1. Date: May 8, 2011
2. Name of Applicant/Petitioner: Arkema Inc.
3. Correspondence Address: Richard C. Kraska
GRAS Associates, LLC
12068 Via Cercina Dr
Bonita Springs, FL 34135

4. Description of Proposed Action:

a. Requested Action

The FCS proposed in this Notification is an equilibrium blend of peroxyacetic acid, hydrogen peroxide, acetic acid, HEDP, and (optionally) sulfuric acid for aqueous antimicrobial solutions applied as a carcass wash to reduce the surface microbial populations on meat carcasses, parts, trim and organs; poultry carcasses, parts and organs; and fish and seafood. The action requested in this Notification is the establishment of a clearance to permit the use of 220 ppm maximum peroxyacetic acid, 80 ppm maximum hydrogen peroxide, 0.05% maximum acetic acid at a maximum, 13 ppm maximum 1 -hydroxyethylidene-1,1 –diphosphonic, and 5 ppm maximum optional sulfuric acid for meat applications. For fish and seafood applications, the maximum concentrations requested are 190 ppm as peroxyacetic acid, 75 ppm as H202, 10 ppm as HEDP, 0.05% acetic acid and 5 ppm optional sulfuric acid.

b. Need for Action

The action is necessary to provide for safer meat, poultry, fish and seafood products for consumers. The antimicrobial effect of peroxyacetic acid reduces populations of pathogenic and nonpathogenic microorganisms that may be present and retards the spoilage of the meat, poultry, fish and seafood.

This product is applied directly to the exposed surface of the meat carcass (beef or swine) via a sprayer after the hide is removed and the head and the hooves are cut off. It is applied to poultry carcasses, poultry carcass parts, or poultry organs through spraying, submersion, or both. For whole or parts of fish and seafood, the product is applied through spraying, submersion, or additional to ice used in packing or transport.

For fish and seafood applications, the FCS is intended to be diluted on-site to approximately 190 ppm as peroxyacetic acid with associated proportional ingredients. The FCS is used by injecting the equilibrium peroxyacetic acid product (PAA) using flow-proportional dispensing equipment in the process water.

c. Locations of use/disposal

This product is for use in meat, poultry and fish processing plants throughout the United States. The expected route of disposal for waste solution from meat and poultry operations is the processing plant wastewater treatment facilities Waste water treatment operations exist at most fish and seafood farms and processing centers, however as described below use on fishing boats will result in some loss of the FCS in open waters.in compliance with local fishing discharge regulations/

Meat processing facilities

This product will be applied to the surface of freshly killed beef or swine carcasses following removal of the hide, head and hooves. This is accomplished by spraying the carcasses on a moving conveyor line or on a rail system. The carcasses are suspended from a hook attached to the conveyor, which carries the carcass into a spray cabinet. Spray nozzles are distributed within the cabinet in such a manner that ensures even application of the dilute solution on the surface of the beef carcass. The carcass exits the other side of the spray cabinet and continues on the processing line.

After the diluted product is sprayed onto the carcass, the majority of the product drains off of the meat and ultimately runs into drains and enters the meat processing plant water treatment facility prior to it being sent to a POTW. Very minor quantities are lost to evaporation.

Poultry processing facilities

Spray application of the diluted product will usually take place prior to chilling by submersion. A de-feathered, eviscerated carcass hung on a shackle is carried into a spray cabinet by a moving line. Spray nozzles inside the cabinet apply the diluted product to the carcass. The carcass then exits the spray cabinet for further processing.

Application of the diluted product by submersion of multiple carcasses into a chiller bath will occur usually following the spray application step. Carcasses are moved through the chiller bath by a paddle or auger-type conveyor, then exit the chiller bath for further processing. Carcass parts or organs may also be chilled by submersion in water containing the product. Additional applications of the diluted product include submersion of multiple carcasses into an after-chiller processing bath containing diluted product or spray of carcasses on conveyor belts or in an after-chiller spray cabinet.

After the diluted product is sprayed onto the poultry carcasses, the bulk of the solution drains off of the poultry carcass. The waste solution ultimately run into drains and enters the poultry processing plant water treatment facility. The diluted product in chiller water / after-chiller bath will also be disposed of by pouring it down drains that lead to the poultry processing plant water treatment facility. All of this water is collected and treated by the facility prior to it being sent to a POTW. Very minor quantities are lost to evaporation into the air.

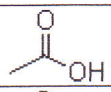
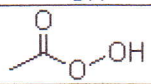
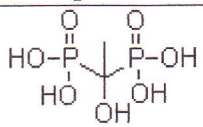
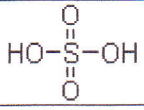
Seafood processing facility

Seafood products are caught or grown in seafood farm. Caught seafood products are sorted and separated into parts. Parts of seafood products are then flash frozen and packaged. The diluted product is sprayed directly onto the raw or processed seafood products before flash frozen procedures, the bulk of the solution drains off of the seafood products. The diluted product is also flash frozen into ice particles with an ice machine and then packaged with the frozen seafood product. The dilute frozen product will eventually thaw and drain off the seafood products.

The waste solution ultimately run into drains and enters the seafood processing plant water treatment facility. All of this water is collected and treated by the facility prior to it being sent to a POTW. Very minor quantities are lost to evaporation into the air.

5. Identification of Substances that are the subject of the Proposed Action:

The raw materials used in this product are hydrogen peroxide, acetic acid, HEDP, and water. Peroxyacetic acid formation is the result of an equilibrium reaction between hydrogen peroxide and acetic acid. Sulfuric acid is optionally added as a catalyst in the reaction process. A concentrated product is supplied (MSDS is attached) and is diluted at the processing plant for use on beef carcasses, poultry carcasses, poultry parts and organs (to 1 ounce concentrated product per 6 gallons of water) to provide a solution of 220 ppm peroxyacetic acid.

Complete Name	CAS No.	Molecular Weight	Molecular Formula	Structural Formula
Hydrogen peroxide	7722-84-1	34.01	H2O2	HO-OH
Acetic acid	64-19-7	60.05	C2H4O2	
Peroxyacetic acid	79-21-0	76.05	C2H4O3	
Hydroxy ethylidene diphosphonic acid (HEDP)	2809-21-4	206.3	C2H8O7P2	
Sulfuric Acid	7664-93-9	98.07	H2SO4	
Water	7732-18-5	18.01	H2O	H-O-H

6. Introduction of Substances into the Environment:

a. Introduction of substances into the environment as a result of manufacture:

The FCS is manufactured is in plants which meet all applicable federal, state and local environmental regulations. Arkema Inc. asserts that there are no extraordinary circumstances pertaining to the manufacture of the FCS such as 1) unique emission circumstances are not adequately addressed by general or specific emission requirements (including occupational) promulgated by Federal, State or local environmental agencies and the emissions may harm the environment; 2) a proposed action threatens a violation of Federal, State or local environmental laws or requirements (40 CFR 1508.27(b)(10)); and 3) production associated with a proposed action may adversely affect a species or the critical habitat of a species determined under the Endangered Species Act or the Convention on International Trade in Endangered Species of Wild Fauna and Flora to be endangered or threatened, or wild fauna or flora that are entitled to special protection under some other Federal law.

b. Introduction of substances into the environment as a result of use/disposal:

Introduction of dilute solutions of the product into the environment will take place primarily via release in wastewater treatment systems. Introduction of the components of the product into the environment will result from use of the product as an antimicrobial agent in processing water

and spray application onto carcasses, and the subsequent disposal of such water and spray drainage into the processing plant wastewater treatment facility. The total amount of product used at a typical facility can be estimated, although the actual amounts used will vary, depending on equipment used and the number of meat or poultry carcasses processed. Examples of each use scenario are based on the experience of the notifier with poultry and meat producing facilities.

For purposes of this assessment, due to the variation in formulations for different application and customer, the maximum concentration of each component in the concentrated products for the purpose of this analysis should be considered as::

- Peroxyacetic acid 20%
- Hydrogen peroxide 6%
- Acetic acid 45%
- HEDP 0.10%
- Sulfuric Acid (optional) 0.10%

Meat:

Product is diluted to 220 ppm peroxyacetic or less, and the diluted solution applied as a spray onto beef or pork carcasses following slaughter and removal of the head, hide and hooves. The carcasses are attached to an overhead conveyor, which carries each carcass inside a spray cabinet, where the spray is applied. Following application of the antimicrobial spray, the carcass exits the cabinet, the excess solution is allowed to drain from the carcass, and is flushed down drains to the wastewater treatment facility.

In beef processing, the typical large facility processes 6000 head of cattle per day.[1] Water usage in beef plants range from 150-450 gallons per animal.[2] To estimate worst case concentrations of water effluent, 150 gallons per animal or 900,000 gallons per day will be used in the calculations. It is estimated that a plant these size will use 75 gallons per day of concentrated product. Water usage in pork processing facilities is similar to beef plants. The concentrated product is 9.362 pounds per gallon, so 75 gallons would be 702.2 pounds or 319 kg.

In meat processing, 75 gallons of solution per day are mixed with 6,479 gallons[3] of water to reach the 13 ppm use level for HEDP in the dilute carcass spray. The total water used in

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[1] Evonik Corporation, Environmental Assessment, FCN 951

[2] Water Efficiency Industry Specific Processes: Meat and Poultry Processing. N.C. Division of Pollution Prevention and Environmental Assistance. Raleigh, NC 27699-1639

[3] Calculation of water used to reach 13 ppm HEDP carcass spray

$$\frac{0.32kgHEDP}{x} = \frac{13mgHEDP}{1kgH2O}$$

$$x = 0.32\ \text{kg} * \frac{1}{13mg} * 1\ \text{kg}\ H_2O$$

processing is 150 gallons per head of cattle, including the spray and process water for other purposes. This additional dilution results in a final HEDP concentration of 94 ppb (0.094 ppm) in water entering the treatment facility, as calculated below.

The total amount of each component present in 75 gallons is

- Peroxyacetic acid: 20% of 319 kg or 63.8 kg.
- Hydrogen peroxide 6 % of 319 kg or 19.1 kg.
- Acetic acid 45% of 319 kg or 144 kg.
- HEDP 0.1% of 319 kg or 0.32 kg.
- Sulfuric Acid 0.1% of 319 kg or 0.32 kg.

Assuming that 100% of these chemicals are discharged to waste water treatment facility each day in a total waste water discharge of 900,000 gallons from the meat processing plant, the maximum concentration of these components in waste water would be:

(Assuming total waste water 900,000 gallons = 3.4 million liters)

- Peroxyacetic acid: 63800 g/ 3.4 million liters= 18800 g/million liters or 18.8 mg/liter (ppm).
- Hydrogen peroxide: 19100 g/3.4million liters = 5618 g/million liters or 5.6mg/liter (ppm).
- Acetic acid: 133000 g/3.4 million liters = 42352 g/million liters or 42 mg/liter (ppm).
- HEDP: 320 g/3.4 million liters = 94 g/million liters or 0.094 mg/liter or 94 ppb.
- Sulfuric Acid: 320 g/3.4 million liters = 94 g/million liters or 0.094 mg/liter or 94 ppb[4].

$$x = \frac{0.32kg * 10^6 mg}{13mg} * 1 \text{ kg } H_2O$$

$$x = 0.024 * 10^6 * 1 \text{ kg } H_2O$$

$$x = 2.4 * 10^4 \text{ kg } H_2O$$

$$1 \text{ gal} = 3.8 \text{ L} = 3.8 \text{ kg}$$

$$1 \text{ kg} = \frac{1}{3.8gal}$$

$2.4 * 10^4$ kg H_2O = **6,479 gal**

[4] Calculation of final HEDP concentration

Treatment of the process water at the on-site wastewater treatment plant is expected to result in nearly 100% degradation of the peroxyacetic acid, hydrogen peroxide, and acetic acid. This expectation is based on the half-life of peroxyacetic acid and hydrogen peroxide and acetic acid (summary provided in Section 7 of this Assessment). The only component that is likely to be present in measurable quantities in wastewater discharged to publicly-owned treatment works (POTWs) is HEDP.

Poultry:

It is estimated that the largest poultry plant known will use 100 gallons of concentrated product per day. This plant generates 1.5 million gallons of waste water per day. The concentrated product is 9.362 pounds per gallon, so 100 gallons would be 936.2 pounds or 425.5 kg.

The total amount of each component present in 100 gallons is

- Peroxyacetic acid: 20% of 425.5 kg or 85 kg.
- Hydrogen peroxide 6.0 % of 425.5 kg or 25.5 kg.
- Acetic acid 45% of 425.5 kg or 192 kg.
- HEDP 0.1% of 425.5 kg or 0.4 kg.
- Sulfuric Acid (optional) 0.1% of 425.5 kg or 0.4 kg.

Assuming that 100% of these chemicals are discharged to waste water treatment facility each day in a total waste water discharge of 1.5 million gallons from the poultry plant, the maximum concentration of these components in waste water would be:

(Assuming total waste water 1.5 million gallons = 5.68 million liters)

- Peroxyacetic acid: 85000 g/ 5.68 million liters= 12725 g/million liters or 12.7 mg/liter (ppm).
- Hydrogen peroxide: 25500 g/5.68 million liters = 4120 g/million liters or 4.12 mg/liter (ppm).
- Acetic acid: 192000 g/5.68 million liters = 33802 g/million liters or 33.8 mg/liter (ppm).
- HEDP: 400 g/5.68 million liters = 70.4 g/million liters or 0.07 mg/liter or 70 ppb.

$$\frac{75 galproduct}{day} * \frac{0.32 kgHEDP}{75 galproduct} * \frac{1 day}{900{,}000 galH_2O} = \frac{3.556*10^{-7} kgHEDP}{1 galH_2O}$$

$$\frac{3.556*10^{-7} kgHEDP}{1 galH_2O} * \frac{1 gH_2O}{8.32 lbs} * \frac{1 lb}{.454 kg} = \frac{9.4*10^{-8} kgHEDP}{kgH_2O} * \frac{1000 g}{1 kg} * \frac{1000 mg}{1 g} =$$

0.094 mg/kg H_2O = **0.094 ppm**

- Sulfuric Acid (optional): 400 g/5.68 million liters = 70.4 g/million liters or 0.07 mg/liter or 70 ppb.

As noted in the previous discussion of the release of the components of the product, it is not expected that any of the constituents of the antimicrobial solution except HEDP will survive initial treatment at the on-site wastewater treatment facility.

Fish and Seafood:

The FCS is proposed for use in water as an antimicrobial agent during the commercial processing and storage of fish and seafood.

As proposed by Enviro Tech Chemical Services, Inc[5], the FCS may be used on-board during the initial evisceration and cleaning of fresh-caught seafood. In this case we would anticipate the water used to process the fish or seafood would be discharged back into the ocean whereas the peroxygen actives in the FCS would have a very short half-life of less than 20 minutes. In this discharge case, the HEDP dilution residuals into the ocean would be impossible for this applicant to calculate. It would be typical for fishing boats to use about 20 gallons per day of the diluted FCS containing 10 ppm active HEDP which could be legally discharged in a large body of water presumably at some distance from shore. The resultant concentration in the body of water would be almost nil.

For land-based operations assuming continuous spray-bar application to the fish processing line is the method used, a spray bar would typically consist of 3 nozzles at 1 gpm. Assuming there will be 3 spray bars, the total water utilized would be 9 gpm. This would equate to 12,960 gal over a continuous 24 hr. period. In the past FDA has used dilution factors (DFs) of 10-50 to calculate concentrations that ultimately get to POTWs. Using the maximum concentrations of components in the spray solution, the following table calculates the concentration of the components at these two DFs.

Component	Maximum Use Concentration	Maximum Concentration in POTW	
		DF=10	DF=50
Peracetic acid	190 ppm	19 ppm	4 ppm
Hydrogen peroxide	75 ppm	7.5 ppm	1.5 ppm
HEDP	10 ppm	1 ppm	0.1 ppm
Acetic acid	500 ppm	50 ppm	10 ppm
Sulfuric acid	5 ppm	0.5 ppm	0.1 ppm

Based on the analysis above for beef, poultry, fish and seafood processing, the worst case discharge to publicly owned treatment facilities, assuming all the HEDP remains in the wastewater following initial treatment, will be 1 ppm on a daily basis.

7. Fate of Emitted Components in the Environment:

[5] Enviro Tech Chemical Services Inc., 2007. Environmental Assessment for FCN 699.

Peroxyacetic acid and hydrogen peroxide are not expected to survive treatment at the primary wastewater treatment facilities at either poultry or beef processing plants. Both compounds are rapidly degraded on contact with organic matter, transition metals, and upon exposure to sunlight. The half-life of PAA in buffered solutions was 63 hours at pH 7 for a 748 ppm solution, and 48 hours at pH 7 for a 95 ppm solution.[6] The half-life of hydrogen peroxide in natural river water ranged from 2.5 days when initial concentrations were 10,000 ppm, and increased to 15.2 days when the concentration decreased to 250 ppm.[7] In biodegradation studies of acetic acid, 99% degraded in 7 days under anaerobic conditions;[8] it is not expected to concentrate in the wastewater discharged to the POTW.

Decomposition of HEDP occurs at a moderately slow pace; 33% in 28 days, based on information provided to FDA previously.[9] In another environmental assessment done by others, it was estimated that 80% of the HEDP discharged to a wastewater treatment plant would bind to the sludge[10]. The calculations above of HEDP concentrations in discharged processing water assume that 100% of the HEDP remains in the water following treatment at the first wastewater plant. This is a very conservative assumption, as several treatment steps, including sedimentation, aerobic or anaerobic treatment, filtration and chemical disinfection of the effluent, will remove or decompose at least a portion of the HEDP that is present in the wastewater.

HEDP that is removed via sedimentation or filtration will slowly degrade into carbon dioxide, water and phosphates. Phosphate anions are strongly bound to organic matter and soil particles, and phosphate is a required macronutrient of plants. Assuming a 10 fold dilution of HEDP in a POTW (typical FDA assumption) and assuming that 80% of the HEDP resides with the sludge, based on a maximum discharge to the POTW of 94 ppb the maximum release from the POTW will be approximately 1.9 ppb in water and 7.5 ppb in sludge, assuming no dilution. At these levels, we would not expect that phosphate released from HEDP would result in measurable increases in phosphate in soils amended with wastewater sludge, or in water receiving treated effluent.

Low quantities of sulfate are expected to reach the aquatic and terrestrial ecosystems. Sulfate is a ubiquitous anion in these ecosystems at higher concentrations.

8. Environmental Effects of Released Substances:

In each of the use scenarios described above, waste antimicrobial solution (from application and drainage) will be directed to an on-site wastewater treatment facility. There, it is expected that decomposition of all of the components excluding HEDP will occur prior to water being discharged. Below is a summary of the decomposition reactions and, if applicable, environmental persistence and ecotoxicity of each component in the formulation.

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[6] Peracetic Acid and its Equilibrium Solutions. JACC No. 40. European Centre for Ecotoxicology and Toxicology of Chemicals, January, 2001 as referenced in Environmental Assessment for FCN 323.
[7] Hydrogen Peroxide. JACC No. 22. European Centre for Ecotoxicology and Toxicology of Chemicals, January, 1993 as referenced in Environmental Assessment for FCN 323.
[8] U.S. High Production Volume (HPV) Chemical Challenge Program: Assessment Plan for Acetic Acid and Salts Category. Acetic Acid and Salts Panel, American Chemistry Council, June 28, 2001 as referenced in Environmental Assessment for FCN 323. .
[9] FMC Corporation, 2003. Environmental Assessment for Food Contact Notification 323
[10] Human & Environmental Risk Assessment (HERA) on ingredients of European household cleaning products: Phosphonates (2004) Available at: http://www.heraproject.com/files/30-F-04-%20HERA%20Phosphonates%20Full%20web%20wd.pdf

Peroxyacetic acid
Decomposes rapidly to acetic acid and hydrogen peroxide (which decomposes into water and oxygen) when exposed to transition metals (such as Fe, or Mn) and organic material. The fate of acetic acid is discussed below. However, the environmental release is anticipated to be well below concentrations found to have a negative impact on aquatic organisms. The 48-hour EC_{50} for *Daphnia magna* ranges from 0.50 to 1.1 mg/L; the 96-hour EC_{50} for *Oncorhynchus mykiss* and *Lepomis macrochirus* ranges from 0.91 to 2.0 mg/L and 1.1 to 3.3 mg/L, respectively.[11]

Hydrogen peroxide:
Decomposes rapidly to water and oxygen when exposed to transition metals (such as Fe, or Mn) and organic material. It is not expected to enter the environment after wastewater treatment. The 96-hour LC_{50} is 16.4 Φg/L and 37.4 Φg/L for *Pimephales promelas* and Ictalurus punctatus, respectively. The 24-hour EC_{50} for *Daphnia magna* is 7.7 mg/L. Several algae species are reported to have less than 5% of the original chlorophyll content when exposed to hydrogen peroxide concentrations ranging from 1.7 to 17 mg/L for 24-48 hours.[12]

Acetic acid:
Summary ecotoxicity data from the High Production Volume (HPV) Assessment Plan for Acetic Acid and Salts[13] indicate that acetic acid I is not highly toxic to aquatic plant and animal species. In water, acetic acid dissociates into the acetate anion and hydrogen proton. The anion is readily biodegradable, with 99% degraded after 7 days (anaerobic conditions, in the presence of activated sludge). The LC_{50} for fathead minnow is 106-122 ppm (24-hour), 92-106 ppm (48-hour), and 79-88 ppm (96-hour). The 48-hour LC_{50} for rainbow trout is 105 ppm and the 48-hour EC_{50} for *Daphnia* is 65 ppm. Toxicity thresholds for algae were reported on the MSDS for green algae *(Scenedesmus quadricauda;* 4000 ppm), blue-green algae *(Anacystis aeruginosa;* 90 ppm), and euglenoid *(Entosiphon sulcatum;* 78 ppm).

1 -Hydroxyethylidene- 1,l -diphosphonic acid (HEDP):
The available ecotoxicity data for HEDP have been reviewed.[14,15] A summary of these data from pages 15-32 of the HERA review are attached. The no effect concentration (NOEC) is 0.1 mg/liter (100 ppb) in a chronic daphnia study. As noted by Jaworska et al., this is considered to be inconsistent with much higher NOECs were found in two other studies on daphnia (> 25 mg/l and > 12 mg/l, respectively). Jaworska et al. noted that this anomalous result was likely due to chelating micronutrients in the study. Jaworska et al. noted no systemic toxicity is found below 10 ppm and recommended that this value be used in risk assessments for aquatic species. There is an adequate margin of safety from the worst case NOEC of 10 ppm to the maximum environmental exposure to HEDP of 1.9 ppb in water. Regarding terrestrial species, the HERA review (see footnote 11) indicates a NOEC for soil dwelling animals of 1000 mg/kg solid dry

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[11] Peracetic Acid and its Equilibrium Solutions. JACC No. 40. European Centre for Ecotoxicity and Toxicology of Chemicals, January, 2001 as referenced in Environmental Assessment for FCN 323.
[12] Hydrogen Peroxide. JACC No. 22/ European Centre for Ecotoxicology and Toxicology of Chemicals, January, 1993 as referenced in Environmental Assessment for FCN 323.
[13] U.S. High Production Volume (HPV) Chemical Challenge Program: Assessment Plan for Acetic Acid and Salts Category. Acetic Acid and Salts Panel, American Chemistry Council, June 28, 2001 as referenced in Environmental Assessment for FCN 323.
[14] Human & Environmental Risk Assessment (HERA) on ingredients of European household cleaning products: Phosphonates (2004) Available at: http://www.heraproject.com/files/30-F-04-%20HERA%20Phosphonates%20Full%20web%20wd.pdf
[15] Jaworska, J; Van Genderen-Takken, H; Hanstveit, A; van de Plassche, E; Feijtel, T. Environmental risk assessment of phosphonates used in domestic laundry and cleaning agents in the Netherlands. Chemosphere 2002, 47, 655-665.

weight and a 14 day median oral lethal dose (LD50) for birds of greater than 284 mg/kg body weight. There is an adequate margin of safety based on these data for terrestrial animals to the expected maximum concentration of 7.5 ppb in sludge.

Sulfuric Acid

While the environmental effects of aerosols sulfuric acid and sulfates on the atmosphere and rain are well known, small quantities of water or terrestrial discharges are not expected to have environmental effects. Sulfate is a ubiquitous environmental anion and low concentrations are well tolerated in aquatic and terrestrial ecosystems.

9. Use of Resources and Energy

The use of the Arkema Inc. product will not require additional energy resources for treatment and disposal of waste solution, as the components readily degrade. The raw materials used in the production of the mixture are commercially-manufactured materials that are produced for use in a variety of chemical reactions and production processes. Energy used specifically for the production of the mixture components is not significant.

10. Mitigation Measures

As discussed above, no significant adverse environmental impacts are expected to result from the use and disposal of the dilutions of antimicrobial product. Thus, the use of the subject mixture is not reasonably expected to result in any new environmental problem requiring mitigation measures of any kind.

11. Alternatives to the Proposed Action

No potential adverse environmental effects are identified herein that would necessitate alternative actions to that proposed in this Food Contact Notification. The alternative of not approving the action proposed herein would simply result in the continued use of nearly identical products by the beef, poultry, pork, fish and seafood processing industry; such action would have no environmental impact. The addition of this product the options available to meat and poultry processors is not expected to increase the use of peroxyacetic acid antimicrobial products; rather Arkema Inc. expects to provide a replacement product for those peroxyacetic acid products already in use.

12. List of Preparers

1. Dr. Richard C. Kraska, GRAS Associates, LLC., Chief Operating Officer
2. Laura Anderson, Product Safety Manager, Arkema Inc.

13. Certification

The undersigned official certifies that the information provided herein is true, accurate, and complete to the best of his knowledge.

[redacted]

Richard C. Kraska

Attachments

A. MSDS for Peracetic acid, Arkema Inc

B. Human & Environmental Risk Assessment (HERA) on ingredients of European household cleaning products: Phosphonates (2004). Environmental Assessment, pages 15-32. Available at: http://www.heraproject.com/files/30-F-04-%20HERA%20Phosphonates%20Full%20web%20wd.pdf

C. Water Efficiency Industry Specific Processes: Meat and Poultry Processing. N.C. Division of Pollution Prevention and Environmental Assistance. Raleigh, NC 27699-1639