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

FSIS DIRECTIVE

7120.1
Rev. 52

10/1/19

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

I. PURPOSE

This directive provides inspection program personnel (IPP) with the latest up-dates to the list of substances that may be used in the production of meat, poultry, and egg products. As a reminder, this directive no longer provides the complete listing of approved substances and On-Line Reprocessing (OLR) and Off-Line Reprocessing (OFLR) Antimicrobial Intervention Systems. The complete listing of approved substances and OLR and OFLR Antimicrobial Intervention Systems is available at the above link. FSIS is also providing a link to the complete list of safe and suitable ingredients, the list in 9 CFR 424.21(c) of additional acceptable food ingredients, and a Web based look-up table to search ingredients by name.

II. CANCELLATION

FSIS Directive 7120.1, Revision 51 *Safe and Suitable Ingredients Used in the Production of Meat, Poultry, and Egg Products*, 06/7/19

III. LATEST UP-DATE TO THE LIST OF SUBSTANCES

Table 1: Summary of Updates to list of substances

1) The use of the substances 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.

Substance	Intended Use of Product	Amount	Reference	Labeling Requirements
Antimicrobial				
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP).	Process water or ice for washing, rinsing, storing or cooling processed and preformed meat and poultry products.	Not to exceed 230 ppm PAA, 165 ppm HP, and 14 ppm HEDP.	Food Contact Substance Notification No. FCN 1144	None under the accepted conditions of use (1)

An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally sulfuric acid, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA).	(1) Water or ice for washing, rinsing, cooling, or otherwise processing whole or cut meat, including 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	In either application, not to exceed 220 ppm PAA and 85 ppm HP. HEDP not to exceed 11 ppm or DPA not to exceed 1.64 ppm with meat carcasses, parts, trim, and organs, and 4.00 ppm with poultry carcasses, parts, trim, and organs.	Food Contact Substance Notification No. FCN 887	None under the accepted conditions of use (6)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally sulfuric acid, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA).	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 PAA and 385 ppm HP. HEDP not to exceed 50 ppm or DPA not to exceed 4.00 ppm; (2) Meat applications as a spray not to exceed 400 ppm PAA and 155 ppm HP. HEDP not to exceed 20 ppm, or DPA not to exceed 1.64 ppm; (3) Hide wash applications as a spray not to exceed 400 ppm PAA and 155 ppm HP. HEDP not to exceed 20 ppm, or DPA not to exceed 1.64 ppm 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 (PAA), hydrogen peroxide (HP), acetic acid, and optionally sulfuric acid, 1-hydroxyethylidine-1,	(1) Poultry post-main chiller (air or water) secondary processing of whole birds, parts, pieces, skin (on or off);	Not to exceed 2000 ppm PAA and 770 ppm HP. HEDP not to exceed 100 ppm measured prior to application, or DPA not to exceed 4.00 ppm.	Food Contact Substance Notification No. FCN 1419	None under then accepted conditions of use (6)

1-diphosphonic acid (HEDP), or dipicolinic acid (DPA).	organs, in the washing, rinsing, cooling and processing of poultry products; (2) poultry use in pre-air chiller dip tanks and post-main water chiller systems as finishing chillers.			
An aqueous solution of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally sulfuric acid, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA).	As an antimicrobial agent in: 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; (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 PAA and 18 ppm HP. HEDP not to exceed 6 ppm, or DPA not to exceed 0.44 ppm with processed and preformed meat and poultry; and 0.10 ppm with sauces, and marinades	Food Contact Substance Notification No. FCN 1654	None under the accepted conditions of use (1)
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally sulfuric acid, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA).	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 to exceed 1200 ppm PAA and 275 ppm HP. HEDP not to exceed 33 ppm, or DPA not to exceed 4.00 ppm with poultry carcasses, parts, trim, and organs.	Food Contact Substance Notification No. 1738	None under the accepted condition
An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP),	Process water and ice used in poultry applied as a spray,	An aqueous mixture not to exceed 2000 ppm PAA and 770 ppm HP. HEDP not	Food Contact Substance Notification No. FCN 1806	None under the accepted conditions of use (3)

acetic acid, and optionally sulfuric acid, 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA).	wash, rinse, dip, chiller water, low temperature (less than 40 degree) immersion baths or scald water for whole or cut poultry carcasses, parts, trim and organs	to exceed 100 ppm, or DPA not to exceed 4.00 ppm with poultry carcasses, parts, trim, and organs.		
Aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid (AA), 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and optionally sulfuric acid (SA).	1) In process water applied as a wash, spray, dip, rinse, chiller water, low-temperature (less than 40°F) immersion bath, or scald water for whole or cut poultry carcasses, parts, trim, and organs; 2) in process water or ice used in washing, rinsing, or cooling whole or cut meat carcasses, parts, trim, and organs; 3) in process water, ice, or brine used in washing, rinsing, or cooling processed and pre-formed meat products; 4) in process water, ice, or brine used in washing, rinsing, or cooling processed and pre-formed poultry products; 5) in brines, marinades, and sauces applied	1) 2000 ppm PAA, 800 ppm HP, and 133 ppm HEDP 2) 1800 ppm PAA, 700 ppm HP, and 120 ppm HEDP 3) 495 ppm PAA, 193 ppm HP, and 33 ppm HEDP 4) 230 ppm PAA, 90 ppm HP, and 15 ppm HEDP pH range for the above applications: 2.0 – 12.0; spray contact time: 0.5 – 15 seconds; wash and rinse contact time: 0.5-120 seconds; spray pressure: 5 – 120 psi; dip dwell time: 0.5-60 seconds 5) 50 ppm PAA, 17 ppm HP, and 4 ppm HEDP 6) 2000 ppm PAA, 800 ppm HP, and 120 ppm HEDP	FCN 1986 (previously FCN 1867)	None under the accepted conditions of use (1)

	to the surface or injected into processed or unprocessed, cooked or uncooked whole or cut poultry; in sauces and marinades applied to the surface of processed and preformed meat and poultry products; 6) in process water used in washing shell eggs.			
A tablet composed of calcium hypochlorite, sodium chloride, calcium hydroxide, calcium chlorate, calcium carbonate, pentasodium triphosphate, and calcium chloride adjusted to a final solution pH of 6.2 - 7.0 using citric acid, sodium bisulfate or other approved acidifier	Poultry carcasses in scald tanks	An aqueous mixture not exceeding 400 ppm total chlorine at a controlled pH of 6.2 to 7.0 in scalder make-up water to achieve 0.5 ppm free chlorine residual in the scalder tank	Acceptability determination Sodium bisulfate; GRAS No. 000003 Citric acid; 9 CFR 424.21	None under the accepted conditions of use (1)(2)
Bacteriophage P100 preparation containing potassium lactate	Various RTE meat and poultry products as an antimicrobial agent against Listeria monocytogenes	Bacteriophage P100 preparation applied to the surface of the product to achieve a level of 1 x 10^7 to 1 x 10^9 plaque forming units (pfu) per gram of product. Potassium lactate not to exceed 50 ppm	GRAS Notice No. 000218	None under the accepted conditions of use (1)
Dried Vinegar	Added to trace lean pork trimmings for use in sausage and pork patties	Up to 0.4% dried vinegar to be added to trace lean pork trimmings where the trace lean pork trimmings comprise no more than 15%	Suitability Determination	None under the accepted conditions of use (1)

		of the total product formulation		
Miscellaneous				
Carrageenan, dextrose, and sodium hexametaphosphate (optional)	To aid in suspending insoluble solids in brine before pumping into meat and poultry products	Up to 0.53 % carrageenan, 0.19 % dextrose, and 0.17 % sodium hexametaphosphate (optional) to suspend insoluble solids in a brine solution	Acceptability determination	None under the accepted conditions of use (1)
Fungal protease produced by *Aspergillus oryzae*	To hydrolyze finely ground poultry and meat to facilitate reduction of particle size and/or liquefy to make homogenous slurries, purees, and broths, and to reduce gelation and viscosity of finely ground meat and poultry, broths, stocks, and extracts.	1) Enzeco Protease FNP at levels of up to 0.2% of the enzyme per batch, as calculated by solids content. 2) Enzeco Fungal Protease Concentrate MG at levels of up to 0.5% of the enzyme per batch, as calculated by solids content.	GRAS Notice No. 000090	Listed by common or usual name in the ingredients statement (2)
Solution of sodium chloride	Chilling poultry carcasses to improve chilling efficiency, meat tenderness, and as an antimicrobial agent.	Sodium chloride up to 4% in poultry chilling water	9 CFR 381.120	Listed as “tenderized with sodium chloride” or “tenderized with salt” contiguous to the product name (2)
Steviol Glycosides with Rebaudioside A and Stevioside	A non-nutritive sweetener in cured and uncured meat and poultry products	At a maximum use level of 2500 ppm of the total product	GRAS Notice No. 790	Listed as “steviol glycosides (purity greater than or equal to 95%),” “highly refined steviol glycosides at a purity greater than or equal to 95%,” or “high purity steviol glycosides (≥95%),” in the

				ingredients statement
Thermolysin enzyme preparation produced by *Geobacillus stearothermophilus*	To hydrolyze finely ground poultry and meat to facilitate reduction of particle size and/or liquefy to make homogenous slurries, purees, and broths	Amano Thermoace PC10F at levels of up to 0.3% of the enzyme per batch, as calculated by solids content.	GRAS Notice No. 000598	Listed by common or usual name in the ingredients statement (2)
List of Approved On-Line Reprocessing (OLR) Antimicrobial Systems for Poultry				
Approved OLR System	**Company Name/ Distributor**	**Substance**	**PPM Concentration**	**Method of Application**
Birkoside MP-2	Envirotech, Birko Corp.	Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). FCN 887	PAA between 80-150 ppm, HP not to exceed 110 ppm, HEDP not to exceed 13 ppm or DPA concentration not to exceed 4.00 ppm. pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray cabinet
ChemSan RBR-22	EnviroTech	Peroxyacetic acid (PAA), hydrogen peroxide (HP), etic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 1806)	An aqueous mixture of PAA between 80-2000 ppm and HP not to exceed 770 ppm. HEDP not to exceed 100 ppm, or DPA concentration not to exceed 4.00 ppm. pH between 2.0-7.0; contact time 1) spray cabinet, 15-120 seconds 2) dip, 5-40 seconds.	1) Spray Cabinet 2) Dip
ChemSan RBR-XC ChemSan RBR-XL	Envirotech	Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid	The concentrated PAA formula is diluted and is to be supplied to the application at a concentration	1) Spray Cabinet 2) Dip

		(HEDP), or dipicolinic acid (DPA). (FCN 1806)	of: PAA between 80 – 2000 ppm and HP not to exceed 770 ppm. HEDP not to exceed 100 ppm or DPA concentration not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time 1) spray cabinet, 15 – 120 seconds 2) dip, 5 - 40 seconds.	
Pathiclean ™	TOMCO2 Systems	A blend of peroxyacetic acid, hydrogen peroxide, acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 887)	PAA not to exceed 220 ppm, HP not to exceed 110 ppm and acetic acid, HEDP not to exceed 13 ppm or DPA concentration not to exceed 4.00 ppm. Contact time minimum of 10 seconds. Delivery pressure: 5-170 psi, pH: 3-7	IOBW/spray cabinet system
Pathiclean TOMCO2 Systems	TOMCO Equipment Co.	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 1806)	The concentrated PAA formula is diluted and is to be supplied to the application at a concentration of: PAA between 80 - 2000ppm, HP not to exceed 770 ppm. HEDP not to exceed 100 ppm, or DPA concentration not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time 1) spray cabinet, 15 – 120 seconds	1) Spray Cabinet 2) Dip

			2) dip, 5 - 40 seconds.	
Perasan MP-2	Envirotech	Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). FCN 887	PAA between 80-150ppm, HP not to exceed 110 ppm. HEDP not to exceed 13 ppm or DPA concentration not to exceed 4.00 ppm. 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 (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP) or dipicolinic acid (DPA). (FCN 1806)	The concentrated PAA formula is diluted and is to be supplied to the application at a concentration of: PAA between 80- 2000 ppm, HP not to exceed 770 ppm. HEDP not to exceed 100 ppm or DPA concentration not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time 1) spray cabinet, 15 – 120 seconds 2) dip, 5 - 40 seconds.	1) Spray Cabinet 2) Dip
Promoat XL™ Promoat ™	Safe Foods Corporation	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene -1,1-diphosphonic acid (HEDP), and optionally sulfuric acid (SA). (FCN 1986 replaces 1867)	20-2000 ppm PAA, 800 ppm HP, and 133 ppm HEDP, pH Range: 2-12; contact time: 0.5-15 seconds for spray; 0.5-120 seconds for wash, rinse; 0.5-60 seconds for dip; spray pressure: 5-120 psi	wash, dip, rinse, spray cabinet
KF 27145	Kroff Tech	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP),	200-2000 ppm PAA, pH Range: 1.0-7.0, Contact Time: 1-120	wash, dip, rinse, spray

		acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and optionally sulfuric acid (SA); (FCN 1693)	seconds for spray, wash, rinse, and dip Spray pressure: 5–100 psi	
List of Approved Off-Line Reprocessing (OFLR) Antimicrobial Systems for Poultry				
Approved OFLR System	**Company Name/ Distributor**	**Substance**	**PPM Concentration**	**Method of Application**
Birkoside MP-2	Envirotech, Birko Corp.	Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 887)	PAA between 80-150 ppm and HP not to exceed 110 ppm. HEDP not to exceed 13 ppm or DPA concentration not to exceed 4.00 ppm. pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray cabinet
ChemSan RBR-22 ChemSan RBR-XC ChemSan RBR-XL	Envirotech ChemStation	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (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, HP not to exceed 385 ppm. HEDP is not to exceed 50 ppm or DPA not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time between 15 – 120 seconds.	Spray
Pathiclean TOMCO2 Systems	TOMCO Equipment Co.*	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or	PAA not to exceed 220 ppm and HP not to exceed 110 ppm. HEDP not to exceed 13 ppm or DPA not to exceed 4.00 ppm. Contact	Spray

		dipicolinic acid (DPA). (FCN 887)	time 5 seconds at 5-170 psi/g.	
Pathiclean TOMCO2 Systems	TOMCO Equipment Co.*	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 1132)	The concentrated PAA formula is diluted and is to be supplied to the spray equipment at a concentration of: PAA between 80- 400 ppm and HP not to exceed 385 ppm. HEDP not to exceed 50 ppm, and DPA not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time of 5 seconds at 5-170 psig.	Spray
Perasan MP-2	Tyson Foods*	Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 887)	PAA between 80-150 ppm and HP not to exceed 110 ppm, HEDP not to exceed 13 ppm, and DPA concentration not to exceed 4.00 ppm. pH 3.0 – 7.0, contact time between 3 – 30 seconds.	Spray
Perasan MP-2C	Enviro Tech Chemical Services Inc.	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (FCN 1806	The concentrated PAA formula is diluted and is to be supplied to the application at a concentration of: PAA between 80 – 2000 ppm and HP not to exceed 770 ppm. HEDP not to exceed 100 ppm, and DPA not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time spray cabinet,	Spray Cabinet

			between 15 – 120 seconds.	
Perasan MP-2C	Envirotech	Concentrated formula of Peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, and optionally 1-hydroxyethylidine-1, 1-diphosphonic acid (HEDP), or dipicolinic acid (DPA). (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 and HP not to exceed 385 ppm. HEDP not to exceed 50 ppm or DPA concentration not to exceed 4.00 ppm. pH 2.0 – 7.0, contact time between 15 – 120 seconds.	Spray
Promoat XL™ Promoat™	Safe Foods Corporation	An aqueous mixture of peroxyacetic acid (PAA), hydrogen peroxide (HP), acetic acid, 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP), and optionally sulfuric acid (SA). (FCN 1986 replaces FCN 1867)	20-2000 ppm PAA, 800 ppm HP, and 133 ppm HEDP, pH Range: 2-12; contact time: 0.5-15 seconds for spray; 0.5-120 seconds for wash, rinse; 0.5-60 seconds for dip; spray pressure: 5-120 psi	wash, dip, rinse, spray

IV. QUESTIONS

A. Refer questions regarding this directive to the Office of Policy and Program Development 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.

Deputy Assistant Administrator
Office of Policy and Program Development