling of processed and pre-formed meat products	(1) The level of peroxyacetic acid (PAA) not to exceed 1800 ppm, hydrogen peroxide (HP) not to exceed 600 ppm, and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 22.5 ppm; (2) Not to exceed 495 ppm PAA, 165 ppm HP, and 14 ppm HEDP.	Food Contact Substance Notification No. FCN 1664	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid (optional) and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), catalyzed with sulfuric acid	(1) in spray, mist, wash, rinse, post chill dip chiller water, and scald water for meat and poultry (including livestock and game) carcasses, parts, trim, and organs. (2) washing, rinsing, or cooling processed and pre-formed meat and poultry (including livestock and game) products.	(1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, 750 ppm hydrogen peroxide (HP), and 10 ppm 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP); (2) Not to exceed 495 ppm PAA, 186 ppm HP, and 2.5 ppm HEDP.	Food Contact Substance Notification No. 1666	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid, and hydrogen peroxide, acetic acid, 1- hydroxye-	Process water or ice for washing, rinsing, storing, or cooling whole or cut meat, including carcasses,	The level of peroxyacetic acid (PAA) will not exceed 400 ppm, hydrogen	Food Contact Substance Notification No. FCN 1394	None under the accepted conditions of use (6)

thylidene-1, 1-diphosphonic acid (HEDP), and optionally sulfuric acid	parts, trim, and organs	peroxide (HP) will not exceed 267 ppm, and 1-hydroxyethy-lidene- 1, 1-diphosphonic acid (HEDP) will not exceed 27 ppm.		
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP), water, and optionally sulfuric acid	(1) Process water or ice for washing, rinsing, or cooling whole or cut meat, including carcasses, parts, trim, and organs; (2) Process water, ice, or brine for washing, rinsing, storing, or cooling processed and preformed meat as defined in 21 CFR 170.3(n)(29) and poultry as defined in 21 CFR 170.3(n)(34); and (3) Process water used as a spray, wash, rinse, dip, chiller water, low-temperature (e.g. less than 40 degrees F) immersion baths, or scald water for poultry parts, organs, and carcasses.	(1) The level of peroxyacetic acid (PAA) will not exceed 400 ppm, hydrogen peroxide (HP) will not exceed 280 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 20 ppm; (2) The level of PAA will not exceed 230 ppm, HP will not exceed 280 ppm, and HEDP will not exceed 14 ppm; (3) The level of PAA will not exceed 2000 ppm and HEDP will not exceed 136 ppm	Food Contact Substance Notification No. FCN 1284	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP), water, and optionally sulfuric acid	(1) Process water or ice for washing, rinsing, or cooling whole or cut meat, including carcasses, parts, trim, and organs; (2) Process water, ice, or brine for washing, rinsing, storing, or cooling processed and	1) The level of peroxyacetic acid (PAA) will not exceed 388 ppm, hydrogen peroxide (HP) will not exceed 155 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 19	Food Contact Substance Notification No. FCN 1389	None under the accepted conditions of use (6)

	preformed meat as defined in 21 CFR 170.3(n)(29) and poultry as defined in 21 CFR 170.3(n)(34); And (3) Process water used as a spray, wash, rinse, dip, chiller water, low- temperature (e.g. less than 40 degrees F) immersion baths, or scald water for poultry parts, organs, and carcasses	ppm; (2) The level of PAA will not exceed 230 ppm, HP will not exceed 92 ppm, and HEDP will not exceed 11 ppm; (3) The level of PAA will not exceed 2000 ppm, HP will not exceed 800 ppm, and HEDP will not exceed 96 ppm.		
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP), and sulfuric acid (optional)	(1) for washing, rinsing or cooling meat carcasses, parts, trim, and organs carcasses, hides, parts, trim and organs. (2) for use in process water applied as a spray, wash, rinse, dip, chiller water, post-main chiller, secondary processing, pre-air chiller dip tanks and post-main water chiller systems as finishing chillers, low-temperature (e.g. less than 40°F) immersion baths, or scald water for poultry carcasses, parts and pieces, and skin on or off and organs. (3) for use in process water, ice, or brine used for washing, rinsing, or cooling of processed and pre-formed meat and poultry products.	(1) An aqueous mixture not exceeding 460 ppm peroxyacetic acid (PAA), 220 ppm hydrogen peroxide (HP), 30 ppm 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP); (2) An aqueous mixture not exceeding 2000 ppm PAA, 950 ppm HP, and 113 ppm HEDP; (3) An aqueous mixture not exceeding 230 ppm PAA, 110 ppm HP, 15 ppm HEDP.	Food Contact Substance Notification No. FCN 1638	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen	(1) In poultry as a spray, wash, rinse, dip, chiller	(1) The level not to exceed 2000 ppm peroxyacetic	Food Contact Substance	None under the accepted conditions

peroxide (HP), 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) and dipicolinic acid (DPA); and optionally sulfuric acid.	water, low-temperature (e.g., less than 40°F) immersion baths, or scald water for whole or cut poultry carcasses, parts, trim, and organs; (2) In process water, ice, or brine used for washing, rinsing, or cooling of whole or cut meat, including carcasses, parts, trim, and organs; (3) In process water, ice, or brine used for washing, rinsing, or cooling of processed and pre-formed meat.	acid (PAA), 933 ppm hydrogen peroxide (HP), 120 ppm 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) and 0.5 ppm dipicolinic acid (DPA);	Notification No. FCN 1639	of use (6)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP), and sulfuric acid (optional)	Used in the process water used in the production of meat, carcasses, parts, trim and organs.	(1) An aqueous mixture not exceeding 1800 ppm peroxyacetic acid (PAA), 600 ppm hydrogen peroxide (HP), 12 ppm 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) for washing, rinsing or cooling meat carcasses, parts, trim, and organs; (2) An aqueous mixture not exceeding 495 ppm PAA, 165 ppm HP, 6 ppm HEDP for washing, rinsing, or cooling processed and pre-formed meat.	Food Contact Substances Notification No. FCN 1694	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic	Process water and ice used in poultry applied as a spray, wash, rinse, dip, chiller water, low temperature (less than 40°F) immersion	An aqueous mixture not to exceed 2000 ppm peroxyacetic acid (PAA), 770 ppm hydrogen peroxide (HP) and 100 ppm 1-	Food Contact Substance Notification No. FCN 1806	None under the accepted conditions of use (3)

acid (HEDP), and sulfuric acid (optional)	baths or scald water for whole or cut poultry carcasses, parts, trim and organs	hydroxyethylidene-1, 1-disphosphonic acid (HEDP)		
An aqueous mixture of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP)	Used as a spray, wash, rinse, dip, chiller water or scald water for meat and poultry parts, organs, trim and carcasses; and in process water, ice, or brine for washing, rinsing, storing, or cooling processed and preformed meat and poultry.	An aqueous mixture not exceeding 2000 ppm peroxyacetic acid (PAA), 1474 ppm hydrogen peroxide (HP), and 118 ppm1-hydroxyethylidene-1, 1-disphosphonic acid (HEDP)	Food Contact Substance Notification No. 1745 (replaces FCN 1096, FCN 1236 and FCN 1495)	None under the accepted conditions of use (1)
A mixture of peroxyacetic acid and hydrogen peroxide; includes optionally acetic acid or sulfuric acid, depending on the desired pH of the wash/chiller process water.	As an antimicrobial agent applied to meat (beef or pork) and poultry products for: (1) beef or pork carcasses, parts, trim, and organs; and (2) poultry parts, organs, and carcasses.	For: (1) beef or pork carcasses, parts, trim, and organs at a level not to exceed 400 ppm peroxyacetic acid and 280 ppm hydrogen peroxide; and (2) poultry parts, organs, and carcasses at a level not to exceed 1000 ppm peroxyacetic acid and 700 ppm hydrogen peroxide.	Food Contact Substances Notification No. FCN 1362	None under the accepted conditions of use (6)
A mixture of peroxyacetic acid, hydrogen peroxide, and 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP),	As an antimicrobial additive in water or ice for: 1) washing, rinsing, cooling, or processing whole or cut meat, including parts, trim and organs; and 2) application to whole or cut poultry, including parts, trim and organs, as a spray, wash, rinse dip and in chiller water or scald water.	220 ppm of peroxyacetic acid, 80 ppm of hydrogen peroxide, and 13 ppm of HEDP	Food Contact Substance Notification No. FCN 0001363	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen	Used in process water used in the production of	Not to exceed 460 ppm peroxyacetic acid (PAA), 100	Food Contact	None under the accepted

peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP), dipicolinic acid (DPA), and sulfuric acid	meat carcasses, parts, trim and organs	ppm hydrogen peroxide (HP), 2 ppm 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP), 0.5 ppm dipicolinc acid (DPA), acetic acid and sulphuric acid.	Substance Notification No. FCN 1477	conditions of use (1)
An aqueous solution of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	(1) In process water used for washing, rinsing or cooling whole or cut red meat including carcasses, parts, trim, and organs. (2) In process water or ice for washing, rinsing, storing or cooling of processed and pre-formed red meat.	(1) Not to exceed 1800 ppm peroxyacetic acid (PAA), 600 ppm hydrogen peroxide (HP), and 12 ppm 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) for use in process water or ice used for washing, rinsing, spraying, misting or cooling whole or cut meat including carcasses, parts, trim, and organs; (2) Not to exceed 495 ppm PAA, 165 ppm HP, and 6 ppm HEDP for use in process water, brine, or ice used for washing, rinsing, storing ,misting or cooling processed and pre-formed red meat.	Food Contact Substance Notification No. FCN 1490	None under the accepted conditions of use (6)
Aqueous mixtures of peroxyacetic acid (PAA), hydrogen peroxide,1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), acetic acid and water	**(**1) Used as a spray, wash, rinse, dip, chiller water or scald water for poultry parts, organs, trim and carcasses; and in process water, ice, or brine for washing, rinsing, storing, or cooling processed and preformed poultry. **(**2) Used as a spray**,** rinse dip, chiller water or scald water for raw meat carcasses,	(1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 1474 ppm, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP) not to exceed 118 ppm (2) Not to exceed 400 ppm PAA, not to exceed 295 ppm HP, not to	Food Contact Substance Notification No. FCN 1495	None under the accepted conditions of use (6)

	parts, trim and organs; and in process water, ice, or brine for washing, rinsing, storing, or cooling processed and preformed meat.	exceed 23.7 ppm HEDP.		
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulphuric acid and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)	1. Spray, wash, rinse, dip, chiller water, low-temperature immersion baths(e.g., less than 40°F), scald water or other process water for poultry parts, organs and carcasses and; 2. Process water, brine, or ice used for washing, rinsing, storing, or cooling processed and pre-formed poultry products as defined in 21 CFR 170.3(n)(34).	(1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 666 ppm and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 130 ppm.; (2) The level of PAA not to exceed 230 ppm, HP not to exceed 77 ppm and HEDP not to exceed 15 ppm.	Food Contact Substance Notification No. FCN 1514	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulphuric acid, dipicolinic acid and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)	1. Spray, wash, rinse, dip, chiller water, low-temperature immersion baths(e.g., less than 40°F) or scald water for whole or cut poultry carcasses, parts, trim and organs. 2. Process water, ice or brine used for washing, rinsing, storing, or cooling of processed and pre-formed meat and poultry products as defined in 21 CFR 170.3(n)(29) and 21 CFR 170.3(n)(34).	(1) The level of peroxyacetic acid (PAA) not to exceed 1150 ppm, hydrogen peroxide (HP) not to exceed 235 ppm, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 2.5 ppm and dipicolinic acid (DPA) not to exceed 0.5 ppm.; (2) The level of PAA not to exceed 230 ppm, HP not to exceed 50 ppm, HEDP not to exceed 0.5 ppm and DPA not to exceed 0.1 ppm .	Food Contact Substance Notification No. FCN 1522	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1, 1-dphosphonic acid (HEDP)	(1) Used as a spray, wash, rinse, dip, chiller water, low-temperature (e.g., less than 40°F) immersion baths, or scald water for whole or cut poultry	(1) Not to exceed 2000 ppm peroxyacetic acid (PAA), 730 ppm hydrogen peroxide (HP), and 14 ppm 1-hydroxyethylidene-	Food Contact Substance Notification No. FCN 1580	None under the accepted conditions of use (1)

	carcasses, parts, trim, and organs. (2) Used in process water or ice used for washing, rinsing, storing, or cooling whole or cut meat, including carcasses, parts, trim, and organs.	1, 1-diphosphonic acid (HEDP); (2) Not to exceed 1800 ppm 655 ppm HP, and 12 ppm HEDP		
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1, 1-dphosphonic acid (HEDP)	Used in water, brine or ice for washing, rinsing, storing, or cooling processed and performed meat/poultry and eggs.	1) An aqueous mixture not exceeding 495 ppm PAA, 180 ppm HP, and 14 ppm HEDP 2) An aqueous mixture not exceeding 230 ppm PAA, 84 ppm HP, and 14 ppm HEDP 3) An aqueous mixture not exceed ing 2000 ppm PAA, 730 ppm HP, and 120 ppm HEDP	Food Contact Substance Notification No. FCN 1622	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP), dipicolinic acid (DPA), and sulfuric acid	In process water and ice used in spray, wash, r inse, dip (minimum dwell time 1-15 seconds), chiller, or scald water for poultry carcasses, parts, and organs	The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 403 ppm, 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) not to exceed 5 ppm, dipicolinic acid (DPA) not to exceed 0.88 ppm.	Food Contact Substance Notification No. 1662	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP) and optionally sulfuric acid	1. Used in water or ice for washing, rinsing or cooling meat carcasses, parts, trim, and organs 2. Used in process water, brine or ice for washing, rinsing, storing, or cooling of processed and pre-	(1) An aqueous mixture not exceeding 1800 ppm peroxyacetic acid (PAA), 1215 ppm hydrogen peroxide (HP), 121.5 ppm 1-hydroxyethylidene-1, 1-disphosphonic acid (HEDP); (2) An aqueous mixture not	Food Contact Substance Notification No. 1688	None under the accepted conditions of use (6)

	formed meat products as defined in 21 CFR 170.3 (n)(29).	exceeding 495 ppm PAA, 335 ppm HP, and 33.5 ppm HEDP.		
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)	(1) in spray, wash, rinse, dip, chiller water, low-temperature immersion baths, or scald water for whole or cut poultry including carcasses, parts, trim, and organs. (2) In process water or ice used for washing, rinsing, storing, or cooling whole or cut meat including carcasses, parts, trim, and organs.	(1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 750 ppm, and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 136 ppm; (2) Not to exceed 1800 ppm PAA, 675 ppm HP, and 33 ppm HEDP.	Food Contact Substance Notification No. 1713	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP)	1. Used in spray, wash , rinse, dip (≤ 45 seconds), chiller water (main chiller ≤ 120 minutes, pre/post chill ≤ 20 seconds), low temperature (e.g. less than 40°F) immersion baths (3-30 seconds), or scald water for whole or cut poultry carcasses, parts, trim, and organs or in water for washing shell eggs. 2. Used in spray, wash, rinse, dip (≤ 45 seconds), chiller water (main chiller ≤ 120 minutes, pre/post chill ≤ 20 seconds), or scald water for meat carcasses, parts, trim, and organs 3. Used in process water or ice for washing, rinsing,	1. (1) An aqueous mixture not exceeding 2000 ppm peroxyacetic acid (PAA), 773 ppm hydrogen peroxide (HP), 118 ppm 1-hydroxyethylidene-1, 1-disphosphonic acid (HEDP); (2) An aqueous mixture not exceeding 460 ppm PAA, 177 ppm HP, and 27 ppm HEDP; (3) An aqueous mixture not exceeding 495 ppm PAA, 190 ppm HP, 29 ppm HEDP; (4) 230 ppm PAA, 88 ppm HP, and 14 ppm HEDP.	Food Contact Substance Notification No. FCN 1715	None under the accepted conditions of use (1)

	or cooling of processed and preformed meat products. 4. In water or ice used for washing, rinsing, or cooling processed and preformed poultry products;			
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and sulfuric acid (optional)	For use as an antimicrobial agent in: 1) brines, sauces, and marinades applied either on the surface or inject into processed or unprocessed, cooked or uncooked, whole or cut, poultry or parts and pieces, 2) surface sauces and marinades applied on processed and preformed meat and poultry products as described in 21 CFR 170.3(n)(29) and (34).	An aqueous mixture not exceeding 50 ppm peroxyacetic acid (PAA), 33 ppm hydrogen peroxide (HP), 3.3 ppm 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP).	Food Contact Substance Notification No. 1726	Non under the accepted conditions of use (1)
An aqueous mixture of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP), and sulfuric acid (optional)	For use in process water or ice used for washing, rinsing or cooling whole or cut meat, including carcasses, hides, parts, trim and organs	An aqueous mixture not exceeding 1200 ppm peroxyacetic acid (PAA), 275 ppm hydrogen peroxide (HP), and 33 ppm1-hydroxyethylidene-1, 1-disphosphonic acid (HEDP).	Food Contact Substance Notification No. 1738	None under the accepted conditions of use (1)
An aqueous potassium hydroxide-based solution with proprietary salts	Hide-on carcass wash in spray cabinet	Potassium hydroxide-based wash solution with proprietary salts used at a final concentration of 1.0 - 3.0 oz. of wash solution per gallon	Acceptability determination	None under the accepted conditions of use (1)

		of water		
An aqueous sodium hydroxide-based solution with proprietary blends of adjuvants	Hide-on carcass wash in spray cabinet	Sodium hydroxide-based wash solution used at a final concentration of 0.5 - 2.0 oz. of wash solution per gallon of water	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene, 1,1-diphosponic acid (HEDP) and optionally sulfuric acid	As an antimicrobial agent in: (1) brines, sauces, and marinades to be applied on the surface or injected into processed or unprocessed, cooked or uncooked whole or cut poultry or parts and pieces and (2) surface sauces and marinades applied on processed and preformed meat and poultry products as described in 21 CFR 170.3(n) (29) and (34)	Not to exceed 50 ppm peroxycetic acid (PAA), 18 ppm hydrogen peroxide (HP), 6 ppm 1-hydroxyethylidene, 1,1-diphosponic acid (HEDP) acetic acid, and optionally sulfuric acid	Food Contact Substance Notification No. FCN 1654	None under the accepted conditions of use (6)
An aqueous solution of potassium hydroxide	Hide-on carcass wash in spray cabinet	Solution of potassium hydroxide wash solution used at final concen-tration 1.5 - 4.0 oz. of wash solution per gallon of water	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of potassium hydroxide	Hide-on carcass wash in spray cabinet	Solution of potassium hydroxide solution wash solution used at a final concentration of 0.01 - 0.40 percent (weight per weight)	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of sodium diacetate (4 percent), lactic	Cooked meat products	Aqueous solution of sodium diacetate (4 percent), lactic acid	Acceptability determination	Listed by common or usual name in

acid (4 percent), pectin (2 percent), and acetic acid (0.5 percent)		(4 percent), pectin (2 percent), and acetic acid (0.5 percent) not to exceed 0.5 percent of finished product formulation.		the ingredients statement (2)
An aqueous solution of acidic calcium sulfate and lactic acid	Applied as a continuous spray or a dip on raw poultry carcasses, parts, giblets, and ground poultry	Acidic calcium sulfate sufficient for purpose; lactic acid not to exceed 5.0 percent and 55^{0}C.	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of hydrochloric acid, phosphoric acid, and lactic acid	Raw and ready-to-eat (RTE) meat products and in water used in poultry processing	Hydrochloric acid and phosphoric acid- sufficient for purpose; lactic acid not to exceed 5.0 percent	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of citric acid and hydrochloric acids	Permeable and impermeable casings of meat and poultry products applied as a spray, dip, or immersion to casings prior to opening, removal, or slicing operations.	Solution of citric acid and hydrochloric acid adjusted to a pH less than 2.5.	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of citric and hydrochloric	Applied to processed and comminuted red meat products in an enclosed mixing, grinding, and/or blending system.	Solution of citric acid and hydrochloric acid adjusted to a pH of 0.5 to 2.0.	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of silver dihydrogen citrate	As an antimicrobial solution applied by spray or dip on poultry carcasses, parts, and organs. Not for use in combination with any other silver containing antimicrobial and is not intended to be used in chiller baths.	For use at levels up to 160 ppm silver dihydrogen citrate in the spray or dip applied to poultry carcasses, parts, and organs.	Food Contact Substance Notification No. FCN 1768	None under the accepted conditions of use (6)
An aqueous solution of silver dihydrogen citrate stabilized with sodium lauryl sulfate and citric acid	As an antimicrobial solution applied by spray or dip on poultry carcasses, parts and organs	For use at levels up to 30 ppm silver dihydrogen citrate in the spray or dip applied to poultry	Food Contact Substance Notification No. FCN	None under the accepted conditions of use (6)

	The FCS is not for use in combination with any other silver containing antimicrobial and is not intended to be used in chiller baths	carcasses parts and organs	1569	
An aqueous solution of sodium octanoate or octanoic acid and either glycerin and/or propylene glycol and/or a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of octanoic acid emulsi-fication) adjusted to a final solution pH of 1.5 to 4.0 using sodium hydroxide, potassium hydroxide, or an acceptable GRAS acid	Various non-standardized RTE meat and poultry products and standardized meat and poultry products that permit the use of any safe and suitable antimicrobial agent	Solution of sodium octanoate or octanoic acid and either glycerin and/or propylene glycol and/or a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of octanoic acid emulsification) adjusted to a final solution pH of 1.5 to 4.0 using sodium hydroxide, potassium hydroxide, or an acceptable GRAS acid applied to the surface of the product at a rate not to exceed 400 ppm octanoic acid by weight of the finished food product	Acceptability determination	None under the accepted conditions of use (3)
An aqueous solution of sodium octanoate, potassium octanoate, or octanoic acid and either glycerin and/or propylene glycol and/or a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of octanoic acid emul-sification) adjusted to a final solution pH of 1.5 to 6.0 using sodium hydroxide, potassium hydroxide,	Fresh meat primals and subprimals and cuts	Solution of sodium octanoate, potassium octanoate, or octanoic acid and either glycerin and/or propylene glycol and/or a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of octanoic acid emulsification) adjusted to a final solution pH of 1.5 to 6.0 using sodium	Acceptability determination	None under the accepted conditions of use (3)

or an acceptable GRAS acid		hydroxide, potassium hydroxide, or an acceptable GRAS acid applied to the surface of the product at a rate not to exceed 400 ppm octanoic acid by weight of the final product		
An aqueous solution of sulfuric acid and sodium sulfate	In the form of a spray, wash, or dip on the surface of meat (beef and pork) and poultry products processing.	Solution of sulfuric acid and sodium sulfate at concen-trations sufficient to achieve a targeted pH range of 1.0 – 2.2 on the surface of meat and poultry	GRAS Notice No. 000408	None under the accepted conditions of use (2)
An aqueous solution of sulfuric acid, citric acid, and phosphoric acid	Process water applied to poultry parts, trim, organs, and carcasses as a spray, wash, rinse, dip, chiller water, or scald water.	Solution of sulfuric acid, citric acid, and phosphoric acid sufficient for purposes.	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of citric and hydrochloric acids adjusted to a pH of 1.0 to 2.0	Poultry carcasses, parts, trim, and organs	An aqueous solution of citric and hydrochloric acids adjusted to a pH of 1.0 to 2.0 applied as a spray or dip with a minimum contact time of 2 to 5 seconds pH measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
An aqueous solution of citric and hydrochloric acids adjusted to a pH of 0.5 to 2.0	Meat carcasses, parts, trim, and organs	An aqueous solution of citric and hydrochloric acids adjusted to a pH of 1.0 to 2.0 applied as a spray or dip for a contact time of 2 to 5 seconds PH measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
A blend of citric acid (1.8 percent), phosphoric acid (1.72 percent), and	Poultry carcasses	A blend of citric acid (1.87 percent), phosphoric acid	Acceptability determination	None under the accepted conditions of use (1)

hydrochloric acid (0.8 percent)		(1.72 percent), and hydrochloric acid (0.8 percent) applied as a spray with a minimum contact time of 1 to 2 seconds and allowed to drip from the carcasses for 30 seconds		
A blend of citric acid and sorbic acid in a 2:1 ratio	To reduce the microbial load of purge trapped inside soaker pads in packages of raw whole muscle cuts of meat and poultry	Incorporated into soaker pads at a level not to exceed 1 to 3 grams per pad	Acceptability determination	None under the accepted conditions of use (1)
A blend of lactic acid (45-60 percent), citric acid (20-35 percent), and potassium hydroxide (>1 percent)	Poultry, beef, pork, and lamb carcasses, heads, and organs including unskinned livers (outer membrane intact); skinned livers (outer membrane removed) tongues, tails, primal cuts, sub-primal cuts, cuts, and trimmings. Skinned livers must be drained for a minimum of 1-2 minutes after application and before packaging.	Blend of lactic acid (45-60 percent), citric acid (20-35 percent), and potassium hydroxide (>1 percent) applied as a spray or dip at a level not to exceed 2.5 percent solution by weight.	Acceptability determination	None under the accepted conditions of use (1)
A blend of salt, sodium acetate, lemon extract, and grapefruit extract	Ground beef, cooked, cured, comminuted sausages (e.g., bologna), and RTE whole muscle meat products	Blend of salt, sodium acetate, lemon extract, and grapefruit extract not to exceed 0.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement for the RTE whole muscle meat products, and cooked, cured, comminuted sausages. Ground beef must be descriptively labeled (4)
A blend of salt, sodium acetate, lemon extract, and grapefruit extract	Beef steaks	Blend of salt, sodium acetate, lemon extract, and grapefruit extract dipped in a solution	Acceptability determination	Product must be descriptively labeled (4)

		containing 2.5 percent of the blend		
A blend of salt, lemon extract, and grapefruit extract	Ground beef	Blend of salt, lemon extract, and grapefruit extract not to exceed 0.5 percent of the product formulation	Acceptability determination	Product must be descriptively labeled (4)
A blend of salt, lactic acid, sodium diacetate, and mono- and diglycerides	Various non-standardized RTE meat and poultry products and standardized meat and poultry products that permit the use of any safe and suitable antimicrobial agent	Blend of salt, lactic acid, sodium diacetate, and mono- and diglycerides not to exceed 0.2 percent of product formulation	Acceptability determination	All ingredients, except for the mono- and diglycerides, must be listed by common or usual name in the ingredients statement (4)
A mixture of hops beta acids, egg white lysozyme, and cultured skim milk	In a salad dressing used in refrigerated meat and poultry deli salads	Mixture of hops beta acids, egg white lysozyme, and cultured skim milk not to exceed 1.5 percent of the finished salad	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
A combination of natural source of nitrite and natural source of ascorbate	As an antimicrobial agent in any meat or poultry product (including ground, formed, or whole muscle meat) that will be heat-treated and processed to be NRTE or RTE.	For use as a component in the product formulation at 1) a rate of a minimum 75 ppm of nitrite from natural sources and minimum 500 ppm of ascorbate from natural sources or 2) a rate of a minimum 100 ppm of nitrite from natural sources and minimum 250 ppm of ascorbate from natural sources by weight of the finished food product. NOTE: Maximum limits for nitrite in bacon and other cured products in 9 CFR 424.22 and 9 CFR 424.21(c) apply to natural sources used instead of pure sodium nitrite. Maximum limits for ascorbate in 9 CFR 424.21(c) also apply	Acceptability determination	Listed by common or usual name in the ingredients statement (1). The products must be labeled as uncured under 9 CFR 317.17. The statement “no nitrates or nitrites added” needs to be qualified with the statement * except for those naturally occurring in **[insert name** natural source of nitrate].

		to this use.		
A combination of sulfuric acid, ammonium sulfate, and water	Used as an acidifier in poultry processing water	Combination of sulfuric acid, ammonium sulfate, and water sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
A mixture of maltodextrin (DE of 5 or greater), cultured dextrose, sodium diacetate, egg white lysozyme, and nisin preparation	In salads, sauces, and dressings to which fully cooked meat or poultry will be added	Mixture of maltodextrin (DE of 5 or greater), cultured dextrose, sodium diacetate, egg white lysozyme, and nisin preparation not to exceed 1.5 percent by weight of the finished product	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)	1. Spray, wash, rinse, dip, chiller water, low-temperature (e.g., less than 40°F) immersion baths, scald water for whole or cut poultry carcasses, parts, trim, skin on or off, organs, and egg shell washes; 2. Water or ice used for washing, rinsing, storing, or cooling whole or cut meat, including carcasses, parts, trim, organs and; 3. Water, ice, or brine used for washing, rinsing, storing, or cooling of processed and pre-formed meat as defined in 21 CFR 170.3(n)(29) and poultry as defined in 21 CFR 170.3(n)(34).	(1) The level of peroxyacetic acid (PAA) not to exceed 2000 ppm, hydrogen peroxide (HP) not to exceed 933 ppm and1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) not to exceed 120 ppm; (2) The level of PAA not to exceed 400 ppm, HP not to exceed 187 ppm and HEDP not to exceed 24 ppm; (3) The level of PAA not to exceed 230 ppm, HP not to exceed 107 ppm and HEDP not to exceed 14 ppm.	Food Contact Substance Notification No. FCN 1501	None under the accepted conditions of use (6)
A mixture of sodium acetate, sodium diacetate, and *Carnobacterium maltaromaticum* strain CB1 (viable and heat-treated)	Meat and poultry product	Mixture of sodium acetate, sodium diacetate, and Carnobacterium maltaromaticum strain CB1 (viable and heat-treated)	Acceptability determination	Listed by common or usual name in the ingredients statement (4)

		not to exceed 0.5 percent of the product formulation		
Acidified sodium chlorite	Poultry carcasses and parts; meat carcasses, parts, and organs; processed, comminuted, or formed meat food products (including RTE)	500 to 1200 ppm in combination with any GRAS acid at a level sufficient to achieve a pH of 2.3 to 2.9 in accordance with 21 CFR 173.325 (*Note: The pH depends on the type of meat or poultry product.)*	21 CFR 173.325	None under the accepted conditions of use (3)
Acidified sodium chlorite	Processed, comminuted or formed poultry products (including RTE)	500 to 1200 ppm of sodium chlorite in combination with any GRAS acid at a level sufficient to achieve a pH of 2.3 to 2.9 in accordance with 21 CFR 173.325 (Note: The pH depends on the type of meat or poultry product.)	Acceptability determination	None under the accepted conditions of use (3)
Acidified sodium chlorite	Poultry carcasses, parts, trim, and organs	Mixing an aqueous solution of sodium chlorite with any GRAS acid to achieve a pH of 2.2 to 3.0 then further diluting this solution with a pH elevating agent (i.e., sodium bicarbonate, sodium carbonate, or an un-acidified sodium chlorite solution) to a final pH of 3.5 to 7.5. When used in a spray or dip the final sodium chlorite concentration does not exceed 1200 mg/kg and the chlorine dioxide concentration does not exceed 30 mg/kg. When used in a pre-chiller or chiller solution on poultry carcasses	Food Contact Substance Notification No. FCN 739	None under the accepted conditions of use (6)

		and parts the additive is used at a level that results in sodium chlorite concentrations between 50 and 150 ppm. Contact times may be up to several minutes at temperatures between 0 and 15 degrees C.		
Acidified sodium chlorite	Red meat, red meat parts and organs, and on processed, comminuted, formed meat products (including RTE)	Applied as a spray or dip, the additive is produced by mixing an aqueous solution of sodium chlorite with any GRAS acid to achieve a pH in the range of 2.2 to 3.0, then further diluting this solution with a pH elevating agent such that the resultant sodium chlorite concentration does not exceed 1200 ppm, and the chlorine dioxide concentration does not exceed 30 ppm. The pH of the use solution is between 3.5 and 7.5	Food Contact Substance Notification No. FCN 450	None under the accepted conditions of use (6)
Ammonium hydroxide	Beef carcasses (in hot boxes and holding coolers)and boneless beef trimmings	Ammonium hydroxide used in accordance with current industry standards of good manufacturing practice	Acceptability determination	None under the accepted conditions of use (1)
Anhydrous ammonia	Lean finely textured beef which is subsequently quick chilled to 28 degrees Fahrenheit and mechanically "stressed"	Anhydrous ammonia used in accordance with current industry standards of good manufacturing practice	Acceptability determination	None under the accepted conditions of use (1)

Anhydrous ammonia	Ground beef	Anhydrous ammonia followed with carbon dioxide treatment in accordance with current industry standards of good manufacturing practice	Acceptability determination	None under the accepted conditions of use (1)
A proprietary vinegar, spice extractive and natural flavor	A proprietary blend of vinegar, spice extractives and natural flavor to be applied as an antimicrobial for raw meat and poultry products.	A proprietary vinegar, spice extractive and natural flavor ≤ 2.1 percent on the surface of raw meat and poultry parts in liquid form; 1percent of product formulation in liquid form to raw meat and poultry products as an inject, vacuum- tumble, spray or dip; ≤ 1.0 percent of ground product formulation in spray-dried form	Acceptability determination	Listed as "vinegar with natural flavoring" in the ingredients statement for various non-standardized meat and products and on standardized meat and poultry products where antimicrobial agents are permitted. Meat and poultry standardized products that do not permit the use of any safe and suitable antimicrobial agents, for example, ground beef, must be descriptively labeled, for example "ground beef (ground pork or ground turkey) with vinegar and natural flavoring." (4)
Bacteriophage preparation (Salmonella targeted)	On the hides of live animals in the holding pens prior to slaughter	Bacteriophage preparation (Salmonella targeted) applied as a spray mist or wash	Acceptability determination	None under the accepted conditions of use (1)

Bacteriophage preparation containing the bacterial monophages FO1a and S16 (Salmonella targeted)	Applied at prechill and postchill locations on raw poultry carcasses and parts	Bacteriophage preparation containing the bacterial monophages FO1a and S16 (Salmonella targeted) at a level up to 108 PPU/g	GRAS Notice No. 000468	None under the accepted conditions of use (1)
Bacteriophage preparation (containing five bacterial monophages specific to Shigella spp.)	RTE meat and poultry products	Bacteriophage preparation (containing five bacterial monophages specific to Shigella spp.) applied as a spray at levels up to 1 x 108 PFU/g of food.	GRAS Notice No. 000672	None under the accepted conditions of use (1)
Bacteriophage preparation (*E. coli* O157:H7 targeted)	On the hides of live animals (cattle) in the holding pens prior to slaughter and hide removal	Bacteriophage preparation (E. coli O157:H7 targeted) applied as a spray, mist, rinse or wash to the hides of live animals (cattle) within lairage, restraining areas, stunning areas, and other stations immediately prior to hide removal.	Acceptability determination	None under the accepted conditions of use (1)
Bacteriophage preparation (Salmonella targeted)	On the feathers of live poultry prior to slaughter	Bacteriophage preparation (Salmonella targeted) applied as a spray mist or wash	Acceptability determination	None under the accepted conditions of use (1)
Bacteriophage preparation (Salmonella targeted)	Ready-to-eat (RTE) poultry products prior to slicing and on raw poultry, including carcasses and parts applied as a spray	Bacteriophage preparation (Salmonella targeted) applied as a spray at 10^6 to 10^7 plaque forming units (pfu) per gram of food product	GRAS Notice No. 000435	None under the conditions of use (1)
Bacteriophage preparation (a mixture of equal proportions of six different individually purified lytic-type bacteriophages specific against	Various RTE meat and poultry products	Bacteriophage preparation (a mixture of equal proportions of six different individually purified lytic-type bacteriophages specific against	21 CFR 172.785	None under the conditions of use (1). Standardized meat and poultry products that do not permit the use of any safe and suitable antimicro-

Listeria monocytogenes)		Listeria monocytogenes) applied as a spray at a level not to exceed 1 ml of the additive per 500 cm2 product surface area		bial agent must be descriptively labeled. (4)
Bacteriophage preparation	Various RTE meat and poultry products	Bacteriophage preparation applied to the surface of the product to achieve a level of 1 x 107 to 1 x 109 plaque forming units (pfu) per gram of product	GRAS Notice No. 000218	None under the accepted condi-tions of use (1). Standardized meat and poultry products that do not permit the use of any safe and suitable antimicrobial agent must be descriptively labeled. (4)
Bacteriophage preparation	Red meat parts and trim prior to grinding	Bacteriophage preparation applied as a mixture diluted with water at a ratio of 1:10. Application rate of approximately 2 ml diluted solution per 500 cm^2 of surface area may be used	FCN No. 1018	None under the accepted conditions of use. (1)
Blend of cultured dextrose, vinegar, and maltodextrin	For use as an antimicrobial incurred products, raw meat and poultry and RTE formulated products	Blend cultured dextrose, vinegar, and maltodextrin, not to exceed 1.5 percent of the product formulation	Acceptability determination	The mixture will require labeling as “cultured dextrose(s), vinegar” in the ingredients statement.
Calcium hypochlorite	Red meat carcasses down to a quarter of a carcass	Calcium hypochlorite applied as a spray at a level not to exceed 50 ppm calculated as free available chlorine measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
Calcium hypochlorite	On whole or eviscerated poultry carcasses	Calcium hypochlorite applied as a spray at a level not to exceed 50 ppm calculated as free available	Acceptability determination	None under the accepted conditions of use (1)

		chlorine measured prior to application		
Calcium hypochlorite	In water used in meat processing	Calcium hypochlorite not to exceed 5 ppm calculated as free available chlorine	Acceptability determination	None under the accepted condi-tions of use (1)
Calcium hypochlorite	In water used in poultry processing (except for product formulation)	Calcium hypochlorite not to exceed 50 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Calcium hypochlorite	Poultry chiller water	Calcium hypochlorite not to exceed 50 ppm calculated as free available chlorine (measured in the incoming potable water)	Acceptability determination	None under the accepted conditions of use (1)
Calcium hypochlorite	Poultry chiller red water (i.e., poultry chiller water re-circulated, usually through heat exchangers, and reused back in the chiller)	Calcium hypochlorite not to exceed 5 ppm calculated as free available chlorine (measured at influent to chiller)	Acceptability determination	None under the accepted conditions of use (1)
Calcium hypochlorite	Reprocessing contaminated poultry carcasses	Calcium hypochlorite 20 ppm calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine	9 CFR 381.91	None under the accepted conditions of use (1)
Calcium hypochlorite	On giblets (e.g., livers, hearts, gizzards, and necks) and salvage parts	Calcium hypochlorite not to exceed 50 ppm calculated as free available chlorine in the influent to a container for chilling.	Acceptability determination	None under the accepted conditions of use (1)
Calcium hypochlorite	Beef primals	Calcium hypochlorite 20 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Carbon Monoxide, Carbon Dioxide and Nitrogen gas as part of a modified	To extend the shelf life and stabilize the color of red meat sausages, poultry	The use of carbon monoxide (up to 0.4 percent), carbon dioxide (20 percent)	Acceptability determination	Packages will be lot coded with a manufacturing date during initial

atmosphere packaging (MAP)	sausages and sausages made with red meat / poultry blend.	and remaining balance of nitrogen as part of the modified atmosphere packaging system.		production. Before shipping to retailers, product must be labeled with the "Use or Freeze By" date. None under the accepted condi-tions of use (2)
Carnobacterium maltaromaticum strain CB1	Ready-to-eat comminuted meat products (e.g., hot dogs)	Carnobacterium maltaromaticum strain CB1applied as a spray to meat products at a maximum concentration of inoculation of 1X104 colony forming units per gram (cfu/g)	GRAS Notice No. 000159	Listed as "*Carnobacterium maltaromaticum"* or "bacterial culture" in the ingredients statement (2)
Carnobacterium maltaromaticum strain CB1 (viable and heat-treated)	Ready-to-eat meat products; meat and poultry products	Viable Carnobacterium maltaromaticum strain CB1 applied at levels up to 1 X 10^9 colony forming units per gram (cfu/g). Heat-treated CB1 applied at levels up to 5000 (typically between 1000-5000) parts per million (ppm)	GRAS Notice No. 000305	Listed as "*Carnobacterium maltaromaticum"* or "bacterial culture" in the ingredients statement (2)
Cetylpyridinium chloride (The solution shall also contain propylene glycol complying with 21 CFR 184.1666 at a concentration of 1.5 times that of cetylpyridinium chloride)	To treat the surface of raw poultry carcasses or giblets, or raw poultry parts (skin-on or skinless)	Cetylpyridinium chloride as a fine mist spray of an ambient temperature aqueous solution applied to raw poultry carcasses/parts prior to immersion in a chiller, at a level not to exceed 0.3 gram cetylpyridinium chloride per pound of raw poultry carcass/parts, provided that the additive is used in	21 CFR 173.375	None under the accepted condi-tions of use (3)

		systems that collect and recycle solution that is not carried out of the system with the treated poultry carcasses/parts, or Except when used as an immersion such as a dip tank, a liquid aqueous solution applied to raw poultry carcasses/parts either prior to or after chilling at an amount not to exceed 5 gallons of solution per carcass, provided that the additive is used in systems that recapture at least 99 percent of the solution that is applied to the poultry carcasses/parts. The concentration of cetylpyridinium chloride in the solution applied to the carcasses/parts shall not exceed 0.8 percent by weight. When application of the additive is not followed by immersion in a chiller, the treatment will be followed by a potable water rinse of the carcass/parts. The potable water may contain up to 50 ppm free available chlorine.		
Cetylpyridinium chloride (The solution shall also	To treat the surface of raw poultry	Immersion such as a dip tank application to treat	Acceptability determination	None under the accepted

contain propylene glycol complying with 21 CFR 184.1666 at a concentration of 1.5 times that of cetylpyridinium chloride)	carcasses or parts (skin-on or skinless)	poultry carcasses/parts not to exceed a 10-second dwell time in aqueous solution of cetylpyridinium chloride. The concentration shall not exceed 0.8 percent by weight. When application of the additive is not followed by immersion in a chiller, the treatment will be followed by a potable water rinse. The potable water may contain up to 50 ppm free available chlorine.		conditions of use (3)
Chlorine dioxide	An antimicrobial agent to be applied to red meat (including meat parts and organs), processed, comminuted, or formed meat products.	Applied as a spray or dip at a level not to exceed 3 ppm residual chlorine dioxide as determined by Method 4500- Cl02 E in the "Standard Methods for the Examination of Water and Wastewater," 18th ed., 1992, or an equivalent method. The application of chlorine dioxide on red meat (including meat parts and organs), processed, comminuted, or formed meat products shall be followed by a potable water rinse or by blanching, cooking, or canning.	Food Contact Substance Notification No. FCN 1578	None under the accepted conditions of use (6)
Chlorine dioxide	In water used in poultry processing	At levels not to exceed 3 ppm residual chlorine dioxide (FCN 001123), and in	Food Contact Substance Notification No. FCN 001123	None under the accepted conditions of use (6)

		accordance with 21 CFR 173.300		
Chlorine dioxide	In water used in poultry processing	Not to exceed 3 ppm residual chlorine dioxide as determined by Method 4500-ClO2 E in the “Standard Methods for the Examination of Water and Wastewater,” 18th ed., 1992, or an equivalent method	21 CFR 173.300	None under the accepted conditions of use (3)
Chlorine dioxide	In water used in poultry processing	Not to exceed 3 ppm residual chlorine dioxide as determined by Method 4500-ClO2-D, modified for use with the Hach Spectrophotometer, or UV absorbance at 360 nm. (2) Chlorine dioxide produced through the “CLOSURE” process produces a concentrated solution that contains at least 600 ppm chlorine dioxide, and no greater than 10 ppm chlorite and 90 ppm chlorate	Food Contact Substance Notification No. FCN 644	None under the accepted conditions of use (6)
Chlorine dioxide	In water used in poultry processing	Not to exceed 3 ppm residual chlorine dioxide as determined by Method 4500-ClO2 E in the “Standard Methods for the Examination of Water and Wastewater,” 20th ed., 1998, or an equivalent method	Food Contact Substance Notification No. FCN 1011	None under the accepted conditions of use (6)
Chlorine dioxide	Red meat, red meat parts and organs; processed, comminuted, or formed meat food products	Applied as a spray or dip at a level not to exceed 3 ppm residual chlorine dioxide as determined by	Food Contact Substance Notification No. FCN 668	None under the accepted conditions of use (6)

		Method 4500-ClO2 E in the “Standard Methods for the Examination of Water and Wastewater,” 18th ed., 1992, or an equivalent method		
Chlorine dioxide	Red meat, red meat parts and organs; processed, comminuted, or formed meat food products	Applied as a spray or dip at a level not to exceed 3 ppm residual chlorine dioxide as determined by Method 4500-ClO2 E in the “Standard Methods for the Examination of Water and Wastewater,” 20th ed., 1998, or an equivalent method	Food Contact Substance Notification No. FCN 1052	None under the accepted conditions of use (6)
Chlorine dioxide	Ready-to-eat meats	The FCS will be applied as a spray or dip, unless precluded by standards of identity in 9 CFR 319, prior to the packaging of food for commercial purposes in accordance with current industry good manufacturing practice. The FCS will be applied in an amount not to exceed 3 ppm residual chlorine dioxide as determined by Method 4500-C102-E in the “Standard Methods for the Examination of Water and Wastewater; 20th ed.., 1998”, or an equivalent method.	Food Contact Substance Notification No. FCN 1158	None under accepted conditions of use.
Chlorine gas	Red meat carcasses down to a quarter of a carcass	Chlorine gas applied as a spray at a level not to exceed 50 ppm calculated as	Acceptability determination	None under the accepted conditions of use (1)

		free available chlorine measured prior to application		
Chlorine gas	On whole or eviscerated poultry carcasses	Chlorine gas applied as a spray at a level not to exceed 50 ppm calculated as free available chlorine measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
Chlorine gas	In water used in meat processing	Chlorine gas not to exceed 5 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Chlorine gas	In water used in poultry processing (except for product formulation)	Chlorine gas not to exceed 50 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Chlorine gas	Poultry chiller water	Chlorine gas not to exceed 50 ppm calculated as free available chlorine (measured in the incoming potable water)	Acceptability determination	None under the accepted conditions of use (1)
Chlorine gas	Poultry chiller red water (i.e., poultry chiller water re-circulated, usually through heat exchangers, and reused back in the chiller)	Chlorine gas not to exceed 5 ppm calculated as free available chlorine (measured at influent to chiller)	Acceptability determination	None under the accepted conditions of use (1)
Chlorine gas	Reprocessing contaminated poultry carcasses	20 ppm Chlorine gas calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine	9 CFR 381.91	None under the accepted conditions of use (1)
Chlorine gas	On giblets (e.g., livers, hearts, gizzards, and necks) and salvage parts	Chlorine gas not to exceed 50 ppm calculated as free available chlorine in the influent to a container for chilling.	Acceptability determination	None under the accepted conditions of use (1)
Chlorine gas	Beef primals	20 ppm chlorine gas calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)

Citric acid	Beef trimmings prior to grinding and beef subprimals	Up to 5 percent of a citric acid solution applied as a spray	Acceptability determination	None under the accepted condi-tions of use (1)
Citric acid	Bologna in an edible casing	Up to a 10 percent citric acid solution applied prior to slicing	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Citric acid	Bologna in an inedible casing	Up to a 10 percent citric acid solution applied prior to slicing	Acceptability determination	None under the accepted conditions of use (1)
Citric acid	Fully cooked meat and poultry products in impermeable and permeable pre-stuck casings.	Up to a 3 percent citric acid solution is applied to the casing just prior to removal.	Acceptability determination	None under the accepted conditions of use (1)
Citric acid	Separated beef heads and associated offal products (e.g., hearts, livers, tails, tongues)	A 2.5 percent citric acid solution applied as a spray prior to chilling	Acceptability determination	None under the accepted conditions of use (1)
Citric acid	In brine to cool fully-cooked RTE meat products (a) sausages and similar products in natural casings (including permeable casings), (b) hams in impermeable casings/netting prior to the removal of the casing/netting	Citric acid not to exceed 3 percent of the brine solution	Acceptability determination	None under the accepted conditions of use (1)
Colicin E1, Colicin E7, Colicin Ia, Colicin M, Colicin N, Colicin K, Colicin U, Colicin S and Colicin B.	Nine recombinant proteins intended for use singly or in combination as an antimicrobial spray on meat products	Colicin protein preparation applied as a spray at a rate of 1-10 mg/kg	GRAS Notice 000676	None under the accepted conditions of use (1)
Cultured substrates that are produced by the fermentation of natural food sources such as caramel, dairy sources (lactose, whey, and whey permeate, milk, milk solids, yogurt), fruit and vegetable based sources (including juices,	In meat and poultry products (e.g., beef or chicken injected with cultured substrates) and ready-to-eat meat and poultry products (e.g., hot dogs and luncheon meat) that provide for the use of ingredients of this type. Cultured	Cultured substrates that are produced by the fermentation of natural food sources at up to 4.5 percent of the product formula Components of the cultured substrates in the final product are not to exceed: 0.16percent for	GRAS Notice No. 000378	Cultured_____" where the blank is replaced by the name of the natural substrate, listed by common or usual name, (dairy sources identified by common or usual name, sugars, wheat, malt, and

pastes, and peels), honey, maple syrup, molasses, starch (from barley, corn, malt, potato, rice, tapioca, and wheat), sugars, (from corn, beet, palm or sugar cane), and wheat. The substrate is fermented to organic acids by individual microorganisms including *Streptococcus thermophilus, Bacillus coagulans, Lactobacillus acidophilus, Lactobacillus paracasei subsp. Paracasei, Lactobacillus plantarum, Lactobacillus sakei, Lactobacillus bulgaricus, and Propionibacterium freudenreichii subsp. Shermanii,* or mix-tures of these strains.	substrates are not intended for use in infant formula or foods.	sodium and calcium, 0.75percent for potassium, 2.1percent for lactate, 0.6percent for acetate and propionate, 0.9 percent for protein, 0.25percent for sugar and 0.1percent for succinic acid.		fruit and vegetable based sources all identified by common or usual name) used in fermentation
Cultured Sugar (derived from corn, cane, or beets)	In enhanced meat and poultry products (e.g., beef or pork injected with a solution) and RTE meat and poultry products (e.g., hot dogs and cooked turkey breast)	Cultured Sugar at up to 4.8 percent of the product formula	GRAS Notice No. 000240	Cultured cane and beet sugar listed by common or usual name (e.g., “cultured cane sugar)” Cultured corn sugar listed as “cultured corn sugar” or “cultured dextrose.”
Cultured Sugar and Vinegar (derived from corn, cane, or beets)	In enhanced meat and poultry products (e.g., beef or pork injected with a solution) and RTE meat and poultry products (e.g., hot dogs and cooked turkey breast)	Cultured Sugar and Vinegar at up to 4.8 percent of the product formula	Acceptability determination	Cultured cane and beet sugar listed by common or usual name and vinegar (e.g., “cultured cane sugar, vinegar” or “cultured sugar, vinegar” Cultured corn sugar listed as “cultured corn

				sugar, vinegar" or "cultured dextrose, vinegar."
DBDMH (1,3-dibromo-5,5-dimethylhydantoin)	For use in poultry chiller water and in water applied to poultry via an Inside-Outside Bird Washer (IOBW) and in water used in poultry processing for poultry carcasses, parts, and organs	1,3-dibromo-5,5-dimethylhydantoin (DBDMH) at a level not to exceed that needed to provide the equivalent of 100 ppm active bromine	Food Contact Substance Notification No. FCN 334 and FCN 453	None under the accepted conditions of use (6)
DBDMH (1,3-dibromo-5,5-dimethylhydantoin)	For use in water supplied to ice machines to make ice intended for general use in poultry processing	1,3-dibromo-5,5-dimethylhydantoin (DBDMH) at a level not to exceed that needed to provide the equivalent of 100 ppm of available bromine (corresponding to a maximum level of 90 mg DBDMH/kg water)	Food Contact Substance Notification No. FCN 775	None under the accepted conditions of use (6)
DBDMH (1,3-dibromo-5,5-dimethylhydantoin)	For use in water applied to beef hides, carcasses, heads, trim, parts, and organs.	1,3-dibromo-5,5-dimethylhydantoin (DBDMH) at a level not to exceed that needed to provide the equivalent of 300 ppm active bromine.	Food Contact Substance Notification No. FCN 792	None under the accepted conditions of use (6)
DBDMH (1,3-dibromo-5,5-dimethylhydantoin)	For use in water applied to swine, goat, and sheep carcasses and their parts and organs	1,3-dibromo-5,5-dimethylhydantoin (DBDMH) at a level not to exceed that needed to provide the equivalent of 500 ppm of available bromine	Food Contact Substance Notification No. FCN 1102	None under the accepted conditions of use (6)
DBDMH (1,3-dibromo-5,5-dimethylhydantoin)	For use in water and ice for meat and poultry products	1,3-dibromo-5,5-dimethylhydantoin (DBDMH) at levels not to exceed 900 ppm available bromine in water or ice applied to meat products and 450 ppm available bromine in water or	Food Contact Substance Notification No. FCN 1190	None under the accepted conditions of use (6)

		ice applied to poultry products.		
Egg white lysozyme	In casings and on cooked (RTE) meat and poultry products	Egg white lysozyme at 2.5 mg per pound in the finished product when used in casings; 2.0 mg per pound on cooked meat and poultry products	GRAS Notice No. 000064	Listed by common or usual name in the ingredients statement (2)
Electrolytically generated hypochlorous acid	Red meat carcasses down to a quarter of a carcass	Electrolytically generated hypochlorous acid applied as a spray at a level not to exceed 50 ppm calculated as free available chlorine measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	On whole or eviscerated poultry carcasses	Electrolytically generated hypochlorous acid applied as a spray at a level not to exceed 50 ppm calculated as free available chlorine measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	In water used in meat processing	Electrolytically generated hypochlorous acid not to exceed 5 ppm calculated as free available chlorine measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	In water used in poultry processing (except for product formulation)	Electrolytically generated hypochlorous acid not to exceed 50 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	Poultry chiller water	Electrolytically generated hypochlorous acid not to exceed 50 ppm calculated as free available chlorine (measured in the incoming potable water)	Acceptability determination	None under the accepted conditions of use (1)

Electrolytically generated hypochlorous acid	Poultry chiller red water (i.e., poultry chiller water re-circulated, usually through heat exchangers, and reused back in the chiller)	Electrolytically generated hypochlorous acid not to exceed 5 ppm calculated as free available chlorine (measured at influent to chiller)	Acceptability determination	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	Reprocessing contaminated poultry carcasses	Electrolytically generated hypochlorous acid at 20 ppm calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine	9 CFR 381.91	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	On giblets (e.g., livers, hearts, gizzards, and necks) and salvage parts	Electrolytically generated hypochlorous acid not to exceed 50 ppm calculated as free available chlorine in the influent to a container for chilling.	Acceptability determination	None under the accepted conditions of use (1)
Electrolytically generated hypochlorous acid	Beef primals	Electrolytically generated hypochlorous acid at 20 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Hops beta acids	In casings and on cooked (RTE) meat and poultry products	Hops beta acids 2.5 mg per pound in the finished product when used in casings; 2.0 mg per pound on cooked meat and poultry products	GRAS Notice No. 000063	Listed by common or usual name in the ingredients statement (2)
Hypobromous acid	In water or ice used for processing meat and poultry products	Hypobromous acid generated on-site from an aqueous mixture of hydrogen bromide and sodium, potassium, or calcium hypochlorite for use	Food Contact Substance Notification No. FCN 944	None under the accepted conditions of use (6)

		at a level not to exceed that needed to provide 300 ppm available bromine (or 133 ppm available chlorine*) in water or ice applied to meat products, and 200 ppm available bromine (or 89 ppm available chlorine*) in water or ice applied to poultry products. *(NOTE: Because there are a limited number of commercial test kits specific for bromine, chlorine kits may be used. The ppm levels between available bromine and chlorine is due to the difference in their molecular weight.)		
Hypobromous acid	In water or ice used for processing meat and poultry products	Hypobromous acid generated on-site from an aqueous mixture of sodium bromide and sodium, potassium, or calcium hypochlorite for use at a level not to exceed that needed to provide 900 ppm available bromine (or 400 ppm available chlorine*) in water or ice applied to meat products, and 200 ppm available bromine (or 89 ppm available chlorine*) in water or ice applied to poultry products. *(NOTE: Because there are a limited number of commercial test kits specific for bromine,	Food Contact Substance Notification No. FCN 1122	None under the accepted conditions of use (6)

		chlorine kits may be used. The ppm levels between available bromine and chlorine is due to the difference in their molecular weight.)		
Hypobromous acid	In water or ice used for processing meat products	Hypobromous acid generated on-site from an aqueous mixture of hydrogen bromide and sodium, potassium, or calcium hypochlorite for use at a level not to exceed that needed to provide 900 ppm available bromine (or 400 ppm available chlorine*) in water or ice applied to meat products. *(NOTE: Because there are a limited number of commercial test kits specific for bromine, chlorine kits may be used. The ppm levels between available bromine and chlorine is due to the difference in their molecular weight.)	Food Contact Substance Notification No. FCN 1036	None under the accepted conditions of use (6)
Hypobromous acid	In water or ice used for processing poultry products	Hypobromous acid generated on-site from an aqueous mixture of hydrogen bromide and sodium, potassium, or calcium hypochlorite for use at a level not to exceed that needed to provide 450 ppm available bromine or 200 ppm available chlorine	Food Contact Substance Notification No. FCN 1098	None under the accepted conditions of use (6)
Hypobromous acid	In water or ice, used as either a spray or a	Hypobromous acid generated on-site	Food Contact Substance	None under the accepted

	dip, for meat (hides on or off) or poultry processing	from an aqueous mixture of hydrogen bromide and sodium, potassium, or calcium hypochlorite for use at a level not to exceed that needed to provide 300 ppm total bromine (182 ppm HOBr) (or 133 ppm total chlorine*) in water or ice applied to meat products. At a level not to exceed 200 ppm total bromine (121 ppm HOBr) (or 90 ppm total chlorine*) in water or ice applied to poultry products. *(NOTE: Because there are a limited number of commercial test kits specific for bromine, chlorine kits may be used. The ppm levels between available bromine and chlorine is due to the difference in their molecular weight.)	Notification No. FCN 1106	conditions of use (6)
Hypobromous acid	For use in water or ice used for process-ing poultry products, generated on-site from an aqueous mixture of sodium bromide and sodium, potassium or calcium hypochlorite	Hypobromous acid at levels not to exceed 450 ppm available bromine or 200 ppm available chlorine.	Food Contact Substance Notification No. FCN 1197	None under the accepted conditions of use (6)
Lactic acid	Livestock carcasses prior to fabrication (i.e., pre- and post-chill), offal, and variety meats	Up to a 5 percent lactic acid solution	Acceptability determination	None under the accepted conditions of use (1)
Lactic acid	Beef and pork sub-primals and trimmings	2 percent to 5 percent solution of lactic acid not to exceed 550C	Acceptability determination	None under the accepted conditions of use (1)

Lactic acid	Beef heads and tongues	Lactic Acid at 2.0 to 2.8 percent solution applied to brushes in a washer cabinet system used to clean beef heads and tongues	Acceptability determination	None under the accepted conditions of use (1)
Lactic acid	Poultry carcasses, meat, parts, trim and giblets	Up to 5 percent lactic acid solution on post chill poultry carcasses, meat, parts, trim and giblet.	Acceptability determination	None under the accepted conditions of use (1)
Lactic acid bacteria mixture consisting of *Lactobacillus acidophilus* (NP35, NP51), *Lactobacillus lactis* (NP7), and *Pediococcus acidilactici* (NP3)	RTE cooked sausages (e.g., frankfurters, bologna, etc.) and cooked, cured whole muscle products (e.g., ham)	Lactic acid bacteria mixture consisting of Lactobacillus acidophilus (NP35, NP51), Lactobacillus lactis (NP7), and Pediococcus acidilactici (NP3) applied by dipping product into a solution containing 107 colony forming units lactobacilli per ml	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Lactic acid bacteria mixture consisting of *Lactobacillus acidophilus* (NP35, NP51), *Lactobacillus lactis* (NP7), and *Pediococcus acidilactici* (NP3)	Poultry carcasses and fresh whole muscle cuts and chopped/ground poultry	Lactic acid bacteria mixture consisting of Lactobacillus acidophilus (NP35, NP51), Lactobacillus lactis (NP7), and Pediococcus acidilactici (NP3) at 105 to 106 colony forming units of lactobacilli per gram of product	Acceptability determination	Listed by common or usual name in the ingredients statement of non-standardized products. Single ingredient raw products must be descriptively labeled (2)
Lactic acid bacteria mixture consisting of *Lactobacillus acidophilus* (NP35, NP51), *Lactobacillus lactis* (NP7), and *Pediococcus acidilactici* (NP3)	Non-standardized comminuted meat products (e.g., beef patties), ground beef, and raw whole muscle beef cuts	Lactic acid bacteria mixture consisting of Lactobacillus acidophilus (NP35, NP51), Lactobacillus lactis (NP7), and Pediococcus acidilactici (NP3) at 106 to 108 colony forming units of	GRAS Notice No. 000171	Listed by common or usual name in the ingredients statement of non-standardized comminuted meat products. Ground beef and raw whole muscle beef cuts must be descriptively labeled (2)

		lactobacilli per gram of product		
Lactoferrin	Beef carcasses and parts	Lactoferrin at up to 2 percent of a water-based antimicrobial spray	GRAS Notice No. 000067	Listed by common or usual name in ingredients statement (2)
Lactoferrin	Beef carcasses	Lactoferrin as part of an antimicrobial spray that would deliver 1 gram of lactoferrin per dressed beef carcass, followed by a wash with tempered water and rinse with lactic acid	GRAS Notice No. 000130	None under the accepted conditions of use (1)
Lauramide arginine ethyl ester (LAE), silicon dioxide, and refined sea salt	Non-standardized RTE comminuted meat products and standardized RTE comminuted meat products that permit the use of any safe and suitable antimicrobial agent	Not to exceed 200 ppm Lauramide arginine ethyl ester (LAE), silicon dioxide, and refined sea salt LAE by weight of the finished product	Acceptability determination	Listed by common or usual name (i.e., lauric arginate, refined sea salt) in the ingredients statement (2)
Lauramide arginine ethyl ester (LAE), silicon dioxide, and refined sea salt	Fresh cuts of meat and poultry; and, non-standardized, non-comminuted RTE meat and poultry products and standardized, non-comminuted RTE meat and poultry products that permit the use of any safe and suitable antimicrobial agent	Not to exceed 200 ppm Lauramide arginine ethyl ester (LAE), 67 ppm silicon dioxide, and 1640 ppm refined sea salt by weight of the finished product	Acceptability determination	Listed by common or usual name (i.e., lauric arginate, silicon dioxide, refined sea salt) in the ingredients statement (2) When applied to the surface of fresh cuts of meat and poultry none under the accepted condi-tions of use (1)
Lauramide arginine ethyl ester (LAE) dissolved at specified concentrations in either propylene glycol, glycerin, or water to which may be added a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of LAE emulsification)	Non-standardized RTE comminuted meat products and standardized RTE comminuted meat products that permit the use of any safe and suitable antimicrobial agent	Not to exceed 200 ppm Lauramide arginine ethyl ester (LAE) by weight of the finished product	Acceptability determination	Listed by common or usual name (i.e., lauric arginate) in the ingredients statement (2)

Lauramide arginine ethyl ester (LAE) dissolved at specified concentrations in either propylene glycol, glycerin, or water to which may be added a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of LAE emulsification)	Fresh cuts of meat and poultry and various non-standardized RTE meat and poultry products and standardized RTE meat and poultry products that permit the use of any safe and suitable antimicrobial agent	Applied to the surface of the product at a rate not to exceed 200 ppm Lauramide arginine ethyl ester (LAE) by weight of the finished food product	GRAS Notice No. 000164	When applied to the surface of RTE products listed by common or usual name (i.e., lauric arginate) in the ingredients statement (2) When applied to the surface of fresh cuts of meat and poultry none under the accepted condi-tions of use (1)
Lauramide arginine ethyl ester (LAE) dissolved at specified concentrations in water	RTE meat and poultry products; raw pork sausage; RTE ground poultry sausage	Applied to the inside of the package or to product surfaces at up to 44 ppm (with a process tolerance of 20 percent, allowing for a Lauramide arginine ethyl ester (LAE) concentration not to exceed 53 ppm) by weight of the finished food product	Acceptability determination	None under the accepted conditions of use (1)
Lauramide arginine ethyl ester (LAE) dissolved at specified concentrations in either propylene glycol, glycerin, or water to which may be added a Polysorbate surface active agent (quantity sufficient to achieve the intended technical effect of LAE emulsification)	Ground poultry**;** ground poultry sausage	Applied in a mixer, blender, or tumbler designed to mix and/or blend other ingredients into ground poultry at a level not to exceed 200 ppm by weight in the finished product. The Lauramide arginine ethyl ester (LAE) is sprayed with a metered dose into the mixer, blender, or tumbler as the product is being mixed, blended, or tumbled	Acceptability determination	None under the accepted conditions of use (1)
Lauramide arginine ethyl ester (LAE)	Ground beef	Lauramide arginine ethyl ester (LAE) applied at a level not to exceed 200	Acceptability determination	None under the accepted conditions of use (1)

		ppm by weight in the finished product		
Maltodextrin, vegetable juice color, citric acid, and ascorbic acid	As a coloring agent for a solid acid tablet to be used in meat and poultry product processing water	Maltodextrin, vegetable juice color, citric acid, and ascorbic acid up to 0.5 percent (by weight of total formulation of the tablet)	Acceptability determination	None under the accepted conditions of use (1)
Monochloramine generated by the reaction between ammonia and sodium hypochlorite carried out at a pH above 10	Poultry process water as a spray, wash, rinse, chiller water, or scald water for whole or cut poultry including parts, trim, and organs	Level of Monochloramine not to exceed 50 ppm	Food Contact Substance Notification No. 1700	None under the accepted conditions of use (1)
Nisin preparation	Cooked, RTE meat and poultry products containing sauces	Nisin preparation not to exceed 600 ppm nisin preparation in the finished product	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Nisin preparation	Meat and poultry soups	Nisin preparation not to exceed 200 ppm of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Nisin preparation	In casings and on cooked (RTE) meat and poultry products	Nisin preparation not to exceed 276 ppm in the finished product when used in casings; not to exceed 220 ppm on cooked meat and poultry products	GRAS Notice No. 000065	Listed by common or usual name in the ingredients statement (2)
Nisin preparation	Egg products	Nisin preparation not to exceed 250 ppm in formulated product	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
A blend of encapsulated nisin preparation (90.9 percent), rosemary extract (8.2 percent) and salt (0.9 percent)	Frankfurters and other similar cooked meat and poultry sausages	A blend of encapsulated nisin preparation (90.9 percent), rosemary extract (8.2 percent) and salt (0.9 percent) not to exceed 550 ppm of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
A blend of nisin preparation, rosemary extract, salt, maltodextrin, and cultured dextrose	Cooked (RTE) meat and poultry sausages and cured meat products	A blend of nisin preparation, rosemary extract, salt, maltodextrin, and cultured	Acceptability determination	Listed by common or usual name in the ingredients statement (4)

		dextrose not to exceed 0.55 percent of product formulation in cooked (RTE) meat and poultry sausages and 0.7 percent of product formulation in cured meat products (where the nisin preparation will not exceed 250 ppm)		
A blend of nisin preparation, rosemary extract, salt, and sodium diacetate	Cooked (RTE) meat and poultry sausages and cured meat products	A blend of nisin preparation, rosemary extract, salt, and sodium diacetate not to exceed 0.25 percent of product formulation (where the nisin preparation will not exceed 250 ppm)	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Organic Acids (i.e., lactic, acetic, and citric acid)	As part of a carcass wash applied pre-chill	Organic Acids (i.e., lactic, acetic, and citric acid) as an aqueous solution of up to 2.5 percent concentration. May be applied as a mist, fog or small droplet rinse	Acceptability determination	None under the accepted conditions of use (1)
Ozone	All meat and poultry products	Ozone to be used in accordance with current industry standards of good manufacturing practice	21 CFR 173.368	None under the accepted conditions of use (3)
An aqueous solution of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	In poultry processing water, scalder, ice, spray applications, and as an acidifier in scald tanks as a scald additive	The level of peroxyacetic acid (PAA) will not exceed 220 ppm, hydrogen peroxide (HP) will not exceed 110 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 13 ppm	Acceptability determination	None under the accepted conditions of use (3)
Peroxyacetic acid, octanoic acid, acetic acid, hydrogen	Meat and poultry carcasses, parts, trim and organs	Maximum concentrations for meat carcasses,	21 CFR 173.370	None under the accepted

peroxide, peroxyoctanoic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)		parts, and organs: Peroxyacetic acids (PAA) 220 ppm, hydrogen peroxide (HP) 75 ppm; Maximum concentrations for poultry carcasses, parts, and organs: PAA 220 ppm, HP 110 ppm, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) 13 ppm		conditions of use (3)
A mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	(1) Process water for washing, rinsing, cooling, or otherwise for processing meat carcasses, parts, trim, and organs; and (2) process water applied to poultry parts, organs, and carcasses as a spray, wash, rinse, dip, chiller water, or scald water	In either application, the level of peroxyacetic acid (PAA) will not exceed 230 ppm, hydrogen peroxide (HP) will not exceed 165 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 14 ppm	Food Contact Substance Notification No. FCN 323	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	Added to process water applied to poultry parts, organs, and carcasses as a spray, wash, rinse, dip, chiller water, immersion baths, or scald water	At a level not to exceed 2,000 ppm peroxyacetic acid (PAA) and 136 ppm 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	Food Contact Substance Notification No. FCN 880	None under the accepted conditions of use (6)
A combination of two aqueous mixtures (FCN 323 and FCN 880) of Peroxyacetic (peracetic) acid, hydrogen peroxide, acetic acid, and stabilizer 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	(1) Process water for washing, rinsing, cooling, or otherwise for processing meat carcasses, parts, trim, and organs; and (2) process water applied to poultry carcasses as a spray, wash, rinse, dip, chiller water, or scald water	An equilibrium solution of peracetic acid (PAA) (15 percent), hydrogen peroxide (HP) (10 percent), and stabilizer 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) (<1percent) using a combination of FCN 323 and FCN 880	Acceptability determination	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1,	(1)Water or ice for washing, rinsing, cooling, or otherwise processing whole or cut meat, including	In either application, the level of peroxyacetic acid (PAA) will not exceed 220 ppm,	Food Contact Substance Notification No. FCN 887	None under the accepted conditions of use (6)

1-diphosphonic acid (HEDP) and optionally sulfuric acid	parts, trim, and organs; and, (2) water or ice applied to whole or cut poultry including parts, trim, and organs as a spray, wash, rinse, dip, chiller water or scalder water	hydrogen peroxide (HP) will not exceed 85 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 11 ppm, measured prior to application		
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) and sulfuric acid	Red meat carcasses, parts, and trim	The level of peroxyacetic acid (PAA) will not exceed 230 ppm, hydrogen peroxide (HP) will not exceed 75 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 13 ppm.	Food Contact Substance Notification No. FCN 951	None under the accepted conditions of use (6)
A mixture of peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	(1) Water or ice for washing, rinsing, cooling, or processing whole or cut meat including carcasses, parts, trim, and organs; and (2) water or ice applied to whole or cut poultry including parts, trim, and organs as a spray, wash, rinse, dip, chiller water, or scald Water	The level of peroxyacetic acid (PAA) not to exceed 220 ppm, hydrogen peroxide (HP) will not exceed 80 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 1.5 ppm measured prior to application	Food Contact Substance Notification No. FCN 993	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	In process water or ice for washing, rinsing, storing, or cooling of processed and preformed meat and poultry products	he level of peroxyacetic acid (PAA) will not exceed 220 ppm, hydrogen peroxide (HP) will not exceed 85 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 11 ppm.	Food Contact Substance Notification No. FCN 1082	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1,	In process water used for washing, rinsing, cooling or otherwise for processing meat carcasses, parts,	The level of peroxyacetic acid (PAA) will not exceed 220 ppm, hydrogen peroxide (HP) will not exceed	Food Contact Substance Notification No. FCN 1089	None under the accepted conditions of use (6)

1-diphosphonic acid (HEDP)	trim, and organs; and in process water applied to poultry parts, organs, and carcasses as a spray, wash, rinse, dip, chiller water, or scald water	160 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 11 ppm, measured prior to application		
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP), and optionally sulfuric acid	In process water or ice used for washing, rinsing, cooling or processing whole or cut meat including parts, trim, and organs; and in process water or ice applied to whole or cut poultry including parts, trim and organs, and carcasses as a spray, wash, rinse, dip, chiller water, or scald water	The level of peroxyacetic acid (PAA) will not exceed 220 ppm, hydrogen peroxide (HP) will not exceed 80 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 13 ppm measured prior to application	Food Contact Substance Notification No. FCN 1093	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP), dipicolinic acid, and sulfuric acid	Red meat carcasses, parts, trim, and organs	The level of peroxyacetic acid (PAA) will not exceed 230 ppm, hydrogen peroxide (HP) will not exceed 75 ppm, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) will not exceed 1 ppm, and dipicolinic acid will not exceed 0.5 ppm.	Food Contact Substance Notification No. FCN 1094	None under the accepted conditions of use (6)
A mixture of peroxyacetic acid, hydrogen peroxide, acetic acid and hydroxyethylidene-1,1-diphosphonic acid (HEDP) and water	Use as a spray, rinse, dip, chiller water or scald water for poultry carcasses, parts, and organs.	Not to exceed 220 ppm peroxyacetic acid (PAA), 162 ppm hydrogen peroxide (HP), and 13 ppm 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)	Food Contact Substance Notification No. FCN 1096	None under the accepted conditions of use (3)
A mixture of peroxyacetic acid, hydrogen peroxide, acetic acid and hydroxyethylidene-1,1-diphosphonic acid (HEDP) and water	Use as a spray, rinse, dip, chiller water or scald water for raw meat carcasses, parts, trim and organs.	Not to exceed 220 ppm peroxyacetic acid (PAA), 162 ppm hydrogen peroxide (HP), and 13 ppm 1-hydroxyethylidene-	Food Contact Substance Notification No. FCN 1236	None under the accepted conditions of use (3)

		1,1-diphosphonic acid (HEDP)		
A mixture of sodium bicarbonate and sodium carbonate with a GRAS approved activator	As an antimicrobial agent when used in packaged meat or poultry products. Moxiyo packets absorbs oxygen and releases carbon dioxide to maintain a low oxygen atmosphere in packaged meat or poultry products when packets are placed next to meat or poultry products. (Note – When Moxiyo packets are placed next to packaged beef jerky, the water activity (aw) of the beef jerky must be no higher than 0.88).	A mixture of sodium bicarbonate and sodium carbonate with a GRAS approved activator at levels sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
A solution of water, lactic acid, propionic acid, and acidic calcium sulfate (solution with a pH range of 1.0-2.0)*	Various RTE meat products, e.g., hot dogs.	A solution of water, lactic acid, propionic acid, and acidic calcium sulfate (solution with a pH range of 1.0-2.0)* applied as a spray for 20-30 seconds of continual application just prior to packaging *Propionic acid may be removed from the solution; sodium phosphate may be added to the solution as a buffering agent (the amount of sodium phosphate on the finished product must not exceed 5000 ppm measured prior to application.	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
A solution of water, acidic calcium sulfate and 85-95,000 ppm of lactic acid (solution	Raw comminuted beef.	A solution of water, acidic calcium sulfate and 85-95,000 ppm of lactic	Acceptability determination	Product must be descriptively labeled (2)

with a pH range of 0.35 to 0.55)		acid (solution with a pH range of 0.35 to 0.55)		
A solution of water, acidic calcium sulfate, lactic acid, and sodium phosphate (solution with a pH range of 1.45 to 1.55)	Raw whole muscle beef cuts and cooked roast beef and similar cooked beef products (e.g., corned beef, pastrami, etc.).	A solution of water, acidic calcium sulfate, lactic acid, and sodium phosphate (solution with a pH range of 1.45 to 1.55) spray applied for up to 30 seconds of continual application *sodium phosphate on the finished product must not exceed 5000 ppm.	Acceptability determination	Listed by common or usual name in the ingredients statement of multi-ingredient products. Single ingredient roast beef products and raw whole muscle beef cuts must be descriptively labeled (2)
PA solution of water, acidic calcium sulfate, lactic acid, and sodium phos-phate (solution with a pH of 1.45 to 1.6)	Cooked poultry carcasses and parts.	A solution of water, acidic calcium sulfate, lactic acid, and sodium phosphate (solution with a pH of 1.45 to 1.6) spray applied for 20 to 40 seconds of continual application * sodium phosphate on the finished product must not exceed 5000 ppm.	Acceptability determination	Listed by common or usual name in the ingredients statement of multi-ingredient products. Single ingredient whole muscle cuts of poultry must be descriptively labeled (2)
A solution of water, acidic calcium sulfate, lactic acid, and disodium phos-phate (solution with a pH of 1.0 to 2.0)	Beef jerky	A solution of water, acidic calcium sulfate, lactic acid, and disodium phosphate (solution with a pH of 1.0 to 2.0) applied to the surface of the product with a contact time not to exceed 30 seconds	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Potassium diacetate	Various meat and poultry products which permit the addition of antimicrobial agents, e.g., hot dogs	Potassium diacetate not to exceed 0.25 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Potassium propionate/Propionic acid	Ready-to-eat meat and poultry, where antimicrobials are permitted	Potassium propionate/Propio-nic acid up to 0.5 percent (by weight of total formulation)	Acceptability determination	Listed by common or usual name in the ingredients statement (4)

Potassium sorbate	Added to raw boneless beef in the production of dry beef snacks and beef jerky as a mold inhibitor.	Potassium sorbate 0.0703 percent by weight of total formulation of raw meat.	Acceptability determination	Listed by common or usual name in the ingredients statement with a qualifying statement disclosing the treatment and purpose, such as "potassium sorbate added to retard mold growth" (2)
Potassium sorbate	Dry sausage, imitation dry sausage, dry beef snacks and beef jerky as an external mold inhibitor (applied by dipping or spraying).	Potassium sorbate at 10 percent in water solution applied to: (1) the external surface of product, (2) casings after stuffing or (3) casings dipped in solution prior to stuffing.	Acceptability determination	Listed by common or usual name in the ingredients statement (2) with a qualifying statement disclosing the treatment and purpose, such as "dipped in potassium sorbate to retard mold growth."
Propylene glycol (PG) and lactic acid (FDA, PNC 1537) or phosphoric acid (FDA PNC 836) as an adjuvant to sodium hypo-chlorite in process water for poultry products	(1) Poultry water pre-chiller spray applications; whole bird chillers and post chiller wash and/or spray applications. (2) Poultry chiller red water (i.e., poultry chiller water recirculated, usually through heat exchangers, and reused back in the chiller)	Propylene glycol (PG) and lactic acid (FDA, PNC 1537) or phosphoric acid (FDA PNC 836) (1) Not to exceed 50 ppm calculated as free available chlorine (measured in the incoming potable water) (2) Not to exceed 5 ppm calculated as free available chlorine (measured at influent to chiller)	Acceptability determination	None under the accepted conditions of use (1)
Salmonella phage preparation containing the bacterial monophages FO1a and S16	Beef products	Salmonella phage preparation containing the bacterial monophages FO1a and S16 at levels up to 108 PFU/g	GRAS Notice No. 000468	None under the accepted conditions of use (1)
Salmonella phage	Poultry	Salmonella phage preparation	GRAS Notice No. 000603	None under the

preparation consisting of two monophages (BP-63 and BP-12 Triumvirate)		consisting of two monophages (BP-63 and BP-12 Triumvirate) applied at 1 x 108 PFU/g		accepted conditions of use (2)
Skim milk or dextrose cultured with *propionibacterium freudenreichii* subsp. *Shermanii*	Meat and poultry sausages including those with standards of identity which permit the use of antimicrobial agents	Skim milk or dextrose cultured with propionibacterium freudenreichii subsp. Shermanii not to exceed 2 percent by weight of the finished product	GRAS Notice No. 000128	Listed by common or usual name in the ingredients statement (2)
Sodium Benzoate and benzoic acid	Ready-to-eat meat and poultry products that permit the use of any safe and suitable antimicrobial agent	Sodium Benzoate and benzoic acid up to 0.1 percent (by weight of total formulation)	21 CFR 184.1733	Listed by common or usual name in the ingredients statement (4)
Sodium citrate buffered with citric acid to a pH of 5.6	Non-standardized and standardized comminuted meat and poultry products which permit ingre-dients of this type	Sodium citrate buffered with citric acid to a pH of 5.6 not to exceed 1.3 percent of the product formulation in accordance with 21 CFR 184.1751	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium diacetate, sodium propionate, and sodium benzoate and benzoic acid	Ready-to-eat meat and poultry products that permit the use of any safe and suitable antimicrobial agent	The maximum level for the combination cannot exceed (by weight of total formulation) 0.5 percent for sodium propionate, 0.25 percent for sodium diacetate, and 0.1 percent for sodium benzoate and benzoic acid.	21 CFR 184.1784 and 184.1733	Listed by common or usual name in the ingredients statement (4)
Sodium hypochlorite	Red meat carcasses down to a quarter of a carcass	Sodium hypochlorite applied as a spray at a level not to exceed 50 ppm calculated as free available chlorine measured prior to application	Acceptability determination	None under the accepted conditions of use (1)
Sodium hypochlorite	On whole or eviscerated poultry carcasses	Sodium hypochlorite applied as a spray at a level not to exceed 50 ppm calculated as free	Acceptability determination	None under the accepted conditions of use (1)

		available chlorine measured prior to application		
Sodium hypochlorite	In water used in meat processing	Sodium hypochlorite not to exceed 5 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Sodium hypochlorite	In water used in poultry processing (except for product formulation)	Sodium hypochlorite not to exceed 50 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Sodium hypochlorite	Poultry chiller water	Sodium hypochlorite not to exceed 50 ppm calculated as free available chlorine (measured in the incoming potable water)	Acceptability determination	None under the accepted conditions of use (1)
Sodium hypochlorite	Poultry chiller red water (i.e., poultry chiller water re-circulated, usually through heat exchangers, and reused back in the chiller)	Sodium hypochlorite not to exceed 5 ppm calculated as free available chlorine (measured at influent to chiller)	Acceptability determination	None under the accepted conditions of use (1)
Sodium hypochlorite	Reprocessing contaminated poultry carcasses	Sodium hypochlorite at 20 ppm calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine	9 CFR 381.91	None under the accepted conditions of use (1)
Sodium hypochlorite	On giblets (e.g., livers, hearts, gizzards, and necks) and salvage parts	Sodium hypochlorite not to exceed 50 ppm calculated as free available chlorine in the influent to a container for chilling.	Acceptability determination	None under the accepted conditions of use (1)
Sodium hypochlorite	Beef primals	Sodium hypochlorite at 20 ppm calculated as free available chlorine	Acceptability determination	None under the accepted conditions of use (1)
Sodium metasilicate	Component of marinades used for raw meat and poultry products	Sodium metasilicate not to exceed 2 percent by weight of the marinade	Acceptability determination	None under the accepted conditions of use (1)

Sodium metasilicate	Raw beef carcasses, subprimals, and trimmings	Sodium metasilicate a 4 percent (plus or minus 2 percent) solution	Acceptability determination	None under the accepted conditions of use (1)
Sodium metasilicate	RTE meat and poultry products	Sodium metasilicate up to a 6 percent solution applied to the surface of the product at a rate not to exceed 300 ppm of the finished product	Acceptability determination	None under the accepted condition of use (1)
Sodium metasilicate and sodium carbonate blend	RTE poultry products	Up to 15 percent of a solution of sodium metasilicate and sodium carbonate (sodium metasilicate not to exceed 6 percent) applied as a surface application at a rate not to exceed 700 ppm by weight of the finished poultry product	Acceptability determination	None under the accepted condition of use (1)
Sodium propionate/ Propionic acid	Ready-to-eat meat and poultry, where antimicrobials are permitted.	Sodium propionate/ Propionic acid up to 0.5 percent (by weight of total formulation)	21 CFR 184.1784 and 184.1081	Listed by common or usual name in the ingredients statement (4)
Trisodium phosphate	Raw poultry carcasses, parts, and giblets		Acceptability determination	None under the accepted condi-tions of use (1)
Antioxidants				
BHA (butylated hydroxyanisole)	"Brown N Serve" sausages	Butylated hydroxyanisole (BHA) 0.02 percent in combination with other antioxidants for use in meat, based on fat content	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
BHT (butylated hydroxytoluene)	"Brown N Serve" sausages	Butylated hydroxytoluene (BHT) 0.02 percent in combination with other antioxidants for use in meat, based on fat content	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
A combination of canola oil, mono- and di-glycerides, the natural spice extract	Dried turkey broth powder	Combination of canola oil, mono- and di-glycerides, the natural spice	Acceptability determination	None under the accepted conditions of use (1) except for

rosemary, and natural mixed tocopherols derived from sunflowers		extract rosemary, and natural mixed tocopherols derived from sunflowers at a level not to exceed 0.12 percent during production of dried turkey broth powder		rosemary extract. Rosemary extract should be identified as "rosemary extract, flavoring, or natural flavoring" in the ingredients statement
Binders				
A combination of food starch (e.g., modified corn starch) and carrageenan	Turkey ham and water products and cured pork products where binders are permitted per 9 CFR 319.104	Combination not to exceed 3 percent of the product formulation with carrageenan not to exceed 1.5 percent (9 CFR 424.21(c))	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
A mixture of carrageenan, sodium carbonate, and xanthan gum	Raw poultry filets, whole carcasses, and parts	A mixture of carrageenan, sodium carbonate, and xanthan gum applied as a brine solution not to exceed 0.65 percent by weight in the finished product	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
A mixture of carrageenan, whey protein concentrate, and xanthan gum	Sausages where binders are permitted; cooked poultry products; beef and poultry patties; modified breakfast sausage, cooked sausages, and fermented sausages covered by FSIS Policy Memo 123; and modified substi-tute versions of fresh sausage, ground beef, or hamburger covered by FSIS Policy Memo 121B.	A mixture of carrageenan, whey protein concentrate, and xanthan gum not to exceed 3.5 percent by weight of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
A mixture of sodium alginate, calcium sulfate, glucono delta-lactone, and sodium pyrophosphate	Various meat and poultry products where binders are permitted	Mixture not to exceed 1.55 percent of product formulation with the sodium alginate not to exceed 1 percent of the product formulation and the sodium	Acceptability determination	Listed by common or usual name in the ingredients statement (4)

		pyrophosphate not to exceed 0.5 percent of the product formulation		
Beef collagen	Various meat and poultry products where binders are permitted	Beef collagen not to exceed 3.5 percent of product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Beef protein	As a coating or marinade or addition to beef patties mix when the beef protein is used as (a) a water binding agent to retain moisture and/or (b) used to block fat in cooked product	Beef protein is only used in beef food products where binders are permitted and the ingredient "Beef Protein" is appropriately declared on the label of raw "Beef with Beef Protein" product per 9 CFR Section 317.2(c)(2). When used as a marinade or coating, beef protein does not exceed 0.8 percent by weight of the final product formulation. When used in the batter only, beef protein does not exceed 0.14 percent by weight of the final product formulation. When used as both coating and in the batter, beef protein does not to exceed 0.89 percent by weight of the final product formulation	GRAS Notice No. 000313	"Beef Protein" used when the protein concentration is 18% or less; "Concentrated Beef Protein" used when protein concentration is greater than 18%. Final determination will be made by FSIS when label is submitted for approval (2)
Binders listed in 9 CFR 424.21(c) for use in cured pork products and poultry products	"Turkey ham and water products"	Binders listed in 9 CFR 424.21(c) for use in cured pork products and poultry products added in accordance with 9 CFR 319.104(d) and 424.21(c)	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Canola Protein (CPI) and Hydrolized Canola Protein (HCPI)	Used as a binder in ground meat (beef and pork patties) and whole muscle poultry	Canola Protein (CPI) and Hydrolized Canola Protein (HCPI) up to 2	GRAS Notice No. 000386	Listed by the common or usual name in the ingredient statement (2)

	products where binders are permitted	percent of product formulation		
Carboxymethyl cellulose (cellulose gum)	Poultry franks	Carboxylmethyl cellulose (cellulose gum) not to exceed 3.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Carboxymethyl cellulose	Cured pork products	Carboxylmethyl cellulose not to exceed 3 percent of product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Carrageenan	Thickener in batter used to prepare poultry franks	Carrageenan not to exceed 0.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Carrot Fiber	Various comminuted meat and poultry products where binders are permitted	Carrot fiber not to exceed 3.5 percent of the product formulation	GRAS Notice No. 000116	List as “isolated carrot product” (2)
Cellulose, powdered conforming to the specifications in the Food Chemicals Codex 5th Edition	Various comminuted poultry products where binders are permitted	Cellulose, powdered conforming to the specifications in the Food Chemicals Codex 5th Edition not to exceed 3.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Chicken Protein	Whole muscle poultry food products where binders are permitted provided the protein is used in products of the same kind (e.g., chicken protein in a marinade injected into whole muscle chicken food products)	Chicken protein not to exceed 0.80 percent of the final product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Chicken Protein, concentrated Turkey Protein	Various poultry products where the protein solution is used in products of the same kind (e.g., chicken protein in a coating of a breaded chicken fritter)	Chicken protein, concentrated turkey protein as a coating applied to the product and/or as a portion of the batter. Not to exceed 0.8 percent of product formulation when applied as a protein coating only, 0.14 percent of product formulation when used in the batter	GRAS Notice No. 000168	Listed by common or usual name in the ingredients statement (2)

		only, and 0.89 percent of product formulation when used as both a coating and in the batter		
Citrus (dried mandarin oranges lemons, limes, grapefruits, and tangerines) flour and citrus pulp dried with guar gum	Various ground meat and poultry products where binders are permitted	Citrus flour and citrus pulp dried with guar gum not to exceed 3.5 percent of the product formulation	GRAS Notice No. 000487	List as "citrus flour" or "dried citrus pulp" with guar gum (2)
Citrus fiber products derived from the albedo or pith layer of lemon or lime peels with or without guar gum (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis)	In whole muscle cuts of meat and poultry and various comminuted meat and poultry products where binders are permitted	Citrus fiber products derived from the albedo or pith layer of lemon or lime peels with or without guar gum (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis) not to exceed 3.0 percent of product formulation	GRAS Notice No. 541	Listed as "Citrus Fiber" in the ingredient statement (2)
Citrus fiber (containing less than 85 percent dietary fiber based on appropriate AOAC methods of analysis)	Various whole muscle and comminuted meat and poultry products and RTE meat and poultry products where binders are permitted	Citrus fiber (containing less than 85 percent dietary fiber based on appropriate AOAC methods of analysis) level not exceeding the product's standard of identity limits with a maximum of 5 percent of total product formulation	GRAS Notice No. 000599	Listed as "isolated citrus product," which would also include the residual sucrose without the need to label it separately (2)
Corn Bran Fiber (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis)	As a formulation aid or as a texturizer in ground, whole muscle, emulsified and processed meat and poultry products, including sauces, soups and gravies, where binders are permitted	Corn Bran Fiber (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis) not to exceed 2 percent of the product formulation	GRAS Notice No. 000427, (21 CFR 170.3(o)(14)), (21 CFR 170.3(o)(32))	Listed as "corn bran fiber in the ingredients statement (2)

Guar Gum	(1) For use as whipping aid in egg products (2) Fish of the order Siluriformes	Guar Gum (1) Not to exceed 0.5 percent (2) Sufficient for purpose using good manufacturing practices	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Guar powder, micronized	Various meat and poultry products where binders are permitted	Guar powder, micronized not to exceed 3.0 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Hydroxypropyl methylcellulose	Seasoning mixtures added to sauces and gravies produced under FDA jurisdiction that will be used in meat and poultry products	Hydroxypropyl methylcellulose sufficient for purpose	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Hydroxypropyl methylcellulose	Thickener in meat and poultry pot pie fillings, sauces, soups, and gravies	Hydroxypropyl methylcellulose not to exceed 1 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Inulin (Chicory Root Fiber when containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis)	Various meat and poultry products (e.g., frankfurters, sausage, patties, loaves, pates) where binders are permitted	Inulin 2 to 5 percent of the product formulation	Acceptability determination and GRAS Notice No. 000118	Listed by common or usual name in the ingredients (Inulin). Alterna-tively, may be listed as “Chicory Root Fiber” when containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis. (2)
Konjac flour	Meat and poultry products in which starchy vegetable flours are permitted	Konjac flour not to exceed 3.5 percent of the product formulation individually or collectively with other binders	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Meat Protein Extracts (MPEs) (poultry protein, beef protein, and pork protein). Produced through the use of Flavourzyme enzyme up to 0.5 percent by weight of raw meat and poultry	As binding agents and coatings (flavorings) in meat and poultry products of the same species	Meat Protein Extracts (MPEs) in nonstandardized meat and poultry products that permit binders at levels not to exceed 0.89 percent by weight and in standardized	Acceptability determination	Listed as “partially hydrolyzed (source of protein) in the ingredients statement (2)

products or the combination of Flavourzyme and Protamex enzymes up to 0.5 percent each by weight of raw meat and poultry products		meat and poultry products where standards of identity permit at levels not to exceed 0.89 percent by weight		
Methylcellulose	Various comminuted meat and poultry products where binders are permitted	Methylcellulose not to exceed 3.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Methylcellulose	Thickener in meat and poultry pot pie fillings, sauces, soups, and gravies; a binder in poultry patties, loaves, and nuggets; a binder in meat patties, loaves, and nuggets; texturizer in Policy Memo 121B and 123 products.	Methylcellulose not to exceed 1 percent of the product formulation as a thickener in meat and poultry pot pie fillings, sauces, soups, and gravies; 1.6 percent as a binder in poultry patties, loaves, and nuggets; 0.25 percent as a binder in meat patties, loaves, and nuggets; 0.6 percent as a texturizer in Policy Memo 121B and 123 products	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Microcrystalline cellulose and sodium carboxymethylcellu-lose	As a fat replacer and binder in standardized and non-standardized comminuted meat and poultry products	Microcrystalline cellulose and sodium carboxymethylcellu-lose in standardized comminuted meat and poultry products where binders are permitted and in non-standardized comminuted meat and poultry products at levels up to 3 percent	Acceptability determination	Listed as “cellulose gel, cellulose gum” in the ingredients statement (2)
Monocalcium phosphate (mono-, di-, and tribasic)	Fish of the order Siluriformes	Monocalcium phosphate (mono-, di-, and tribasic) sufficient for purpose using good manufacturing practices	21 CFR 182.1217	Listed by common or usual name in the ingredients statement (4)
Oat Fiber	Various meat products (e.g.,	Oat Fiber not to exceed 3.5 percent	Acceptability determination	Listed as “isolated oat product” or

	frankfurters, sausage patties, loaves) where binders are permitted and whole muscle meat products	of the product formulation		"modified oat product" in the ingredients statement. Whole muscle meat products must be descriptively labeled (4)
Oat Fiber (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis)	In whole muscle cuts of meat and poultry and comminuted meat and poultry products where binders are permitted	Oat Fiber not to exceed 3.5 percent of product formulation	Acceptability determination	Listed as "Oat Fiber" in the ingredient statement
Oat Hull Fiber	Various non-standardized comminuted meat products	Oat Hull Fiber not to exceed 3.5 percent of the product formulation	GRAS Notice No. 000261	Listed as "isolated oat product" in the ingredients statement (2)
Oat Hull Fiber	Whole muscle and comminuted poultry products where binders are permitted	Oat Hull Fiber not to exceed 3.5 percent of the product formulation	GRAS Notice No. 000342	Listed as "isolated oat product" in the ingredients statement (2)
Oat Hull Fiber (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis)	In whole muscle cuts of meat and poultry and comminuted meat and poultry products where binders are permitted	Oat Hull Fiber not to exceed 3.5 percent of product formulation	Acceptability determination	Listed as "Oat Hull Fiber" in the ingredient statement
Oat Hull Fiber (containing a minimum of 85 percent dietary fiber based on appropriate AOAC method of analysis)	Anti-caking agent within powdered or crystallized organic acids and/or oleoresin-containing injectable brines for meat and poultry	Oat Hull Fiber at levels below 2 percent (w/w) of the dry mixtures, and at levels of 0.1 percent or less of the total product formulation	GRAS Notice No. 000261	Listed as "oat hull fiber" or as "isolated oat product" (if under 85% dietary fiber) in the ingredients statement (2)
Orange pulp, dried	Non-standardized whole muscle meat and poultry products where binders are permitted and standardized whole muscle meat and poultry products where standards of identity permit the use of binders	Orange pulp, dried not to exceed 3.5 percent of the product formulation	Acceptability determination	List as "citrus flour" or "dried orange pulp" (2)
Orange pulp, dried and orange pulp, dried with guar gum	Various ground meat and poultry products where binders are permitted	Orange pulp, dried and orange pulp, dried with guar gum not to exceed 3.5 percent of the product formulation	GRAS Notice No. 000154	List as "citrus flour" or "dried orange pulp" (2)

Orange pulp, dried and orange pulp, dried with guar gum	Processed egg products (liquid, frozen, and dried whole eggs)	Orange pulp, dried and orange pulp, dried with guar gum not to exceed 3.0 percent of total product formulation	Acceptability determination	Listed as "citrus flour" or "dried orange pulp". If containing guar gum, label as "citrus flour with guar gum" or "dried orange pulp with guar gum". (2)
Partially hydrolyzed proteins	Various meat and poultry products where binders are permitted.	Partially hydrolyzed proteins not to exceed 3.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Pea fiber	Standardized meat and poultry products where binders are permitted and non-standardized meat and poultry products, e.g., meat patties and poultry nuggets	Pea fiber sufficient for purpose	Acceptability determination	Listed as “isolated pea product” (2)
Pea protein proteolysate	Various whole muscle and comminuted meat and poultry products and RTE meat and poultry products	Pea protein proteolysate not to exceed the product’s specific standard of identity limits and not more than 7 percent of the total product formulation	GRN 1581	Listed as “pea protein proteolysate”’ or ‘pea protein isolate’.(2)
Pectin	Various meat and poultry products where binders are permitted	Pectin not to exceed 3 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Plum extract, Plum puree, Plum fiber, Plum powder	Whole cuts of meat and poultry products. Various, meat and poultry products where binders are permitted.	Plum Extract/ Puree/ Fiber/powder not to exceed Up to 2 percent product formulation	Acceptability Determination	List as “isolated plum product”
Pork collagen	Various meat and poultry food products where binders are permitted	Pork collagen not to exceed 3.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Pork skin proteins	Various meat products where binders are permitted	Pork skin proteins not to exceed 1.5 percent of product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Pork Protein	As a coating or marinade or addition to pork when the pork	Pork protein is only used in pork products where	GRAS Notice No. 000314	“Pork Protein” used when the protein

	protein is used as (a) water binding agent to retain moisture and/or (b) block fat in cooked product	binders are permitted and the ingredient “Pork Protein” is appropriately declared on the label of raw “Pork with Pork Protein” product per 9 CFR Section 317.2(c)(2); when used as marinade or protein coating not to exceed 0.8percent by weight of final product formulation; when used in batter only not to exceed 0.14percent by weight of final product formulation; when used as both coating and in batter not to exceed 0.89 percent by weight of final product formulation		concentration is 21% or less; “Concentrated Pork Protein” used when protein concentration is greater than 21%. Final determination will be made by FSIS when label is submitted for approval for “Pork with Pork Protein” product (2)
Potassium bicarbonate	Formulation aid in fish of the order Siluriformes	Potassium bicarbonate levels sufficient for purpose using good manufacturing practices	21 CFR 184.1613	Listed by common or usual name in the ingredients statement (4)
Potato fiber	Whole muscle poultry products and comminuted meat and poultry products where binders are permitted	Potato fiber not to exceed 3.5 percent of product formulation	GRAS Notice No. 000310	Listed as “isolated potato product” (2)
Potato protein concentrate	Meat and poultry products where binders are permitted	Potato protein concentrate not to exceed 3.0 percent of the product formulation; or 3.5 percent in combination with potato starch	Acceptability determination and GRAS Notice No. 000086	Listed as “Potato protein concentrate” in the ingredient statement (2)
Potato protein isolate	Various whole muscle and comminuted meat and poultry products where binders are permitted	Potato protein isolate not to exceed 3.0 percent of the product formulation	GRAS Notice No. 000447	Listed as “potato protein isolate” in the ingredients statement (2)

Psyllium Husk	As a binder in meat and poultry products where binders are permitted	Psyllium Husk at levels up to 0.3 percent of total product weight	Acceptability determination	Listed as “Psyllium” or “Psyllium Husk” in the ingredients statement (2)
Rice bran	Various comminuted meat and poultry products where binders are permitted (e.g., hot dogs, meatballs, and chicken patties)	Rice bran not to exceed 3.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Rice Starch	As a binder in whole muscle poultry where binders are permitted	Rice starch, 2 percent in raw; 3 percent in cooked poultry.	Acceptability determination	Listed by common name “rice starch” in the ingredients statement.
Rice Starch	As a binder in whole muscle meat products where binders are permitted	Rice starch, sufficient for purpose but level may be limited by food standards of identity or other approved conditions of use, for example up to 0.8 percent in cured pork products	Acceptability determination	Listed by common name “rice starch” in the ingredients statement.
Rice Starch	As a binder in comminuted meat and poultry where binders are permitted	Rice starch, sufficient for purpose but level may be limited by food standards of identity or other approved conditions of use, for example up to 3.5 percent in a 9 CFR 319.140 “Sausage”	Acceptability determination	Listed by common name “rice starch” in the ingredients statement.
Rice starch	Cured pork products	Rice Starch not to exceed 0.8 percent of product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Silicone dioxide	To prevent caking	Silicone dioxide sufficient for purpose using good manufacturing practices	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Sodium alginate	Various meat products where binders are permitted	Sodium alginate not to exceed 1 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium alginate	Various poultry products where binders are permitted	Sodium alginate not to exceed 0.8 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)

Sodium aluminum phosphate	Fish of the order Siluriformes	Sodium aluminum phosphate levels sufficient for purpose using good manufacturing practices	21 CFR 182.1781	Listed by common or usual name in the ingredients statement (4)
Sodium carbonate or sodium bicarbonate	Fish of the order Siluriformes	Sodium carbonate or sodium bicarbonate levels sufficient for purpose using good manufacturing practices	21 CFR 184.1742, 21 CFR 184.1736	Listed by common or usual name in the ingredients statement (4)
Sodium phosphate (mono-, di-, and tribasic)	Fish of the order Siluriformes	Sodium phosphate (mono-, di-, and tribasic) sufficient for purpose using good manufacturing practices	21 CFR 182.1778	Listed by common or usual name in the ingredients statement (4)
Soy Fiber (Okara)	Sausages as provided for in 9 CFR Part 319, bockwurst	Soy Fiber (Okara) not to exceed 3.5 percent of the formulation individually or collectively with other binders for use in meat	Acceptability determination	Listed as “Isolated Soy Product” in the ingredients statement (2)
Soy Fiber (Okara)	Chili con carne, chili con carne with beans	Soy Fiber (Okara) not to exceed 8 percent of the formulation individually or collectively with other binders for use in meat	Acceptability determination	Listed as “Isolated Soy Product” in the ingredients statement (2)
Soy Fiber (Okara)	Spaghetti with meatballs and sauce, spaghetti with meat and sauce and similar products	Soy Fiber (Okara) not to exceed 12 percent of the formulation individually or collectively with other binders for use in meat	Acceptability determination	Listed as “Isolated Soy Product” in the ingredients statement (2)
Soy Fiber (Okara)	Various meat and poultry products (e.g., patties, loaves, pates) where binders are permitted	Soy Fiber (Okara) sufficient for purpose	Acceptability determination	Listed as “Isolated Soy Product” in the ingredients statement (2)
Sugar beet fiber	Used as a binding and/or thickening agent in standardized meat and poultry	Sugar beef fiber in non-standardized meat and poultry products at levels up	GRAS Notice No. 000430	Listed as “sugar beet pulp,” or “sugar beet powder,” or “sugar

	products, and in non-standardized meat and poultry products such as beef and poultry patties, sausages, or chicken links.	to 5 percent, and in standardized meat and poultry products where binding and/or thickening agents are permitted.		beet pulp powder" in the ingredients statement (2)
Transglutaminase enzyme	Texturizing agent in meat and poultry food products where texturizing agents and binders are permitted	Transglutaminase enzyme not to exceed 65 ppm of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Transglutaminase enzyme	Cross-linking agent in modified meat and poultry products addressed in Policy Memos 121B and 123.	Transglutaminase enzyme not to exceed 65 ppm of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Transglutaminase enzyme	Binding and cross-linking agent in uncooked restruc-tured chicken breasts	Transglutaminase enzyme not to exceed 100 ppm of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Trehalose	Binding and purge control agent in various meat and poultry products where binders are permitted	Trehalose not to exceed 2 percent of the product formulation	GRAS Notice No. 000045	Listed by common or usual name in the ingredients statement (2)
Xanthan gum (purified by recovery with ethyl alcohol)	Various meat and poultry products where binders are permitted and in fish of the order Siluriformes	Non-standardized meat and poultry products and products with a standard of identity which currently permit the use of xanthan gum listed in 9 CFR 424.21(c). Sufficient for purpose in accordance with 21 CFR 172.5	GRAS Notice No. 000121 9 CFR 424.21(c)	Listed by common or usual name in the ingredients statement (4)
Coloring Agents				
Annatto powder (annatto extract, water, potassium carbonate, potassium hydroxide)	To tint sodium nitrite containing cure meat or poultry blends for purposes of visual confirmation of addition in batching operations (in lieu of FD&C Red #3)	Annatto powder (annatto extract, water, potassium carbonate, potassium hydroxide) at less than 1 ppm per 1000 pounds of meat or poultry blending	Acceptability determination	None under the accepted conditions of use (1)

Carmine (cochineal)	To color isolated soy protein for use in dry cured acidified sausages	Carmine (cochineal) 0.2 to 0.4 percent of the hydrated protein gel. The protein gel must not exceed 30 percent of the meat food product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (5); Product name requires qualifying statement such as "Artificially Colored"
Carmine (cochineal)	To color non-standardized fully cooked poultry products and standardized fully cooked poultry products that permit the use of coloring agents	Carmine (cochineal) not to exceed 0.0075 percent of total finished product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (5); Product name requires qualifying statement such as "Artificially Colored"
Citric acid	For use as color stabilizer in egg products	Citric acid sufficient for purpose	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Monopotassium phosphate or monosodium phosphate	For use as color preservative in egg products	Monopotassium phosphate or monosodium phosphate not to exceed 0.5 percent in liquid whole egg. If water is used as a carrier, not to exceed 50 percent of the solution mixture by weight.	Acceptability determination; 21 CFR 160.110(a)	Listed by common or usual name in the ingredients statement (2)
Titanium dioxide	To color non-standardized RTE poultry products and standardized RTE poultry products that permit the use of coloring agents	Titanium dioxide not to exceed 0.25 percent by weight of the food product	Acceptability determination; 21 CFR 73.575	Listed by common or usual name in the ingredients statement (5). Product name requires qualifying statement contiguous to product name such as "Artificially Whitened" or "Artificially Lightened"
Tomato lycopene extract and concentrate	To color RTE meat products that permit the use of coloring agents	Tomato lycopene extract used at a level not to exceed 50 mg/kg lycopene in product. Tomato lycopene	GRAS Notice No. 000156	Listed by common or usual name in the ingredients statement (5); Product name requires qualifying

		concentrate used at a level not to exceed 100 mg/kg of lycopene in product.		statement such as "Colored with lycopene tomato extract"
Curing Accelerators (must be used only in combination with curing agents)				
Potassium erythorbate	Cured pork and beef cuts; cured meat food products; cured comminuted poultry or poultry products	Potassium erythorbate 87.5 oz. to 100 gallons of pickle at 10 percent pump; 7/8 oz. to 100 lbs. Of meat, meat byproduct or poultry product; 10 percent to surfaces of cured meat cuts or poultry products prior to packaging	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Denuding agents (may be used in combination. Must be removed from tripe by rinsing with potable water.)				
Calcium carbonate	Denuding agent for washing tripe	Calcium carbonate sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Calcium citrate	Denuding agent for washing tripe	Calcium citrate sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Calcium hydroxide	Denuding agent for washing tripe	Calcium hydroxide sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Potassium carbonate	Denuding agent for washing tripe	Potassium carbonate sufficient for purpose	Acceptability determination	None under the accepted condi-tions of use (1)
Potassium citrate	Denuding agent for washing tripe	Potassium citrate sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Potassium hydroxide	Denuding agent for washing tripe	Potassium hydroxide sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Tricalcium phosphate	Denuding agent for washing tripe	Tricalcium phosphate sufficient for purpose	Acceptability determination	None under the accepted condi-tions of use (1)
Tripotassium phosphate	Denuding agent for washing tripe	Tripotassium phosphate sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Emulsifying Agents				
DATEM (diacetyl tartaric acid esters	Used to emulsify shortening products*	DATEM (diacetyl tartaric acid esters of mono- and	9 CFR 424.21	Listed by common or usual name in the ingredients

of mono- and diglycerides)	*9 CFR 424 also refers to the use of DATEM in various poultry products, however the safety has not been confirmed in meat and poultry products other than shortening.	diglycerides) sufficient for purpose		statement “DATEM.”
Papain enzyme	Egg products (egg white)	Papain enzyme not to exceed 0.25 percent of total product formulation	Acceptability determination	Listed by common or usual name "Papain" in the ingredients statement. (2)
Phospholipase A2 enzyme derived from a non-animal source	Egg products (egg yolks and whole eggs)	Phospholipase A2 enzyme derived from a non-animal source not to exceed 0.05 percent of total product formulation	GRN 183	Listed by common or usual name "Phospholipase” in the ingredients statement. (2)

Phospholipase A2 enzyme derived from a non-animal source	Egg products (egg yolks and whole eggs)	Phospholipase A2 enzyme derived from a non-animal source not to exceed 0.05 percent of total product formulation	GRN 212	Listed by common or usual name "Phospholipase" in the ingredients statement. (2)
Film Forming Agents				
A mixture of invert sugar, water, maltodextrin, malic acid, modified food starch, pectin, and xanthan gum	Used to transfer flavorings, spices or coloring to the packaging materials of meat and poultry products	A mixture of invert sugar, water, maltodextrin, malic acid, modified food starch, pectin, and xanthan gum not to exceed 0.5 percent of the total of the finished product	Acceptability determination	None under the accepted conditions of use (1)
Aqueous mixture of Sunflower lecithin, acetic acid, citric acid, corn starch, rice bran extract, propylene glycol and methylcellulose	For use as an aid in the release of netting and/or casing on meat and poultry products after cooking and to transfer spices onto the meat or poultry product	Aqueous mixture of Sunflower lecithin, acetic acid, citric acid, corn starch, rice bran extract, propylene glycol and methylcellulose, not to exceed 2 percent of the product formulation	Acceptability determination	None under the accepted conditions of use. Any spices added to the release agent must be listed on the ingredient statement
A mixture of water, glycerin, carrageenan, and cornstarch	Used to aid in the release of elastic netting on cooked meat products that are cooked in elastic netting	A mixture of water, glycerin, carrageenan, and cornstarch sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
A mixture of water, glycerin, carrageenan, cornstarch, and caramel	Used to aid in the release of elastic netting on cooked meat products that are cooked in elastic netting	A mixture of water, glycerin, carrageenan, cornstarch, and caramel sufficient for purpose	Acceptability determination	"Caramel Color" listed as an ingredient and as a product name qualifier (2)
A mixture of water, glycerin, carrageenan, cornstarch, and smoke flavoring	Used to aid in the release of elastic netting on cooked meat products that are cooked in elastic netting	A mixture of water, glycerin, carrageenan, cornstarch, and smoke flavoring sufficient for purpose	Acceptability determination	"Smoke Flavor" listed as an ingredient and as a product name qualifier (2)
A mixture of water, liquid smoke, citric acid, phosphated mono-and diglycerides, sodium salt, cellulose gum, calcium chloride, propylene glycol,	For use as an aid in the release of netting and/or casing on meat and poultry products after cooking	A mixture of water, liquid smoke, citric acid, phosphated mono-and diglycerides, sodium salt, cellulose gum, calcium chloride, propylene glycol,	Acceptability determination	Listed as "liquid smoke" in the ingredients statement (1)

sodium alginate, xanthan gum, and potassium sorbate		sodium alginate, xanthan gum, and potassium sorbate not to exceed 2 percent of the product formulation		
A mixture of water, liquid smoke, citric acid, cellulose gum, calcium chloride, propylene glycol, sodium alginate, xanthan gum, and potassium sorbate	For use as an aid in the release of netting and/or casing on meat and poultry products after cooking	A mixture of water, liquid smoke, citric acid, cellulose gum, calcium chloride, propylene glycol, sodium alginate, xanthan gum, and potassium sorbate not to exceed 2 percent of the product formulation	Acceptability determination	Listed as "liquid smoke" in the ingredients statement (1)
A mixture of water, liquid smoke, citric acid, cellulose gum, rice bran extract, calcium chloride, propylene glycol, sodium alginate, xanthan gum, and potassium sorbate	For use as an aid in the release of netting and/or casing on meat and poultry products after cooking	A mixture of water, liquid smoke, citric acid, cellulose gum, rice bran extract, calcium chloride, propylene glycol, sodium alginate, xanthan gum, and potassium sorbate not to exceed 2 percent of the product formulation	Acceptability determination	Listed as "liquid smoke and rice bran extract" in the ingredients statement (1)
A mixture of water, propylene glycol, sodium alginate, potassium sorbate, citric acid, and calcium chloride	For use as an aid in the release of netting and/or casing on meat and poultry products after cooking	A mixture of water, propylene glycol, sodium alginate, potassium sorbate, citric acid, and calcium chloride not to exceed 2 percent of the product formulation	Acceptability determination	None under the accepted conditions of use (1)
A mixture of water, sunflower oil and sunflower lecithin, liquid smoke with polysorbate, citric acid, calcium chloride, propylene glycol, sodium alginate, xanthan gum, and potassium sorbate	For use as an aid in the release of netting and/or casing on meat and poultry products after cooking	A mixture of water, sunflower oil and sunflower lecithin, liquid smoke with polysorbate, citric acid, calcium chloride, propylene glycol, sodium alginate, xanthan gum, and potassium sorbate not to exceed 2 percent of the product formulation	Acceptability determination	Listed as "liquid smoke" in the ingredients statement (1)

A solution of sodium alginate, dextrose, isolated pea protein, sugar, and maltodextrin (DE of 6) used with a solution of calcium chloride, powdered sugar, oleoresin black pepper, and isolated pea protein.	Used to form a calcium alginate-based casing on pork and poultry sausages.	A solution of sodium alginate, dextrose, isolated pea protein, sugar, and maltodextrin (DE of 6) used with a solution of calcium chloride, powdered sugar, oleoresin black pepper, and isolated pea protein. Quantity of the casing on the sausage ranges from 8 to 15 percent of total product formulation and calcium alginate not to exceed 0.219 percent of the finished product formulation	Acceptability determination	List all ingredients used in the casing by common or usual name in the ingredients statement (4)
Canola oil	Used as a release agent on belts during the freezing of raw poultry products.	Applied on the freezer belt at a maximum amount of approximately 6 pounds (1 gallon) resulting in 0.001 g/in2 of canola oil on the form freeze belt.	Acceptability determination	None under the accepted conditions of use (2)
Gelatin spice sheets	To ensure even distribution of seasonings on cooked pork products	Gelatin spice sheets sufficient for purpose	Acceptability determination	None under the accepted conditions of use (1)
Hydroxypropyl methylcellulose	Film-forming agent in glazes for meat and poultry products	Hydroxypropyl methylcellulose not to exceed 4 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Methylcellulose	Film-forming agent in glazes for meat and poultry products	Methylcellulose not to exceed 3 percent of the product formulation for poultry products, 3.5 percent of the product formulation for meat products	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium alginate, guar gum, dicalcium phosphate, acetylated distarch adipate (modified food starch), and sodium hexametaphosphate	For use as a component in sausage casing for various types of sausages, specifically	Sodium alginate, guar gum, dicalcium phosphate, acetylated distarch adipate	Acceptability determination	Listed as "alginate-based casing (sodium alginate, guar gum, dicalcium phosphate,

	as part of the solution used to encase the sausage	(modified food starch), and sodium hexametaphosphate as a component in sausage casing, specifically as part of the solution used to encase the sausage, at a range from 2 to 15 percent of total product formulation		modified food starch, and sodium hexametaphosp-hate)"at the end of the ingredients statement (4)
Sodium alginate, acetylated distarch adipate (modified food starch), and sodium hexametaphosphate	For use as a component in sausage casing for various types of sausages, specifically as part of the solution used to encase the sausage	Sodium alginate, acetylated distarch adipate (modified food starch), and sodium hexametaphosphate as a component in sausage casing, specifically as part of the solution used to encase the sausage, at a range from 0.7 to 5.5 percent of the casing solution and the dry mixture not to exceed 0.6 percent of total product formulation	Acceptability determination	Listed as “alginate-based casing (sodium alginate, modified food starch, and sodium hexametaphosp-hate)”at the end of the ingredients statement (4)
Flavoring Agents				
A blend of lemon juice and vinegar	Various non standardized raw, cured, and ready to eat meat and poultry products and on standardized meat and poultry products where flavoring agents are permitted	A blend of lemon juice and vinegar up to 3.5 percent of product formulation	Acceptability determination	Listed by common or usual name "lemon juice and vinegar" in the ingredients statement for various non standardized raw, cured, and ready to eat meat and poultry products and on standardized

				meat and poultry products where flavoring agents are permitted. Ground beef and ground poultry must be descriptively labeled (4)
Adenosine 5'-monophosphoric acid (AMP) and its monosodium and disodium salts	As a flavor enhancer for meat and poultry soups and soup mixes	Adenosine 5'-monophosphoric acid (AMP) and its monosodium and disodium salts not to exceed 200 ppm of the product formulation	GRAS Notice No. 000144	Listed by common or usual name in the ingredients statement (2)
A mixture of L-lysine and L-glutamic acid	Raw meat and poultry products	A mixture of L-lysine and L-glutamic acid applied as a brine solution prior to cooking and/or smoking not to exceed 0.6 percent in finished product	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Carboxypeptidase enzyme preparation	To accelerate the development of flavor during the ripening process of fermented meat	Carboxypeptidase enzyme preparation at levels of 1.2-6.0 milligrams TOS/kg of fermented meat	GRAS Notice No. 000345	Listed as Carboxypeptidase (CPG) enzyme or “enzyme” in the ingredients statement (2)
Encapsulated sodium diacetate	Flavor enhancer in fresh and ready-to-eat (RTE) comminuted and whole muscle meat and poultry added as a component in seasoning blends and meat and poultry sauces	Encapsulated Sodium diacetate at a level not to exceed 1.0 percent (total formula weight) in combination with other GRAS acids at a level sufficient to achieve a pH of 4.8 – 5.5	Acceptability determination	Listed by common or usual name in the ingredients statement. Comminuted product must be descriptively labeled. (2)
Lactic acid	As a flavor enhancer added to pork fatty tissue used in the production of dehydrated pork fatty tissue	Lactic acid not to exceed 0.367 percent of the pork fatty tissue, prior to dehydration	Acceptability determination	Product must be descriptively labeled (4)
Laminaria japonica (brown algae)	As a flavor enhancer or flavoring agent in marinades for meat and poultry, meat and poultry soups,	Laminaria japonica (brown algae) not to exceed 0.08 percent of the product formulation	GRAS Notice No. 000123	Listed by common or usual name in the ingredients statement (2)

	gravies, and seasonings			
Malic acid	Flavoring agent in fish of the order Siluriformes	Malic acid at levels sufficient for purpose using good manufacturing practices	21 CFR 582.1069	Listed by common or usual name in the ingredients statement (4)
Mixture of citrus (orange) extract, oregano extract, and rosemary extract	As a natural flavoring in meat and poultry products including RTE, fresh, cooked and frozen beef, pork, and poultry products where currently permitted by FSIS regulations	Mixture of citrus (orange) extract, oregano extract, and rosemary extract up to 1000 ppm of the final product formulation	Acceptability determination	Each ingredient listed by common or usual name or collectively as "natural flavoring" (4)
Monosodium glutamate (MSG)	Flavoring agent in fish of the order Siluriformes in various meat and poultry products and fish of the order Siluriformes	Monosodium glutamate (MSG) at levels sufficient for purpose using good manufacturing practices	9 CFR 424.21, 21 CFR 182.1	Listed by common or usual name in the ingredients statement (4)
Pea protein proteolysate	Various whole muscle and comminuted meat and poultry products and RTE meat and poultry products	Pea protein proteolysate not to exceed the product's specific standard of identity limits and not more than 7 percent of the total product formulation	GRN 1581	Listed as "pea protein proteolysate"' or 'pea protein isolate'.(2)
Potassium acetate	Various meat and poultry products	Potassium acetate not to exceed 1.2 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Potassium carbonate	Flavoring agent in fish of the order Siluriformes	Potassium carbonate levels sufficient for purpose using good manufacturing practices	21 CFR 184.1619	Listed by common or usual name in the ingredients statement (4)
Potassium citrate	As a flavor or flavor enhancing agent in meat and poultry products	Potassium citrate not to exceed 2.25 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)
Sodium acetate and sodium diacetate mixture	Various meat and poultry products	Sodium acetate and sodium diacetate mixture as a combination not to exceed 0.80 percent total formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (4)

		weight. Sodium acetate not to exceed 0.50 percent of the formulation weight; Sodium diacetate not to exceed 0.30 percent of the formulation weight.		
Sucralose	Non-nutritive sweetener in various non-standardized meat and poultry products	Sucralose not to exceed 500 ppm in the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Trehalose	As a flavor enhancer in non-standardized RTE meat and poultry products	Trehalose not to exceed 2 percent by weight of product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Miscellaneous				
Beef Protein	A 1.8 percent beef protein solution pH adjusted with the use of up to 0.5percent citric acid used as a processing aid in frying beef products to reduce fat uptake.	Beef Protein applied as a coating at up to 0.8 percent (by weight of the final product), or as a component of batter at up to 0.14 percent, and as both at a combined total of up to 0.89 percent	GRAS Notice No. 000313	None under the accepted conditions of use (1)
Activated charcoal	Use of activated charcoal in collecting and removing gases and liquid impurities during the beef aging process.	For single-use only and the amount of activated charcoal used will not exceed 0.00135 wt.percent or 13.5 ppm on beef. The inedible fat layer that contains the activated charcoal will be cut off and discarded prior to retail.	Food Contact Substance Notification No. FCN 1629	None under the accepted conditions of use (6)
Alkyl polyglycosides	Hog scalding	Alkyl polyglycosides sufficient for purpose of increasing the wetting ability of the caustic solution	GRAS Notice No. 000237	None under the accepted conditions of use (1)
Alkyl polyglycosides	Wash meat (i.e., beef carcasses after the hide has been removed to remove	Alkyl polyglycosides used at up to 2 percent active solution level	GRAS Notice No. 000237	None under the accepted conditions of use (1)

	any extraneous hair, dirt, etc.) during butchering and wash poultry (i.e., whole or eviscerated carcasses after defeathering)	followed by a potable water rinse		
Ammonium hydroxide	To adjust the pH of brine solutions prior to injection into meat	Ammonium hydroxide sufficient for purpose to achieve a brine solution with a pH of up to 11.6	Acceptability determination	None under the accepted conditions of use (1)
An aqueous mixture of dimethylpolysilo-xane,Tween 60, S-Maz 60, a Kosher Base (DMPS and Silicone Dioxide) and Formaldehyde	Spray, drench, or dip for raw poultry carcasses/parts (may be used with Cecure™)	A proprietary blend (including ≤10percent DMPS, ≤0.08 percent Formaldehyde)	21 CFR 173.340, 21 CFR 172.842, CFR 172.480 and 9 CFR 424.21(c)	None under the accepted conditions of use (1)
An aqueous solution of arginine, potassium hydroxide, salt, and water	pH control agent in brine solutions for beef subprimals or to make beef patties	Arginine is added to the salt and water brine solution and the pH is adjusted. The potassium hydroxide is then added and the pH is adjusted.	Acceptability determination L-arginine: GRAS Notice No. 000290	Salt and water must be listed by common or usual name on the ingredients statement
An aqueous solution of Sodium Hydroxide and Sodium Gluconate	As a cleaning agent to remove hair and dirt from bovine and ovine feet	Final concentrations will be 3.76-4.67 percent sodium hydroxide and 0.26-0.32 percent sodium gluconate, in water solution	21 CFR 182.6757 and 21 CFR 184.1763	None under the accepted conditions of use (1)
An aqueous solution of Hydrogen Peroxide	As a bleaching agent on bovine and ovine feet	Final concentration of Hydrogen Peroxide between 0.38-0.48 percent wt. followed by a potable water rinse	21 CFR 184.1366(c)	None under the accepted conditions of use (1)
An aqueous solution of alkyl polyglycoside	As a cleaning agent to remove hair and dirt from bovine and ovine feet	Concentration of Alkyl Polyglycoside will be 0.01-0.03 percent wt. in water solution followed by a potable water rinse or removed by subsequent cleaning operations	Acceptability determination	None under the accepted conditions of use (1)
A 60/40 blend of sodium bicarbonate and citric acid	To generate carbon dioxide in packages of raw whole muscle	A 60/40 blend of sodium bicarbonate and citric acid	Acceptability determination	None under the accepted

	cuts of meat and poultry; raw meat and poultry trimmings; raw ground meat and poultry	incorporated into soaker pads at a level not to exceed 0.5 to 2 grams per pad		conditions of use (1)
A mixture of potato starch, sodium and postassium di-and triphosphate, dextrose, carrageenan, microcrystalline cellulose (cellulose gel), xanthan gum, sodium ascorbate, and sodium erythorbate	For use in meats and poultry as a binder where binders are permitted, although the presence of the sodium ascorbate and sodium erythorbate would limit the use of this ingredient to cured products, and their levels of use must comply with the limits prescribed in 9 CFR 424.21.	A mixture of potato starch, sodium and postassium di-and triphosphate, dextrose, carrageenan, microcrystalline cellulose (cellulose gel), xanthan gum, sodium ascorbate, and sodium erythorbate in meats and poultry as a binder where binders are permitted at 3 percent of the finished	Acceptability determination	Listed as "potato starch, sodium and postassium di-and triphosphate, dextrose, carrageenan, microcrystalline cellulose (cellulose gel), xanthan gum, sodium ascorbate, and sodium erythorbate" in the ingredients statement (2)
A mixture of sodium chloride, potassium chloride, and sodium gluconate	For use in whole muscle meats and poultry for sodium reduction	A mixture of sodium chloride, potassium chloride, and sodium gluconate at levels sufficient for purpose	Acceptability determination	Listed as "salt, potassium chloride, and sodium gluconate" in the ingredients statement (2)
A mixture of sodium chloride, sodium ferrocyanide, potassium chloride, magnesium carbonate, sodium nitrite, medium chain triglycerides (MCT) and sodium gluconate	For use in whole muscle meats, meat products and poultry products for sodium reduction and curing	A mixture of sodium chloride, sodium ferrocyanide, potassium chloride, magnesium carbonate, sodium nitrite, medium chain triglycerides (MCT) and sodium gluconate at a level of up to 3 percent of product formulation	Acceptability determination	Listed as "salt, sodium gluconate, potassium chloride, and sodium nitrite" in the ingredients statement (2)
A solution of water, dextrose, glycerin, maltose, and sodium phosphate	To aid in the removal of residual blood from beef, bison, pork, lamb and goat carcasses after the typical exsangui-nation process is completed.	A solution of water, dextrose, glycerin, maltose, and sodium phosphate sufficient for purpose	Acceptability determination	For all edible tissue none under the accepted conditions of use unless the Moisture Fat Free% (MFF%) analysis shows treated carcasses are not in compliance with retained water requirements. (1)

Algal oil derived from *Schizochytrium sp.*	For use as an alternative edible oil in the production of various meat and poultry products	Algal oil derived from Schizochytrium sp. not to exceed 1.45 percent by weight of the product formulation for meat products and 0.87 percent by weight of the product formulation for poultry products	GRAS Notice No. 000137	Listed by common or usual name in the ingredients statement (2)
Barley fiber	For use as a texturizer in sauces, soups, and gravies containing meat and poultry	Barley fiber not to exceed 2.5 percent by weight of the product formulation	GRAS Notice No. 000344	Listed as "isolated barley product" in the ingredient statement (2)
Bacterial proteolytic food grade enzyme derived from Bacillus subtilis and alkaline protease food grade enzyme made from Bacillus licheniformis	To reduce gelation and viscosity of cooked meat and poultry broths, stocks, and extracts	Bacterial proteolytic food grade enzyme derived from Bacillus subtilis and alkaline protease food grade enzyme made from Bacillus licheniformis ,0.1 percent of each enzyme for a maximum of 0.2 percent the total formulation.	Acceptability determination	None under the accepted conditions of use (2)
Cellulose (powdered)	To facilitate grinding and shredding in cheese	Cellulose not to exceed 2 percent of the cheese	Acceptability determination	None under the accepted conditions of use (1)
Choline chloride with or without magnesium stearate	For use as a direct replacement for sodium chloride in meat and poultry products including processed, ready-to-eat (RTE), fresh and frozen meat and poultry products with or without stated standards of identity or composition	Not to exceed 6000 ppm choline chloride. When magnesium stearate is used with choline chloride it is used with 2 percent added magnesium stearate	Acceptability determination	Listed as "choline chloride" in the ingredient statement (1)
Citroglycerides (citric acid esters of mono- and diglycerides)	To aid in the dispersion of lauric arginate (LAE)	Citroglycerides used in a 5:1 mixture with lauric arginate with the maximum amount in meat and poultry products not to exceed 1125 ppm	GRAS Notice No. 000222	Listed by common or usual name in the ingredients statement (2)

Cultured Sugar (derived from cane, corn, or beets)	In uncooked (raw) sausage meat	Cultured sugar at up to 4.8 percent of the product formula	GRAS Notice No. 000240	Cultured cane and beet sugar listed by common or usual name (e.g., “cultured cane sugar) or as “cultured sugar.” Cultured corn sugar listed as “cultured corn sugar” or “cultured dextrose” (2)
Diacylglycerol oil	For use as an alternative edible oil in the production of various meat and poultry products	Diacylglycerol oil not to exceed 11 percent of the meat or poultry product formula	GRAS Notice No. 000115	Listed by common or usual name in the ingredients statement (2)
Dimethylpolysiloxane (methyl polysilicone)	Antifoaming agent in soups, rendered fats, curing solutions and non-curing brine solutions	Dimethylpolysiloxane (methyl polysilicone) not to exceed 10 ppm in soups and rendered fats; up to 50 ppm in curing solutions and non-curing brine solutions	21 CFR 173.340 and 9 CFR 424.21(c)	None under the accepted conditions of use (1)
Erythorbic Acid	To delay discoloration in ground beef and ground beef patties	Erythorbic acid not to exceed 0.04 percent of the product formulation	Acceptability determination	Product must be descriptively labeled (2)
Fish oil concentrate	For use as an alternative edible oil in the production of various meat and poultry products	Fish oil concentate not to exceed 2.9 percent by weight of the product formulation for meat products and 1.7 percent by weight of the product formulation for poultry products	GRAS Notice No. 000105	Listed by common or usual name in the ingredients statement (2)
Fish oil (predominantly sardine, anchovy, and tuna)	For use as an alternative edible oil in the production of various meat and poultry products	Fish oil (predominantly sardine, anchovy, and tuna) not to exceed 3.3 percent by weight of the product formulation for meat products and 2.0 percent by weight of the product formulation for poultry products	GRAS Notice No. 000193	Listed by common or usual name in the ingredients statement (2)

Fish oil (predominantly anchovy)	For use as an alternative edible oil in the production of various meat and poultry products	Fish oil (predominantly anchovy) not to exceed 3.3 percent by weight of the product formulation for meat products and 2.0 percent by weight of the product formulation for poultry products	GRAS Notice No. 000138	Listed by common or usual name in the ingredients statement (2)
Fish oil (predominantly anchovy) microencapsulated	For use as an alternative edible oil in the production of various meat and poultry products	Fish oil (predominantly anchovy) microencapsulated not to exceed 6.0 percent by weight of the product formulation for meat products and 3.6 percent by weight of the product formulation for poultry products Fish oil (predominantly anchovy) microencapsulated not to exceed 6.0 percent by weight of the product formulation for meat products and 3.6 percent by weight of the product formulation for poultry products	GRAS Notice No. 000138	Listed by common or usual name in the ingredients statement (2)
Glucose oxidase and catalase enzymes from *Aspergillus niger* with a dextrose energy source and sodium bicarbonate buffer	To maintain a low oxygen atmosphere in packages of raw whole muscle cuts of meat and poultry	Glucose oxidase and catalase enzymes from Aspergillus niger with a dextrose energy source and sodium bicarbonate buffer incorporated into soaker pads such that the enzymes do not exceed 0.03 percent by weight of the meat or poultry	Acceptability determination	None under the accepted conditions of use (1)
Glucose oxidase and catalase enzymes	To maintain a low oxygen atmosphere	Glucose oxidase and catalase	Acceptability determination	Listed by common or usual name in

from *Aspergillus niger* with a dextrose energy source and sodium bicarbonate buffer	in packages of shelf-stable, ready-to-eat, meat products	enzymes from Aspergillus niger with a dextrose energy source and sodium bicarbonate buffer applied to the surface of the product such that the enzymes do not exceed 0.03 percent by weight of the meat food product		the ingredients statement (2)
Glycerophospholipid cholesterol acyltransferase (GCAT) enzyme preparation from *Bacillus licheniformis* expressing a modified GCAT gene from *Aeromonas salmonicida* subsp. s*almonicida* (GCAT enzyme preparation)	For use as an emulsifier in comminuted meat products	Glycerophospholipid cholesterol acyltransferase (GCAT) enzyme preparation from Bacillus licheniformis expressing a modified GCAT gene from Aeromonas salmonicida subsp. salmonicida (GCAT enzyme preparation) not to exceed 22.6 mg TOS/kg of total product formulation	GRAS Notice No. 000265	Listed by common or usual name in the ingredients statement (2)
Guar gum	For use as whipping aid in egg products	Guar gum not to exceed 0.5 percent	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Hydrogen peroxide	To minimize biofilm buildup on reverse osmosis and ultrafil-tration membranes for processing beef plasma	Hydrogen peroxide not to exceed 100 ppm added just prior to plasma entering membranes	Acceptability determination	None under the accepted conditions of use (1)
Hydrogen peroxide	Used as prescribed for alternative pasteurization treatments of egg products	Hydrogen peroxide used at 10 percent solution	21 CFR 178.1005	None under the accepted conditions of use (1)
Hydrolyzed gelatin	To prevent moisture loss from fresh cuts of meat and poultry	A 13 percent aqueous solution of hydrolyzed gelatin sprayed on the surface not to exceed 2 percent hydrolyzed gelatin by weight of the meat or poultry	Acceptability determination	Listed by common or usual name in the ingredients statement. Label must also bear a statement, contiguous to the product name, indicating product

				has been coated with hydrolyzed gelatin to prevent moisture loss. (4)
Medium and long chain triacylglycerol (tailored triglycerides containing approximately 12 percent medium chain fatty acids)	For use as a supplementary source of vegetable oil in the production of various meat and poultry products	Medium and long chain triacylglycerol (tailored triglycerides containing approximately 12 percent medium chain fatty acids) sufficient for purposes	GRAS Notice No. 000217	Listed by common or usual name in the ingredients statement (2)
Microcrystalline cellulose coated with cellulose gum, potato starch, sodium tripolyphosphate (a stabilizer), chicken egg white powder, tetrasodium pyrophosphate (a stabilizer), and transglutaminase	For use as a fat replacer and moisture binder in non-standardized comminuted meat products or standardized comminuted meat products that permit the use of binders and phosphates	Microcrystalline cellulose coated with cellulose gum, potato starch, sodium tripolyphosphate (a stabilizer), chicken egg white powder, tetrasodium pyrophosphate (a stabilizer), and transglutaminase not to exceed 2.77 percent by weight of the final products	Acceptability determination	Labeled in the correct order of predominance followed by a sublisting of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as “sodium phosphate” in the correct order of predominance in the sublisting of the blend in the ingredients statement
Polyglycerol ester produced by transesterification of triglycerol with soybean oil	Added to fresh livestock blood during collection to eliminate foaming	Polyglycerol ester produced by transesterification of triglycerol with soybean oil not to exceed 60 ppm in the fresh livestock blood	Acceptability determination	None under the accepted conditions of use (1)
Polyglycerol polyricinoleic acid (PGPR)	For use as an emulsifier in the formulation of color additives which are subsequently used in processed meat and poultry products for which colors are permitted	Polyglycerol polyricinoleic acid (PGPR) sufficient for purpose using good manufacturing practices	GRAS Notice No. 000270	Listed by common or usual name in the ingredients statement (2)

Potassium magnesium chloride, and salt	For use as a replacement for a portion of the salt normally used in meat and poultry products	Potassium magnesium chloride, and salt sufficient for purpose	GRAS Notice No. 000403	Listed as Sea salt (Potassium magnesium chloride, and salt) in the ingredients statement (2)
Protease preparations from *Bacillus licheniformis*	Used as a processing aid to prevent gel formation in making chicken broth	Protease preparations from Bacillus licheniformis applied to chicken broth at a rate up to 0.5percent of the weight of protease to the weight of protein in the chicken broth	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Rice protein	1) For use as a replacement for fat and/or meat or poultry in processed meat and poultry products (e.g. meat and poultry patties) where the use of ingredients of this type are permitted. 2) For use in the formulation of substitute standard-ized meat and poultry products named by an expressed nutrient content claim described in 9 CFR 319.10 and 381.172 which allow the use of ingredients of this type as a replacement for fat	Rice protein comprised of 19 percent rice flour, 1 percent natrium (sodium) alginate, and 80percent water used at a level not to exceed 25 percent of the finished product	Acceptability determination	The ingredient must be listed as “Textured Rice Protein with a sublisting of ingredients in the ingredient statement, i.e., Textured Rice Protein (water, rice flour, sodium alginate).”
Salmon oil	For use as an alternative edible oil in the production of various meat and poultry products	Salmon oli not to exceed 5.0 percent by weight of the product formulation for meat products and 3.0 percent by weight of the product formulation for poultry products	GRAS Notice No. 000146	Listed by common or usual name in the ingredients statement (2)
Sea Salt (Potassium magnesium chloride, and salt)	For use as a replacement for a portion of the salt normally used in meat and poultry products	Sea Salt Potassium magnesium chloride, and salt) sufficient for purpose	GRAS Notice No. 000403	Listed as Sea Salt in the ingredients statement (2)

Silicon dioxide	For use as anticaking agent in egg products	Silicon dixide not to exceed 1.0 percent in dried whole eggs or yolks	Acceptability determination; 21 CFR 172.480	Listed by common or usual name in the ingredients statement (2)
Small planktivorous pelagic fish oil	For use as an alternative edible oil in the production of various meat and poultry products	Small planktivorous pelagic fish oil not to exceed 3.3 percent by weight of the product formulation for meat products and 2.0 percent by weight of the product formulation for poultry products	GRAS Notice No. 000102	Listed by common or usual name in the ingredients statement (2)
Sodium bicarbonate	Neutralize excess acidity (maintain pH) in fresh pork and beef cuts	Sodium bicarbonate in an injected solution, not to exceed 0.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium bicarbonate	Maintain pH and reduce purge in fresh turkey products	Sodium bicarbonate in an injected solution, not to exceed 0.5 percent of the product formulation	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium bicarbonate	To soak natural casings to ease stuffing	Sodium bicarbonate 1.06 percent of an aqueous solution. Casings must be rinsed with potable water prior to stuffing	Acceptability determination	None under the accepted conditions of use (1)
Sodium carbonate	Used as an anti-scaling agent with authorized sodium metasilicate (SMS) meat and poultry uses	Sodium carbonate up to 15 percent of a solution of sodium metasilicate and sodium carbonate (sodium metasilicate not to exceed 6 percent) applied as a surface application at a rate not to exceed 700 ppm by weight of the authorized SMS meat and poultry product uses	Acceptability determination	None under the accepted conditions of use (1)
Sodium carbonate	For moisture retention in meat and poultry products	Sodium carbonate at a minimum of 750 ppm in brine solut-ions, in accordance with current industry	21CFR 184.1736	Listed by common or usual name (i.e., sodium carbonate) in the

		standards of good manufacturing practice		ingredients statement (2)
Sodium desoxycholate	For use as whipping aid in egg products	Sodium desoxycholate not to exceed 0.1 percent in egg products	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium gluconate	For use as a stabilizer in emulsion-type sausages (derived from its sequestering properties)	Sodium gluconate when used in accordance with 21 CFR 182.6757 as a sequestraint and in accordance with good manufacturing practice	Acceptability determination	Listed as "sodium gluconate" in the ingredients statement (2)
Sodium hydroxide	For application to poultry carcasses immediately after removal of feathers and prior to evisceration to minimize fecal material from adhering to the carcass	Sodium hydroxide 0.05 percent solution	Acceptability determination	None under the accepted conditions of use (1)
Sodium hydroxide and hydrochloric acid	To adjust the pH of (species) plasma during processing (in which it is exposed to heat) to prevent gelling	Sodium hydroxide and hydrochloric acid sufficient for purpose to adjust pH	Acceptability determination	None under the accepted conditions of use (1)
Sodium lauryl sulfate	For use as whipping aid in egg products	Sodium lauryl sulfate not to exceed 0.1 percent in dried egg whites; Not to exceed 0.0125 percent in liquid or frozen egg whites	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Sodium nitrite	For use on one side of a food packaging film used for vacuum packaging raw red meat and raw whole muscle cuts of red meat as a color fixative	Sodium nitrite at a maximum level of 113 milligrams per square meter of film.	GRAS Notice No. 000228	Red meat packaged in a film containing sodium nitrite must be coded with a "Use or Freeze by" date not to exceed 34 days after packaging for ground red meat and 36 days for whole muscle cuts of red meat.

Sodium potassium hexametaphosphate	To decrease the amount of cooked out juices in meat and poultry products except where otherwise prohibited by the meat or poultry inspection regulations	Sodium potassium hexametaphosphate not to exceed 0.5 percent of product formulation	GRAS Notice No. 000316	Listed by common or usual name in the ingredients statement (2)
Sodium siliocoaluminate	For use as anticaking agent in egg products	Sodium siliocoaluminate not to exceed 2.0 percent in dried whole eggs of yolks	Acceptability determination; 21 CFR 160.105(d)(1)	Listed by common or usual name in the ingredients statement (2)
Stearidonic acid (SDA) soybean oil	For use as an ingredient in meat and poultry products	Stearidonic acid (SDA) soybean oil sufficient for purpose	GRAS Notice No. 000283	Listed by common or usual name in the ingredients statement (2)
Triethyl citrate	For use as whipping aid in egg products	Triethyl citrate not to exceed 0.03 percent in liquid or frozen egg whites; not to exceed 0.025 percent in dried egg whites	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Triple salt of magnesium, ammonium, and potassium chloride	For use as a substitute for a portion of the sodium chloride normally used in meat and poultry products.	Triple salt of magnesium, ammonium, and potassium chloride sufficient for purpose	GRAS Notice No. 000272	Listed by common or usual name in the ingredients statement (2)
Trisodium phosphate (as a component of phosphate blends, not to exceed 40 percent of the phosphate blend)	To decrease the amount of cooked out juices in meat food products except where otherwise prohibited by the meat inspection regulations and poultry food products except where otherwise prohibited by the poultry products inspection regulations	Trisodium phosphate as a component of phosphate blends, not to exceed 40 percent of the phosphate blend) for meat food products, 5 percent of phosphate in pickle at 10 percent pump level; 0.5 percent of phosphate in meat food product (only clear solution may be injected into meat food product). For poultry food products, 0.5 percent of total product.	Acceptability determination	Listed by common or usual name in the ingredients statement (4) Note: Phosphates may be collectively designated as “sodium phosphates” or “potassium phosphates”

Trisodium diphosphate	For use as a stabilizer, moisturizer, and sequestraint for use in sausages (fine emulsions)	Trisodium diphosphate not to exceed 0.5 percent of phosphate in product	GRAS Notice No. 000300	Listed by common or usual name in the ingredients statement (2) Note: Phosphates may be collectively designated as "sodium phosphates" or "potassium phosphates"
Tuna oil	For use as an alternative edible oil in the production of various meat and poultry products	Tuna oil not to exceed 3.1 percent by weight of the product formulation for meat products and 1.8 percent by weight of the product formulation for poultry products	GRAS Notice No. 000109	Listed by common or usual name in the ingredients statement (2)
Xanthan gum	To aid in suspending carrageenan and other insoluble solids (e.g., starch and soy protein) in the brine tank before poultry and ham pumping	Xanthan gum not to exceed 2 percent of the amount of carrageenan	Acceptability determination	None under the accepted conditions of use (1)
Moisture Retention				
An aqueous mixture of sodium tripolyphosphate, sodium hexametaphosphate and salt (optional)	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of sodium tripolyphosphate, sodium hexametaphosphate and salt (optional) sufficient for purpose using good manufacturing practices	21 CFR 182.1810, 21 CFR 182.6760	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of sodium tripolyphosphate, salt, sodium hexametaphosphate,	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to	An aqueous mixture of sodium tripolyphosphate, salt, sodium hexametaphosphate,	21 CFR 182.1810, 21 CFR 182.6760,	Labeled in the correct order of predominance followed by a sub-

citric acid, and ascorbic acid	retain moisture in fish or fish products of the order Siluriformes	citric acid, and ascorbic acid sufficient for purpose using good manufacturing practices	21 CFR 182.1033, 21 CFR 182.3013	listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of sodium tripolyphosphate, salt, sodium hexametaphos-phate, sodium acid pyrophosphate and citric acid	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of sodium tripolyphosphate, salt, sodium hexametaphos-phate, sodium acid pyrophosphate and citric acid sufficient for purpose using good manufacturing practices	21 CFR 182.1810 21 CFR 182.6760, 21 CFR 182.1087, 21 CFR 182.1033	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of sodium tripolyphosphate, salt, and citric acid.	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of pentasodium, triphosphate, tetra sodium diphosphate, sufficient for purpose using good manufacturing practices	21 CFR 182.1810, 21 CFR 182.1033	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium

				phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of pentasodium, triphosphate, tetra sodium diphosphate	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of pentasodium, triphosphate, tetra sodium diphosphate, sufficient for purpose using good manufacturing practices	21 CFR 182.1810, 21 CFR 182.6789	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of sodium, triphosphate, potassium citrate, citric acid, and tetra sodium diphosphate, sodium chloride	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of sodium, triphosphate, potassium citrate, citric acid, and tetra sodium diphosphate, sodium chloride, sufficient for purpose using good manufacturing practices	21 CFR 182.1810, 21 CFR 182.6789, 21 CFR 182.1033	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of salt, citric acid, potassium citrate, pentasodium triphosphate, tetra sodium diphosphate	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the	An aqueous mixture of salt, citric acid, potassium citrate, pentasodium triphosphate, tetra sodium diphosphate, sufficient for purpose	21 CFR 182.1810, 21 CFR 182.6789, 21 CFR 182.1033	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the

	order Siluriformes	using good manufacturing practices		blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of citric acid, sodium triphosphate, potassium diphosphate	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of citric acid, sodium triphosphate, potassium diphosphate, sufficient for purpose using good manufacturing practices	21 CFR 182.1033, 21 CFR 182.1810	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
An aqueous mixture of sodium triphosphate, salt, potassium citrate	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	An aqueous mixture of sodium triphosphate, salt, potassium citrate, sufficient for purpose using good manufacturing practices	21 CFR 182.1810, 21 CFR 184.1625	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of

				predominance in the sub-listing of the blend in the ingredients
Calcium citrate	Fish of the order Siluriformes	Calcium citrate, sufficient for purpose using good manufacturing practices	21 CFR 582.1195	Listed by common or usual name in the ingredients statement (4)
Sodium citrate	Fish of the order Siluriformes	Sodium citrate, sufficient for purpose using good manufacturing practices	21 CFR 184.1751	Listed by common or usual name in the ingredients statement (4)
Sodium tripolyphosphate	Fish of the order Siluriformes	Sodium tripolyphosphate, sufficient for purpose using good manufacturing practices	21 CFR 182.1810	Listed by common or usual name in the ingredients statement (4)
Sodium tripolyphosphate and salt (optional)	Injected or applied as a spray, immersion bath, drag through dip tank or tumbler to retain moisture in fish or fish products of the order Siluriformes	Sodium tripolyphosphate and salt (optional), sufficient for purpose using good manufacturing practices	21 CFR 182.1810	Labeled in the correct order of predominance followed by a sub-listing of each ingredient of the blend listed by its common or usual name in the ingredients statement. Phosphates may be listed collectively as "sodium phosphate" in the correct order of predominance in the sub-listing of the blend in the ingredients
Packaging Systems				
Carbon monoxide gas as part of Cryovac's modified atmosphere packaging system (for use with 550P Tray/Lid and LID551P)	Packaging fresh cuts of case ready muscle meat and case ready ground meat to maintain wholesomeness, provide flexibility in distribution, and reduce shrinkage of the meat	The use of carbon monoxide (0.4 percent), carbon dioxide (30 percent) and nitrogen (69.6 percent) as part of the Cryovac low oxygen modified atmosphere packaging system used with 550P Tray /Lid	Acceptability Determination	None under the accepted conditions of use (2)

Carbon monoxide gas as part of Cryovac's modified atmosphere packaging system	Packaging fresh cuts of case ready muscle meat and case ready ground meat to maintain wholesomeness	The use of carbon monoxide (0.4 percent), carbon dioxide (30 percent) and nitrogen (69.6 percent) introduced directly into the package. System uses a barrier lid that only covers a highly permeable patch. The permeable patch is a one half inch hole in the lid film. Barrier lid removed prior to display for retail sale	Acceptability determination	None under the accepted conditions of use (2)
Carbon monoxide gas as part of the Pactiv modified atmosphere packaging system (ActiveTech 2001)	Packaging fresh cuts of case ready muscle meat and case ready ground meat to maintain wholesomeness	The use of carbon monoxide (0.4 percent), carbon dioxide (30 percent) and nitrogen (69.6 percent) as part of the Pactiv modified atmosphere packaging system	GRAS Notice No. 000083	None under the accepted conditions of use (2)
Carbon monoxide gas as part of a high oxygen modified atmosphere packaging (MAP) system used in accordance with GRN 000083 (Pactiv)	Packaging fresh cuts of fresh ground and whole muscle meat to maintain wholesomeness, provide flexibility in distribution, and reduce shrinkage of the meat	Carbon monoxide gas not to exceed 0.4 percent of the modified atmosphere gas mixture	GRAS Notice No. 000251	None under the accepted conditions of use (2)
Carbon monoxide gas as part of a high oxygen modified atmosphere pack-aging system used in accordance with GRN 000083 (Cargill)	Packaging fresh cuts of case-ready muscle meat and ground meat to maintain wholesomeness	Carbon monoxide gas not to exceed 0.4 percent of the modified atmosphere gas mixture	Acceptability determination	None under the accepted conditions of use (2)
Carbon monoxide gas a part of Cargill's modified atmosphere packaging system introduced directly into the bulk or master container used for bulk transportation of fresh meat products.	Packaging fresh cuts of muscle meat and ground meat to maintain wholesomeness	Carbon monoxide gas not to exceed 0.4 percent of the modified atmosphere gas mixture	Acceptability determination	None under the accepted condi-tions of use (2)

Meat products are subsequently repackaged in packages not containing a carbon monoxide modified atmosphere prior to retail sale (In accordance with GRN 000083)				
Carbon monoxide gas as part of the Precept modified atmosphere packaging system	Packaging case-ready fresh cuts of beef and pork as well as ground beef and pork to maintain wholesomeness	Carbon monoxide gas as part of the Precept modified atmosphere packaging system 0.4 percent (with a process tolerance of 20 percent, allowing for a carbon monoxide concentration up to 0.48 percent) in combination with carbon dioxide (20-100 percent) and nitrogen (0-80 percent)	GRAS Notice No. 000143	None under the accepted conditions of use (2) Products packaged in this MAP system must be coded with a "Use or Freeze by" date not to exceed 28 days after packaging for ground meat and 35 days for whole muscle cuts
Carbon monoxide gas as part of Precept's modified atmosphere packaging system	Packaging case-ready fresh cuts of poultry as well as ground poultry	Carbon monoxide gas as part of Precept's modified atmosphere packaging system, 0.3 percent (with a process tolerance of 20 percent, allowing for a carbon monoxide concentration up to 0.36 percent), in combination with nitrogen (0-80 percent), and carbon dioxide (20-100 percent)	Acceptability determination	None under the accepted conditions of use (2) Products packaged in this MAP system must be coded with a "Use or Freeze by" date not to exceed 28 days after packaging for ground poultry and 35 days for whole muscle cuts of poultry
Carbon monoxide as a component of a modified atmosphere packaging system (Tyson Foods, Inc.)	Packaging case-ready fresh cuts of beef and pork as well as ground beef and pork	Carbon monoxide (at a level not to exceed 2.2 mg carbon monoxide per pound of packaged meat) in combination with carbon dioxide and nitrogen	GRAS Notice No. 000167	None under the accepted conditions of use (2) Products packaged in this MAP system must be coded with a "Use or Freeze by" date not to

				exceed 28 days after packaging for ground meat and 35 days for whole muscle cuts
Carbon monoxide as part of the packaging system	Wholesale (primals and subprimals)	Carbon monoxide (21.4 ml/1 of water) dissolved in a brine/marinade (27.8 percent by weight) solution which is injected into meat wholesale-primals and subprimals.	GRAS Notice No. 000194	None under the accepted conditions of use (2).
Carbon monoxide gas part of a modified atmosphere packaging system	To extend the shelf life and stabilize the color of red meat sausages, poultry sausages and sausages made with a red meat/poultry blend.	Carbon monoxide not to exceed 0.4 percent of the modified atmosphere gas mixture.	Acceptability determination	Product will be lot coded and labeled with a "Use By" or "Use or Freeze By" date before shipping to retailers. None under the accepted conditions of use (2)
Poultry scald agents (must be removed by subsequent cleaning operations)				
Alkyl polyglycosides	To remove feathers from poultry carcasses	Alkyl polyglycosides, sufficient for purpose	GRAS Notice No. 000237	None under the conditions of use (1)
Calcium acid phosphate	To remove feathers from poultry carcasses	Calcium acid phosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium acid pyrophosphate	To remove feathers from poultry carcasses	Calcium acid phosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium bicarbonate	To remove feathers from poultry carcasses	Calcium bicarbonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium carbonate	To remove feathers from poultry carcasses	Calcium carbonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium dodecylbenzene sulfonate	To remove feathers from poultry carcasses	Calcium dodecylbenzene sulfonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium 2-ethylhexyl sulfate	To remove feathers from poultry carcasses	Calcium 2-ethylhexyl sulfate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)

Calcium hexametaphosphate	To remove feathers from poultry carcasses	Calcium hexametaphosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium hydroxide	To remove feathers from poultry carcasses	Calcium hydroxide, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium lauryl sulfate	To remove feathers from poultry carcasses	Calcium lauryl sulfate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium phosphate (mono-, di-, and tribasic)	To remove feathers from poultry carcasses	Calcium phosphate (mono-, di-, and tribas), sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium pyrophosphate	To remove feathers from poultry carcasses	Calcium pyrophosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium sesquicarbonate	To remove feathers from poultry carcasses	Calcium sesquicarbonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium sulfate	To remove feathers from poultry carcasses	Calcium sulfate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Calcium tripolyphosphate	To remove feathers from poultry carcasses	Calcium tripolyphosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium acid phosphate	To remove feathers from poultry carcasses	Potassium acid phosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium acid pyrophosphate	To remove feathers from poultry carcasses	Potassium acid pyrophosphat, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium bicarbonate	To remove feathers from poultry carcasses	Potassium bicarbonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium carbonate	To remove feathers from poultry carcasses	Potassium carbonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium dodecylbenzene sulfonate	To remove feathers from poultry carcasses	Potassium dodecylbenzene sulfonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium 2-ethylhexyl sulfate	To remove feathers from poultry carcasses	Potassium 2-ethylhexyl sulfate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)

Potassium hexametaphosphate	To remove feathers from poultry carcasses	Potassium hexametaphosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium hydroxide	To remove feathers from poultry carcasses	Potassium hydroxide, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium lauryl sulfate	To remove feathers from poultry carcasses	Potassium lauryl sulfate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium phosphate (mono-, di-, and tribasic)	To remove feathers from poultry carcasses	Potassium phosphate (mono-, di-, and tribasic), sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium pyrophosphate	To remove feathers from poultry carcasses	Potassium pyrophosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium sesquicarbonate	To remove feathers from poultry carcasses	Potassium sesquicarbonate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium sulfate	To remove feathers from poultry carcasses	Potassium sulfate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Potassium tripolyphosphate	To remove feathers from poultry carcasses	Potassium tripolyphosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Tetracalcium pyrophosphate	To remove feathers from poultry carcasses	Tetracalcium pyrophosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Tetrapotassium pyrophosphate	To remove feathers from poultry carcasses	Tetrapotassium pyrophosphate, sufficient for purpose	Acceptability determination	None under the conditions of use (1)
Tenderizing Agents				
Calcium gluconate	Raw meat products	Calcium gluconate solutions applied or injected into raw meat shall not result in a gain of 3 percent above green weight	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Protease preparation derived from *Bacillus subtilis*	Raw meat products	Protease preparation derived from Bacillus subtilis solutions applied or injected into raw meat shall not result in a gain of 3	Acceptability determination	Listed by common or usual name in the ingredients statement (2)

		percent above green weight		
Protease produced from *Bacillus subtilis* var. *amyloliquefaciens*	Raw meat products	Protease produced from Bacillus subtilis var. amyloliquefaciens solutions applied or injected into raw meat shall not result in a gain of 3 percent above green weight	Acceptability determination	Listed by common or usual name in the ingredients statement (2)
Protease produced from *Aspergillus niger*	Raw meat cuts and raw poultry muscle tissue of hen, cock, mature turkey, mature duck, mature goose, and mature guinea	Protease produced from Aspergillus niger solutions applied or injected into raw meat or poultry tissue shall not result in a gain of 3 percent above green weight	GRAS Notice No. 000089	Listed by common or usual name in the ingredients statement (2)

Table 3: List of Approved On-Line Reprocessing (OLR) Antimicrobial Systems for Poultry

Approved OLR System	**Company Name/ Distributor**	**Substance (antimicrobial) and if applicable, FDA's Food Contact Notification (FCN)**	**PPM Concentration (range), pH, contact time, temperature (if applicable)**	**Method of Application (e.g., Spray, Wash, Inside Outside Bird Washer (IOBW) with or without brushes**
Accutab Chlorination™	Southeastern Systems Inc.	Chlorine (Calcium hypochlorite**)**	Between 20 and **50** ppm calculated as free available chlorine, pH between 6 - 7, Citric acid Sodium bisulfate or an approved acidifier will be used to adjust pH level, spray rate in brush cabinet 5-10 gallons per minute.	IOBW **and** brush cabinet with spray nozzles.
AFCO 4360 FC-100	AFCO	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1389)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 800 ppm, and HEDP not to exceed 96 ppm, minimum contact time of three (3) to ten (10) seconds	Spray
AFCO 4363 Perasafe 23	AFCO	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 765 ppm, and HEDP not to exceed 62.6 ppm, with a contact time of three (3) to ten (10) seconds	Spray
AFCO Peragonn™	AFCO Safe Foods Corporation	An aqueous solution of Peroxyacetic acid, hydrogen peroxide, and HEDP. FCN 1089	Peroxyacetic acid (not to exceed 220 ppm), 160 ppm for hydrogen peroxide, and 11 ppm for 1- hydroxyethylidene-1,1-diphosphonic acid (HEDP). Delivery pressure of 55-80 psi for a total contact time	Spray cabinet

			that can be from 55-65 seconds.	
Amplon™ formerly AFTEC 3000 (AFT Clear 3000)	Zoetis formerly Advanced Food Technologies	Sulfuric acid, sodium sulfate and water	Fed continuously with tap water dosed with Amplon™ to a target pH of 1.8 +/- 0.4. For spray cabinets, the fresh mixture will be delivered to spray bars at a minimum system pressure of 10 psi and mixture flow between 5 gal/minutes and 10 gal/minute.	Spray cabinet
ASCEND™	Zee Company	Acidified Sodium Chlorite.	Acidified Sodium Chlorite 500 to 1200 ppm in combination with citric acid, sodium bisulfate (sodium acid sulfate), or any GRAS acid sufficient to achieve a pH of 2.3 to 2.9 in accordance with 21 CFR 173.325 (Note: The pH depends on the type of poultry product.)	Spray
AVGard®XP	Danisco Inc.	Anhydrous sodium metasilicate (SMS) and Sodium sulfate or sodium carbonated as an anti- scaling agent	SMS rinse applied at a level of 4 percent +/- 2 percent	First Spray Cabinet - 20 ppm chlorine Second Spray Cabinet - SMS rinse applied at a level of 4% +/- 2% utilizing drench nozzles at sufficient flowrates and pressures so as to reduce particulate and microbial levels.
Avibrom	Albemarle Corp.	1,3-dibromo-5,5-dimethylhydantion DBDMH	AviBrom minimum of 60 ppm and maximum of 100 ppm available bromine; 0.1 gallons of aqueous bromine solution for up to 15 seconds; Flow of water 25 psi pressure and 10 gallons per minute water input.	First Spray Cabinet - 60-100ppm available bromine Second Spray Cabinet - recycled solution used for this cabinet to meet the requirements of water reuse, specifically 9 CFR 416.2(g)
Bio-Cide	Bio-Cide International, Inc.	Acidified sodium chlorite FCN 739	Mixing an aqueous solution of sodium chlorite with any GRAS acid to achieve a pH of 2.2 to 3.0 then further	Spray cabinet

			diluting this solution with a pH elevating agent (i.e., sodium bicarbonate, sodium carbonate, or an un-acidified sodium chlorite solution) to a final pH of 5.0 to 7.5. The final sodium chlorite concen-tration does not exceed 1200 mg/kg and the chlorine dioxide concentration does not exceed 30 mg/kg.	
Biosan 2205 MPS, Biosan 1510 MPS	Biosan LLC	An aqueous solution Peroxyacetic acid (PAA), acetic acid, Hydrogen peroxide, and 1-hydroxyethylidene -1, 1-diphosphoric acid (HEDP) and dipicolinic acid (DPA) FCN 1639	PAA not to exceed 2000 ppm, hydrogen peroxide will not exceed 933 ppm,1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) will not exceed 120 ppm; and dipicolinic acid (DPA) will not exceed 0.5 ppm; contact time: one (1) – thirty (30) seconds; pH 1.0 - 2.0; pressure: 10-90 psi	Spray
Birkoside MP-2	Envirotech, Birko Corp.	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. FCN 887	PAA between 80-150ppm Hydrogen peroxide not to exceed 110 ppm, HEDP not to exceed 13ppm, pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray cabinet
CECURE™	Safe Foods Corp	Cetylpyridinium chloride (The solution shall also contain propylene glycol complying with 21 CFR 184.1666 at a concentration of 1.5 times that of cetylpyridinium chloride). May be used in combination with an approved defoamer (i.e. Foamfix) in accordance with 21	As a fine mist spray of an ambient temperature aqueous solution applied to raw poultry carcasses/ parts prior to immersion in a chiller, at a level not to exceed 0.3 gram cetylpyridinium chloride per pound of raw poultry carcass/ parts, provided that the additive is used in systems that collect and recycle solution that is not carried out of the system with the treated	Spray cabinet, drench, dip

		CFR 173.340 and 9 CFR 424.21(c)	poultry carcasses/ parts, or Except when used as an immersion such as a dip tank (≤10 seconds), an aqueous solution such as a drench (minimum of 2 to 5 seconds) applied to raw poultry carcasses/ parts either prior to or after chilling at an amount not to exceed 5 gallons of solution per carcass, provided that the additive is used in systems that recapture at least 99 percent of the solution that is applied to the poultry carcasses/ parts. The concentration of cetylpyridinium chloride in the solution applied to the carcasses/ parts shall not exceed 0.8 percent by weight. When application of the additive is not followed by immersion in a chiller, the treat-ment will be followed by a potable water rinse of the arcass/parts. The potable water may contain up to 50 ppm free available chlorine.	
ChemSan RBR	ChemStation	Peroxyacetic acid (PAA), FCN 887	PAA between 80-150 ppm and a pH between 3-7	Spray cabinet/ IOBW
ChemSan RBR-22/ ChemSan RBR-XC	Envirotech ChemStation	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 1132)	The concentrated PAA formula is diluted and is to be supplied to the spray application at a concentration of: PAA between 80- 400 ppm, Hydrogen peroxide not to exceed 385 ppm, HEDP not to exceed 50 ppm, pH 2.0 - 7.0, contact time between 15-120 seconds.	Spray cabinet
ChloroSan	Ecolab Inc., Alcide	Acidified sodium chlorite	Between 500 to 1200 ppm in combination	Spray cabinet,

	Corporation		with any GRAS acid at a level sufficient to achieve a pH of 2.3 to 2.9.	
Circlean IOBW Hypochlorous acid	Tecumseh Farms Smart Chicken, LLC	A mixture of sodium hypochlorite briquettes, carbon dioxide and water (citric acid may be added for chlorine tank descaling)	Between 20 – 50 ppm hypochlorous acid solution, pH 5-7, contact time of 2-4 seconds at 5-170 psi. 50% Citric acid at a final concentra-tion of 1.995 ppb.	IOBW (with small brushes inside)
Citrilow™	Safe Foods Corporation	Citrilow™, formerly Precure™, is an aqueous solution of Citric and Hydrochloric acids	pH 1.0 - 2.0, contact time is a minimum 2 seconds	Spray cabinet
CMS Clear	CMS Technology, Inc.	An aqueous mixture of sulfuric acid, sodium sulfate, and water	The aqueous mixture is to be supplied for the spray application at a target pH of 1.8, with a range of 1.4 to 2.2. The mixture will be delivered at a minimum system pressure of 10 psi and mixture flow between 5 to 10 gallons per minute.	Spray Cabinet
DiverContact® P16	Diversey, Inc. and Cryovac , Inc.	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylid ene-1,1-diphosphonic acid (HEDP), and sulfuric acid (optional, as a catalyst) and water (FCN 1284)	An aqueous mixture of peroxyacetic acid (PAA) not exceeding 2000 ppm and 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) and 136 ppm as listed in FCN 1284. Application pressures range between 20 and 90 pounds per square inch with a contact time between 3 and 30 seconds. An aqueous mixture of peroxyacetic acid (PAA) not exceeding 2000 ppm and 1-hydroxyethyli dine-1,1-diphosphonic acid (HEDP) and 136 ppm as listed in	Spray

			FCN 1284. Application Pressures range between 20 and 90 pounds per square inch with a contact time between 3 and 30 seconds.	
Enviro Tech	Enviro Tech Chemical Services, Inc.	Peroxyacetic acid FCN 887	Between 80-150 ppm and a pH between 3-7	Spray cabinet/ IOBW
FRESHFX L-12	PeroxyChem LLC, formerly SteriFx, Inc.	A mixture of GRAS acids (citric, phosphoric and hydrochloric) that utilizes low pH to kill pathogens	pH 2.2 or less	Spray cabinet
FreshFX LP	PeroxyChem LLC, formerly SteriFx, Inc.	A mixture of GRAS Acids (citric, phosphoric and sulfuric) that utilizes low pH to kill pathogens	pH of 2.2 or less	Spray cabinet/
Hypochlorous acid	CMS Technology, Inc.	Hypochlorous acid acidified with CMS Blue, a combination of sulfuric acid, ammonium sulfate, copper sulfate, and water	CMS Blue added to 20-50 ppm chlorinated water to form hypochlorous acid at a pH range of 5 to 7. The mixture will be delivered at a system pressure range of 5-170 psig.	Spray cabinet
Hypochlorous Acid	Tyson Foods	Hypochlorous acid, acidified chlorine	Between 20 – 50 ppm hypochlorous acid solution, pH 5 to 7	Spray cabinet
Hypochlorous acid	TOMCO2 Systems	Hypochlorous acid	Not to exceed 50 ppm, contact time minimum of 10 seconds. Delivery pressure**:** 5-170 psi, pH: 5-10	IOBW/spray cabinet system
INSPEXX™ 100	Ecolab, Inc.	An aqueous mixture of peroxyacetic acid (PAA), peroxyoctanoic acid, acetic acid, octanoic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP)	1. PAA Concentration: The PAA concentration is applied at a concentration between 20-220 ppm using a single spray cabinet, wash or rinse. 2. Carcass Exposure Time: Carcass exposure to the PAA concen- tration is a minimum of 8 seconds.	IOBW/spray wash

			3. Pressure: Cabinet water pressure is a minimum of 20 psi.	
Inspexx 150	ECOLAB	Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP). FCN 1096	The level of PAA is applied at a concentration between 20- 220 ppm.	Spray cabinet/ Wash/IOBW
Inspexx 150, 3DT Inspexx 150, Inspexx 250, 3DT, Inspexx 250	ECOLAB	Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP). FCN 1495	The level of PAA is applied at a concentration between 20- 2000 ppm, exposure time: minimum of five (5) seconds, pH 2.0-8.0, pressure: minimum of 5 psi.	Spray cabinet/ Wash/IOBW
Inspexx™ 150, 3DT Inspexx™ 150, Inspexx™ 250, or 3DT Inspexx™ 250	Ecolab	Peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethyl idine-1, 1-diphosphonic acid (HEDP). (FCN 1745)	The concentration of PAA is between 20-2000 ppm, 1474 ppm hydrogen peroxide and 118 ppm 1-hydroxyethylidene-1, 1-diphosphonic acid in spray, exposure time: between 5 and 60 seconds, pH 2.0-8.0, pressure: minimum of 5 psi.	Spray cabinet/wash IOBW
IOBW Hypochlorous acid	Tecumseh Farms Smart Chicken, LLC	A mixture of Sodium hypochlorite briquettes, carbon dioxide and water (citric acid may be added for chlorine tank descaling)	Between 20 – 50 ppm hypochlor-ous acid solution, pH 5-7, contact time of 2-4 seconds at 5-170 psi. 50% Citric acid at a final concentration of 1.995 ppb	IOBW
Microtox 5 P	Valley Chemical Solutions	Peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidine-1, 1- diphosphonic acid (HEDP) FCN 1247	PAA is not to exceed 2000 ppm, 750 ppm hydrogen peroxide, and 136 ppm HEDP. Delivery pressure is 10-60 psig.	Spray
Microtox Plus	Valley Chemical Solutions	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidine-1, 1- diphosphonic acid (HEDP) FCN 1247	The concentrated PAA formula is diluted and supplied to the spray cabinet at a concentration between 25 - 2,000 ppm, 750 ppm hydrogen peroxide, and 136 ppm HEDP. Delivery pressure is 10-60 psig.	Spray
Microtox Plus	Zee Company, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide,	1) PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed	1) Spray Cabinet 2**) Dip**

		acetic acid, sulphuric acid and 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) (FCN 1514)	666 ppm, acetic acid, sulfuric acid, and HEDP not to exceed 130 ppm. 2) PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed 666 ppm, acetic acid, sulfuric acid, and HEDP not to exceed 130 ppm; contact time: 12-40 seconds depending on line speed	
Microtox Ultra	Zee Company, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid (optional), 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1666)	1) PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed 750 ppm, and HEDP not to exceed 10 ppm 2) PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed 750 ppm, and HEDP not to exceed 10 ppm; contact time: 12-40 seconds depending on line speed	1) Spray Cabinet 2) Dip
OxyFX 22	CraftChem, Inc. Predictive Food Safety Solutions, LLC	An aqueous solution Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1-diphosphoric acid (HEDP) FCN 1495	The level of PAA applied will not exceed 2000 ppm, hydrogen peroxide will not exceed 750 ppm,1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP) will not exceed 136 ppm; contact time: two (2) – fifteen (15) seconds; pH 1.0 – 2.0; pressure: 40-80 psi	Spray
OxypHresh 22	CMS Technology, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1379)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 728 ppm, and HEDP not to exceed 13.3 ppm; maximum contact time of fifteen (15) seconds; pressure of 5-170 psi	Spray Cabinet
Ozone	BOC Gas	An aqueous ozone solution.	Ozone applied at a rate of 3.5 to 4 ppm of ozone at a 3% concentration.	Spray
Pathiclean ™	TOMCO2 Systems	A blend of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-	Peroxyacetic acid not to exceed 220 ppm, hydrogen peroxide, not to exceed 110 ppm, acetic acid, 1-	IOBW/spray cabinet system

		hydroxyethylidine-1, 1- diphosphoric acid (HEDP), and water. (FCN 887)	hydroxyethylidine-1, 1-diphosphoric acid (HEDP) not to exceed 13 ppm. Contact time minimum of 10 seconds. Delivery pressure: 5-170 psi, pH: 3-7	
Peracet™ 2000	CraftChem, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1465)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 750 ppm, and HEDP not to exceed 136 ppm, contact time of two (2) to fifteen (15) seconds	Spray Cabinet
Peraclean 22	Evonik Corporation	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, sulfuric acid (optional), 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), dipicolinic acid (DPA), sulfuric acid and water (FCN 1522)	The aqueous solution is to be supplied to the spray application at a concentration of: PAA not to exceed 1150 ppm, HP not to exceed 235 ppm, HEDP not to exceed 2.5 ppm and DPA not to exceed 0.5 ppm, pH 2-7, contact time of 1-15 seconds.	Spray
Perasan MP-2	Envirotech	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. FCN 887	PAA between 80-150ppm Hydrogen peroxide not to exceed 110 ppm, HEDP not to exceed 13ppm, pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray cabinet
Perasan MP-2C	Envirotech	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 1132)	The concentrated PAA formula is diluted and is to be supplied to the application at a concentration of : PAA between 80-400ppm Hydrogen peroxide not to exceed 385 ppm, HEDP not to exceed 50 ppm, pH 2.0 – 7.0, contact time between 15 – 120 seconds.	Spray cabinet
Peroyx X15™ and Peroxy X[22]	Xgenex	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-	An aqueous mixture not exceeding 2000 ppm PAA, 950 ppm HP, and 113 ppm HEDP	Spray

		hydroxyethylidene-1,1- diphosphonic acid (HEDP), and sulfuric acid (optional) and water (FCN 1638)		
Promoat™	Brainerd Chemical Company, Safe Foods Corporation	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) and water. (FCN 1580)	Not exceed 2000 ppm PAA, hydrogen peroxide will not exceed 730 ppm, and HEDP will not exceed 14 ppm in spray for poultry carcasses measured prior to application.	Spray
ProtectFX System	PeroxyChem LLC, formerly Synergy Technologies	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP). (FCN 1379)	The level of PAA not to exceed use concentrations of 2000 ppm, 728 ppm hydrogen peroxide, and 13.3 ppm of HEDP.	Spray cabinet
Protec™ 2000	Safe Foods Corporation, CraftChem, Inc.	An aqueous solution of peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 1465)	The aqueous solution is to be supplied to the spray application at a concentration of: PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed 750 ppm, and HEDP not to exceed 136 ppm, minimum contact time of two (2) to fifteen (15) seconds.	Spray
SaniDateFD	Biosafe Systems, LLC	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1501)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 728 ppm, and HEDP not to exceed 13.3 ppm with a contact time of 2 to 12 seconds	Spray, IOBW
Sanova	Ecolab Inc., Alcide Corporation	Acidified sodium chlorite	Between 500 to 1200 ppm in combination with any GRAS acid at a level sufficient to achieve a pH of 2.3 to 2.9.	Spray cabinet,
Spectrum®/ Spectrum 2000®	PeroxyChem LLC, formerly Peroxygens, FMC	A aqueous mixture of FCS 323 or FCS 880, peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, and 1-	PAA between 18-2000 ppm, contact time with the antimicrobial treatment solution will be between 1 – 30 seconds.	Spray, IOBW/ brushes

		hydroxyethylidene-1, 1-diphosphonic acid (HEDP)		
Syntrx3200	PeroxyChem LLC, formerly Synergy Technologies	An aqueous solution of citric and hydrochloric acids adjusted to a pH of 1.0 to 2.0	Applied with a contact time of 2 to 5 seconds measured prior to application.	Spray cabinet
Terrastat FCN 1379	Brainerd Chemical Company	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, and 1-hydroxyethylidene-1, 1- Diphosphonic acid (HEDP). (FCN 1379)	The level of PAA not to exceed 2000 ppm, 728 ppm hydrogen peroxide, and 13.3 ppm of HEDP	Spray cabinet
Terrastat FCN 1580	Brainerd Chemical Company	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. Peroxyacetic acid (FCN 1580)	Not exceed 2000 ppm PAA, hydrogen peroxide will not exceed 730 ppm, and HEDP will not exceed 14 ppm in spray for poultry carcasses measured prior to application	Spray
Trisodium phosphate		Trisodium phosphate (TSP)	Pre-chill: Applied to carcasses as a spray up to 15 seconds using an 8-12 percent solution. Applied in accordance with good manufacturing practice.(21 CFR 182.1778)	Spray cabinet

Table 4: List of Approved Off-Line Reprocessing (OFLR) Antimicrobial Systems for Poultry

Approved OFLR System	**Company Name/ Distributor**	**Substance (antimicrobial) and if applicable, FDA's Food Contact Notification (FCN)**	**PPM Concentration (range), pH, contact time, temperature (if applicable)**	**Method of Application (e.g., Spray,** Wash, **Inside Outside Bird Washer (IOBW) with or without brushes**
AFCO 4360 FC-100	AFCO	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1389)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 800 ppm, and HEDP not to exceed 96 ppm, contact time of three (3) to ten (10) seconds	Spray
AFCO 4363 Perasafe 23	AFCO	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 765 ppm, and HEDP not to exceed 62.6 ppm, with a contact time of three (3) to ten (10) seconds	Spray
AVIBROM (DBDMH)	Albemarle Corp. AVIBROM	1,3-dibromo- ,5 dimethylhydation DBDMH bromine FCN 334 FCN 453	Avibrom between 60-100 ppm available bromine; complete coverage of outside and inside of carcass for 60-90 seconds.	IOBW/spray cabinets
Birkoside MP-2	Envirotech, Birko Corp.	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. FCN 887	PAA between 80-150ppm Hydrogen peroxide not to exceed 110 ppm, HEDP not to exceed 13ppm, pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray cabinet
Biosan 2205 MPS, Biosan	Biosan LLC.	◦An aqueous solution	PAA not to exceed	Spray

1510 MPS		Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1-diphosphoric acid (HEDP) and dipicolinic acid (DPA) FCN 1639	2000 ppm, hydrogen peroxide will not exceed 933 ppm,1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) will not exceed 120 ppm; and dipicolinic acid (DPA) will not exceed 0.5 ppm; contact time: one (1) – thirty (30) seconds; pH 1.0 – 2.0; pressure: 10-90 psi	
Calcium Hypochlorite	N/A	Calcium hypochlorite	20 ppm calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine	Spray
CECURE™	Safe Foods Corp	Cetylpyridinium chloride (The solution shall also contain propylene glycol complying with 21 CFR 184.1666 at a concentration of 1.5 times that of cetylpyridinium chloride). May be used in combination with an approved defoamer (i.e. Foamfix) in accordance with 21 CFR 173.340 and 9 CFR 424.21(c)	As a fine mist spray of an ambient temperature aqueous solution applied to raw poultry carcasses/ parts prior to immersion in a chiller, at a level not to exceed 0.3 gram cetylpyridinium chloride per pound of raw poultry carcass/ parts, provided that the additive is used in systems that collect and recycle solution that is not carried out of the system with the treated poultry carcasses/ parts, or Except when used as an immersion such as a dip tank (≤10 seconds), an aqueous solution such as a drench (minimum of 2-5	Spray, Dip

			seconds) applied to raw poultry carcasses/ parts either prior to or after chilling at an amount not to exceed 5 gallons of solution per carcass, provided that the additive is used in systems that recapture at least 99 percent of the solution that is applied to the poultry carcasses/ parts. The concentration of cetylpyridinium chloride in the solution applied to the carcasses/ parts shall not exceed 0.8 percent by weight. When application of the additive is not followed by immersion in a chiller, the treatment will be followed by a potable water rinse of the carcass/parts. The potable water may contain up to 50 ppm free available chlorine.	
ChemSan RBR-22/ ChemSan RBR-XC	Envirotech ChemStation	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 1132)	The concentrated PAA formula is diluted and is to be supplied to the spray application at a concentration of: PAA between 80-400 ppm, Hydrogen peroxide not to exceed 385 ppm, HEDP not to exceed 50 ppm, pH 2.0 – 7.0, contact time between 15 – 120 seconds.	Spray
Citrilow™	Safe Foods Corporation	Citric Acid (CA), Hydrochloric acid (HCI), and water.	The application time will not be less than 2 seconds. pH between	Spray

			1 and 2	
DiverContact® P16	Diversey, Inc. and Cryovac , Inc.	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and sulfuric acid (optional, as a catalyst) and water (FCN 1284)	An aqueous mixture of peroxyacetic acid (PAA) not exceeding 2000 ppm and 1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) not exceeding 136 ppm; contact time: three (3) –thirty (30) seconds; pH: 3.5 – 6.5; pressure: 20 -	Spray
Enviro Tech	Enviro Tech Chemical Services, Inc.	Peroxyacetic acid (PAA), FCN 887	PAA between 80-150 ppm and a pH between 3-7	Spray
Hypochlorous acid	N/A	Electrolytically generated hypochlorous acid	20 ppm calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine.	Spray
Inspexx 150	ECOLAB	Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP). FCN 1096	The level of PAA is applied at a concentration between 40-220 ppm PAA.	Spray, Wash or Rinse
Inspexx 150, 3DT Inspexx 150, Inspexx 250 3DT, Inspexx 250	ECOLAB	Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP). FCN 1495	The level of PAA is applied at a concentration between 40 - 2000 ppm, exposure time: minimum of five (5) seconds, pH 2.0-8.0, pressure: minimum of 5 psi.	Spray, Wash, or Rinse
Inspexx™ 150, 3DT Inspexx™ 150, Inspexx™ 250, or 3DT Inspexx™ 250	Ecolab	Peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP). (FCN 1745)	The concentration of PAA 40-2000 ppm, 1474 ppm hydrogen peroxide and 118 ppm 1-hydroxyethylidene-1, 1-diphosphonic acid in spray, exposure time: 5-60 seconds,	Spray cabinet/wash IOBW

			pH 2.0-8.0, pressure: minimum of 5 psi.	
Microtox 5 P	Valley Chemical Solutions	Peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidine-1, 1- diphosphonic acid (HEDP) FCN 1247	PAA is not to exceed 2000 ppm, 750 ppm hydrogen peroxide, and 136 ppm HEDP. Delivery pressure is 10-60 psig.	Spray
Microtox Plus	Valley Chemical Solutions	Peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidine-1, 1- diphosphonic acid (HEDP) FCN 1247	The concentrated PAA formula is diluted, supplied to the spray equipment at ambient pressure and at a concentration of : PAA is not to exceed 2000 ppm, 750 ppm hydrogen peroxide, and 136 ppm HEDP.	Spray
Microtox Plus	Zee Company, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid (optional), 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1514)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 666 ppm, and HEDP not to exceed 130 ppm	Spray
Microtox Ultra	Zee Company, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, sulfuric acid (optional), 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1514)	PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed 666 ppm, and HEDP not to exceed 130 ppm	Spray
OxyFX 22	CraftChem, Inc., Predictive Food Safety Solutions, LLC	An aqueous solution Peroxyacetic acid (PAA), acetic acid, hydrogen peroxide, and 1-hydroxyethylide ne-1, 1-diphosphoric acid (HEDP) FCN 1495	The level of PAA applied will not exceed 2000 ppm, hydrogen peroxide will not exceed 750 ppm,1-hydroxyethylidine-1,1-diphosphonic acid (HEDP) will not exceed 136 ppm; contact time: of two (2) – fifteen (15) seconds; pH 1.0 –	Spray

			2.0; pressure: 40-80 psi	
Pathiclean TOMCO2 Systems	TOMCO Equipment Co.*	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 887)*	*Perasan MP-2 (EnviroTech) PAA not to exceed 220 ppm, Hydrogen peroxide, not to exceed 110 ppm, acetic acid, 1-hydroxyethylidine-1, 1-diphosphoric acid (HEDP), not to exceed 13 ppm. Contact time of 5 seconds at 5-170 psig.	Spray
Pathiclean TOMCO2 Systems	TOMCO Equipment Co.*	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 1132)	*Perasan MP-2C (EnviroTech) The concentrated PAA formula is diluted and is to be supplied to the spray equipment at a concentration of : PAA between 80-400 ppm Hydrogen peroxide not to exceed 385 ppm, HEDP not to exceed 50 ppm, pH 2.0 – 7.0, contact time of 5 seconds at 5-170 psig.	Spray
Peracet™ 2000	CraftChem, Inc.	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1465)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 750 ppm, and HEDP not to exceed 136 ppm, contact time of two (2) to fifteen (15) seconds	Spray Cabinet
Peraclean 22	Evonik Corporation	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, sulfuric acid (optional), 1-hydroxyethylidene-1,1-diphosphonic acid	The aqueous solution is to be supplied to the spray application at a concentration of: PAA not to exceed 1150 ppm, HP not to exceed 235 ppm,	Spray

		(HEDP), dipicolinic acid (DPA), sulfuric acid and water (FCN 1522)	HEDP not to exceed 2.5 ppm and DPA not to exceed 0.5 ppm, pH 2-7, contact time of 1-15 seconds.	
Peragonn™	Safe Foods Corporation	Peroxyacetic acid (PAA), hydrogen peroxide, and 1-hydroxyethylidene-1,1- diphosphonic acid (HEDP). FCN 1089	PAA is not to exceed 220 ppm; hydrogen peroxide; and 11 ppm 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP).	Spray
PERASAN MP-2	Tyson Foods*	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 887)	PERASAN MP -2 *(EnviroTech) PAA between 80-150 ppm Hydrogen peroxide not to exceed 110 ppm, HEDP not to exceed 13 ppm, pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray
Perasan MP-2C	Envirotech	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. (FCN 1132)	The concentrated PAA formula is diluted and is to be supplied to the spray application at a concentration of : PAA between 80-400ppm Hydrogen peroxide not to exceed 385 ppm, HEDP not to exceed 50 ppm, pH 2.0 – 7.0, contact time between 15 – 120 seconds.	Spray
Peroyx X15™ and Peroxy X22	Xgenex	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and sulfuric acid (optional) and water (FCN 1638)	An aqueous mixture not exceeding 2000 ppm PAA, 950 ppm HP, and 113 ppm HEDP	Spray
Promoat™	Brainerd Chemical Company, Safe Foods Corporation	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-	Not exceed 2000 ppm PAA, hydrogen peroxide will not exceed 730 ppm, and HEDP will not exceed 14 ppm in	Spray

		1, 1-diphosphonic acid (HEDP) and water. (FCN 1580)	spray for poultry carcasses measured prior to application.	
PROTECTFX™ 993	PeroxyChem LLC, formerly Synergy Technologies	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1- hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. Peroxyacetic acid (FCN 993)	The level of PAA not to exceed 220 ppm, hydrogen peroxide will not exceed 80 ppm, and HEDP will not exceed 1.5 ppm measured prior to application	Spray
Protec™ 2000	Safe Foods Corporation CraftChem, Inc.	An aqueous solution of peroxyacetic acid (PAA), hydrogen peroxide, 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) and water. (FCN 1465)	The aqueous solution is to be supplied to the spray application at a concentration of: PAA not to exceed 2000 ppm, hydrogen peroxide not to exceed 750 ppm, and HEDP not to exceed 136 ppm, contact time of two (2) to fifteen (15) seconds.	Spray
SaniDateFD	Biosafe Systems, LLC	An aqueous mixture of peroxyacetic acid, hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and water (FCN 1501)	The aqueous solution is to be supplied to the spray application at a concentration of: peroxyacetic acid not to exceed 2000 ppm, hydrogen peroxide not to exceed 728 ppm, and HEDP not to exceed 13.3 ppm with a contact time of 2 to 12 seconds	Spray
Sodium Hypochlorite	N/A	Sodium Hypochlorite	20 ppm calculated as free available chlorine Note: Agency guidance has allowed the use of up to 50 ppm calculated as free available chlorine	Spray
Spectrum® / Spectrum 2000®	PeroxyChem LLC, formerly Peroxygens, FMC	A aqueous mixture of FCS 323 or FCS 880, peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, and 1- hydroxyethyl-lidene-1, 1- diphos-	PAA between 18-2000 ppm; Contact with the antimicrobial treatment solution will be between 1 – 30 seconds.	Spray, dip tank, IOBW brush cabinet with spray nozzles.

		phonic acid (HEDP)		
Terrastat FCN 1580	Brainerd Chemical Company	Peroxyacetic acid (PAA), hydrogen peroxide, acetic acid, 1-hydroxyethylidene-1, 1- diphosphonic acid (HEDP) and water. Peroxyacetic acid (FCN 1580)	PAA not exceed 2000 ppm, hydrogen peroxide will not exceed 730 ppm, and HEDP will not exceed 14 ppm in spray for poultry carcasses measured prior to application	Spray