

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AFR 3 - 2006

Mr. Robert J. Sloan  
Sr. Regulatory Services Associate  
Lonza, Inc.  
90 Boroline Road  
Allendale, NJ 07401

Subject: **Formulation HS-1210 Disinfectant/Sanitizer**  
EPA Registration Number 47371-180  
Application Date October 3, 2006  
EPA Received Date October 5, 2005

Dear Sloan:

The following amendment, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended is acceptable with the following comment:

**Proposed Amendments:**

- Response to Agency letter dated 5/12/04

**Labeling Comments:**

1. The proposed label claims that a 200 ppm use solution of the product, Formulation HS-1210 Disinfectant Sanitizer (14.08%), is an effective sanitizing rinse for use on previously cleaned, hard, non-porous, food contact surfaces in the presence of 500 ppm hard water against *Vibrio cholerae* for the label-specified contact time of 1 minute. This claim is acceptable.
2. The submitted efficacy data do not support the use of the product, Lonza Formulation HS-1210 (14.08%), as a sanitizing rinse against *Listeria monocytogenes*. The laboratory needs to confirm that the neutralizer is effective and non-toxic to *Listeria monocytogenes*. Neutralizer testing using *Vibrio cholerae* is not acceptable. Delete the claims for *Listeria monocytogenes* from the last section (200 ppm active with 500 ppm water hardness) in the left column on page two.
3. Delete the claims for *Campylobacter jejuni* and *Salmonella choleraesuis* from the second to last section (150 ppm active with 500 ppm water hardness) in the left column on page two. These claims are not in agreement with the last stamped label for this product.

**CONCURRENCES**

SYMBOL							
SURNAME							
DATE							

4. Revise your label to be in agreement with PR Notice 2000-5 which requires mandatory label language. Make the following changes to your label:
  - a. Revise the statement in the left column of page three which begins: "Can be applied with a cloth, sponge.. "to begin exactly as follows: "Apply with a cloth, sponge..."
  - b. Revise the statement in the right column of page three which begins: "Sanitary filling: Recommended for use in.. "to include: "...Use a sanitizing solution of 150-200 ppm active quat in an external application for the filler.."
  - c. Revise the statement in the left column of page four item #6 in both Wisconsin sections to read: "Prepare fresh sanitizing solution at least daily or when visibly soiled or diluted."
  - d. Revise the statement in the right column of page four item #5 in the Poultry and Farm Sections to read as follows: "Saturate surfaces with disinfecting solution for a period of 10 minutes."
  - e. Revise the statement in the left column of page five in the Citrus Canker section to include the following: "...Apply treatments to trucks, attached trailers, and field equipment..."
5. Clarify the specific pest in the Fishery, Milk, Citrus.. on page three and in the For Sanitizing in Fisheries, Milk, Citrus.. on page four to indicate that the bacteria referred to in association with condensation on pipes in these sections is odor causing bacteria.

**General Comments:**

A stamped copy of the acceptable labeling is enclosed. Submit one (1) copy of your final printed labeling before distributing or selling the product bearing the revised labeling.

Should you have any questions or comments concerning this letter, please contact Drusilla Copeland at (703) 308-6224.

Sincerely,



Velma Noble  
Product Manager (31)  
Regulatory Management Branch I  
Antimicrobials Division (7501C)

Enclosure: Efficacy Review Dated 12/28/05

3/8

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**DANGER.** Corrosive. Causes irreversible eye damage and skin burns. May be fatal if absorbed through skin. Do not get in eyes, on skin or on clothing. Wear protective eyewear (goggles, face shield or safety glasses), protective clothing and rubber gloves. May be fatal if swallowed. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

**FIRST AID**

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 – 20 minutes.

**IF SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Call a poison control center or doctor for treatment advice. Have the product container or label with you when calling a Poison Control Center or doctor or going for treatment.

**NOTE TO PHYSICIAN:** Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.

**ENVIRONMENTAL HAZARDS**

This pesticide is toxic to fish. Do not apply in marine and/or estuarine oil fields.

*(Note to reviewer: If container size is 5 gallons or greater, the following Environmental Hazards statements will be added:)*

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**PHYSICAL/CHEMICAL HAZARDS**

This pesticide is a cationic germicide. Do not mix with soap or anionic materials. Do not use or store near heat or flame.

**FORMULATION HS-1210 DISINFECTANT /  
SANITIZER (14.08%)**

**ONE-STEP DISINFECTANT**

**SANITIZER – GERMICIDE – DEODORANT**

Salmonellacidal    Bactericidal    Pseudomonacidal  
Staphylocidal    Fungicidal    \*Virucidal

**Active Ingredients:**

Didecyl dimethyl ammonium chloride.....8.448%  
n-Alkyl (C<sub>14</sub> 50%, C<sub>12</sub> 40%, C<sub>16</sub> 10%)

dimethyl benzyl ammonium chloride.....5.632%

Inert Ingredients: .....85.920%

Total.....100.000%

**KEEP OUT OF REACH OF CHILDREN**

**DANGER**

See (side) (right) (back) (left) panel for Precautionary Statements and First Aid

EPA Reg. No.47371-180

EPA Est. No. (as indicated on container)

Net Contents: (as indicated on container)

H&S Chemicals Division  
c/o Lonza Inc.  
90 Boroline Road  
Allendale, NJ 07401

ACCEPTED  
with COMMENTS  
in EPA Letter Dated  
APR 3 2006  
Under the Federal Insecticide,  
Fungicide, and Rodenticide Act as  
amended, this pesticide,  
registered under EPA Reg. No. 47371-180

(Note to reviewer: The following is considered optional marketing language:)

A concentrated, multi-purpose germicide and deodorant effective in 5% organic serum (according to the AOAC Use-dilution Test).

Disinfects and deodorizes hard nonporous surfaces in one labor saving step.

Use in hospitals, nursing homes, medical clinics, dental offices, schools, colleges, office buildings, hotels and motels, airports, restaurants, bars, beverage plants, citrus plants, breweries, federally inspected meat and poultry plants, veterinary clinics and animal life science laboratories, tack shops, pet shops, breeding and grooming establishments, kennels, poultry and turkey farms, equine farms, dairy farms and hog farms.

Use on hard, nonporous surfaces such as floors, walls, lavatory fixtures, showers, machinery and equipment, garbage cans, metal, stainless steel, glazed porcelain, painted and plastic surfaces.

Bactericidal at 1:256 dilution (1/2 oz. per gallon of water) against Pseudomonas aeruginosa, Staphylococcus aureus, and Salmonella choleraesuis according to AOAC Use-Dilution Test method, modified in the presence of 5% organic serum. (See reference sheet for complete list of pathogenic organisms).

Formulation HS-1210 Disinfectant / Sanitizer (14.08%) is effective at 150 ppm active quat according to the AOAC Germicidal & Detergent Sanitizer Test modified in the presence of 800 ppm water hardness (calculated as CaCO3) against:

- Escherichia coli (E. coli)
- Staphylococcus aureus

Formulation HS-1210 Disinfectant / Sanitizer (14.08%) is effective at 150 ppm active quat according to the AOAC Germicidal & Detergent Sanitizer Test modified in the presence of 800 ppm water hardness (calculated as CaCO3) against:

- Campylobacter jejuni
- Escherichia coli (E. coli)
- Salmonella choleraesuis
- Staphylococcus aureus

Formulation HS-1210 Disinfectant / Sanitizer (14.08%) is effective at 200 ppm active quat according to the AOAC Germicidal & Detergent Sanitizer Test modified in the presence of 500 ppm water hardness (calculated as CaCO3) against:

- ~~Escherichia coli (E. coli)~~
- Escherichia coli 0157:H7 (pathogenic E. coli)
- ~~Listeria monocytogenes~~
- Salmonella choleraesuis
- Shigella sonnei
- Staphylococcus aureus
- Vibrio Cholerae
- Yersinia enterocolitica

- DISINFECTANT 1:256 ..... 1/2 oz. per gallon of water ..... (550 ppm)
- SANITIZER 1:938 ..... 2 oz. per 14 1/2 gallons of water ..... (150 ppm)
- SANITIZER 1:704 ..... 2 oz. per 11 gallons of water ..... (200 ppm)

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**DISINFECTION / DEODORIZING DIRECTIONS:**

If surfaces are visibly dirty, preclean prior to disinfection / deodorizing activity.

Prepare a solution of 1/2 ounce of product per gallon of water. Apply use-solution with a cloth, sponge, mop, coarse trigger sprayer, or by soaking to thoroughly wet all surfaces. For sprayer applications, use a coarse spray device. Spray 6 - 8 inches from the surface, rub with a brush, cloth or sponge. Do not breathe spray. Let solution remain on the surface for a minimum contact time of 10 minutes. Wipe dry with a clean cloth or sponge or allow to air dry. The use solution is prepared fresh for each use then discarded. Rinsing is not necessary unless floors are to be waxed or polished. Food contact surfaces must be thoroughly rinsed with potable water.

(Note to reviewer: For labels that list medical premises and / or metal and / or stainless steel surfaces, one of the following statements must be used:)

This product is not to be used as a terminal sterilant/high level disinfectant on any surface or instrument that (1) is introduced directly into the human body, either into or in contact with the bloodstream or normally sterile areas of the body, or (2) contacts intact mucous membranes but which does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body. This product may be used to preclean or decontaminate critical or semi-critical medical devices prior to sterilization or high level disinfection.

or

This product is not to be used on medical device surfaces.

**VIRUCIDAL DIRECTIONS\*:**

Virucidal against \*Bovine rhinotracheitis, \*Avian Infectious Bronchitis virus, and \*Newcastle Disease virus, Marek's Disease Virus and Infectious Bronchitis Virus - Arkansas strain (IBV) according to the virucidal qualification, modified in the presence of 5% organic serum at a 1:256 dilution. Follow Disinfection Directions.

**FUNGICIDAL DIRECTIONS:**

Fungicidal against Trichophyton mentagrophytes and Candida albicans according to the AOAC fungicidal test, modified in the presence of 5% organic serum at a 1:256 dilution. For fungicidal activity, use in areas such as locker rooms, dressing rooms, shower and bath areas, and exercise facilities. Follow Disinfection Directions.

**MOLD AND MILDEW CONTROL DIRECTIONS:** To control mold and mildew on hard, nonporous surfaces wash visible soil from the surface. Then apply a use-solution of 1/2 fluid oz. per gallon of water with a mop, sponge, cloth, or coarse trigger sprayer so as to wet all surfaces thoroughly. Let air dry. Repeat application every 7 days to control recurrence of growth.

**FISHERY, MILK, CITRUS, ICE CREAM & POTATO PROCESSING PLANTS DISINFECTION DIRECTIONS:**

Applied routinely as a disinfectant on walls and floors will reduce or eliminate odors in the processing area. Use on filling equipment to reduce or eliminate odors in the processing area and bacteria associated with condensation on equipment and pipes. Follow Disinfection Directions.

**FOR SANITIZING FOOD CONTACT SURFACES:**

For use on precleaned, hard, nonporous food contact surfaces including plastic and other hard nonporous cutting boards and chopping blocks, counter tops, tables, food preparation surfaces, cooking and eating utensils, and drinking glasses. For heavily soiled areas, remove gross food particles by preflush, prescrape and presoak when necessary. Wash thoroughly with detergent or compatible cleaner, then rinse with potable water prior to application of sanitizing solution.

Use 2 ounces per 11 - 14 1/2 gallons of water (200 - 150 ppm quat) for a minimum contact time of 1 minute in a single application.

*(Alternate language for closed loop dilution center.)* Then use product from the Closed Loop Dilution Center (200 ppm quat) for a minimum contact time of 1 minute in a single application.

Can be applied with a cloth, sponge, mop, coarse trigger sprayer, or by soaking. Eating utensils and drinking glasses must be sanitized by immersion. Thoroughly wet all surfaces. Drain thoroughly and air dry. Do not rinse.

Fresh sanitizing solution must be prepared at least daily or more often if the use solution becomes diluted. For mechanical applications, use solution may not be reused for sanitizing applications but may be reused for other purposes such as cleaning.

Before use as a sanitizer in federally inspected meat and poultry plants and dairies, food products and packaging materials must be removed from the room or carefully protected.

Formulation HS-1210 (14.08%) (Note to reviewer: Language in ( ) is optional or interchangeable)  
EPA Reg. No. 47371-180  
EPA Draft 10-3-05

**RESTAURANT AND BAR USE:** For use as a sanitizer on dishes, glassware, silverware, eating and cooking utensils. For heavily soiled areas, remove gross food particles by preflush, prescrape and presoak when necessary. Wash thoroughly with detergent or compatible cleaner, then rinse with potable water prior to application of this product. Then immerse in a solution of 2 ounces per 11 - 14 1/2 gallons of water (200 - 150 ppm quat) for at least 1 minute. Drain thoroughly and air dry. Do not rinse.

*(Alternate language for closed loop dilution system.)*

**RESTAURANT AND BAR USE:** For use as a sanitizer on dishes, glassware, silverware, eating and cooking utensils. For heavily soiled areas, remove gross food particles by preflush, prescrape and presoak when necessary. Wash thoroughly with detergent or compatible cleaner, then rinse with potable water prior to application of this product. Then immerse in a sanitizing solution from Closed Loop Dilution Center (200 ppm quat) for at least 1 minute. Drain thoroughly and air dry. Do not rinse.

**BEVERAGE PLANTS:** For sanitizing of bottling or pre-mix dispensing equipment. After cleaning, thoroughly rinse equipment with cold or lukewarm water. Fill equipment with a solution of 2 ounces per 11 - 14 1/2 gallons of water (200 - 150 ppm quat). Allow the solution to remain in contact with equipment for at least 1 minute or until operations resume at which time the sanitizing solution should be drained from the system. To insure the removal of flavors, it is suggested that during changeover between products the system should be cleaned, rinsed and flushed with the sanitizing solution for at least 1 minute. Allow to drain completely before using. Do not rinse.

**SANITARY FILLING:** Recommended for use in sanitizing bottles or cans in the final rinse application. The product is to be proportioned into the final rinse water line of the container washer or rinser in concentration of 150 - 200 ppm active quat. A sanitizing solution of 150 - 200 ppm active quat should be used in an external application for the filler and closing machine. Do not rinse.

**STORAGE TANK SANITIZING:** Recommended for sanitizing beer fermentation and holding tanks. A solution of 150 - 200 ppm active quat should be applied manually or used in combination with automated cleaning systems. Follow directions for sanitizing food contact surfaces. Drain thoroughly. Do not rinse. For mechanical operations or automated systems, the used sanitizing solution may not be reused for sanitizing but may be reused for other purposes such as cleaning.

**FOR SANITIZING IN FISHERIES, MILK, CITRUS, POTATO & ICE CREAM PROCESSING PLANTS:** For use as a sanitizer on conveyors and equipment to reduce or eliminate odors in the processing area. Also, for use on filling equipment to reduce bacteria associated with condensation on equipment and pipes. Follow directions for sanitizing food contact surfaces.

**FOR WISCONSIN ONLY  
SANITIZING EATING AND DRINKING UTENSILS  
IN EATING ESTABLISHMENTS**

- 1) Scrape and pre-wash utensils and glasses whenever possible.
- 2) Wash with a good detergent or compatible cleaner.
- 3) Rinse with potable water.
- 4) Sanitize in a solution of 2 fluid ounces per 11 - 14½ gallons of water. Immerse all utensils for at least two minutes or for a contact time specified by governing sanitary codes.
- 5) Place sanitized utensils on a rack or drain-board to air dry.
- 6) Fresh sanitizing solution should be prepared at least daily or when visibly soiled or diluted.

**NOTE:** A clean potable water rinse following sanitization is not permitted under Section HFS 196.13 of the Wisconsin Administrative Code.

*(Alternate language for closed loop dilution center.)*

**FOR WISCONSIN ONLY  
SANITIZING EATING AND DRINKING UTENSILS IN  
EATING ESTABLISHMENTS**

- 1) Scrape and pre-wash utensils and glasses whenever possible.
- 2) Wash with a good detergent or compatible cleaner.
- 3) Rinse with potable water.
- 4) Sanitize in a solution from the Closed Loop Dilution Center (200 ppm quat). Immerse all utensils for at least two minutes or for a contact time specified by governing sanitary codes.
- 5) Place sanitized utensils on a rack or drain-board to air dry.
- 6) Fresh sanitizing solution should be prepared at least daily or when visibly soiled or diluted.

**NOTE:** A clean potable water rinse following sanitization is not permitted under Section HFS 196.13 of the Wisconsin Administrative Code.

**POULTRY & TURKEY HOUSE DISINFECTANT  
DIRECTIONS:**

Dilution: 1:256 ..... ½ ounce per gallon of water

1. Remove all poultry and feeds from premises, trucks, coops, and crates.
2. Remove all litter and droppings from floors, walls and surfaces of facilities occupied or traversed by poultry.
3. Empty all troughs, racks, and other feeding and water appliances.
4. Thoroughly clean all surfaces with soap or detergent and rinse with water.
5. Saturate surfaces with the recommended disinfecting solution for a period of 10 minutes.
6. Ventilate buildings, coops, and other closed spaces. Do not house poultry or employ equipment until treatment has been absorbed, set or dried.
7. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains, and waterers with soap or detergent, and rinse with potable water before reuse.

**FARM PREMISE DISINFECTANT DIRECTIONS:**

For use in Equine, Dairy and Hog farms

1. Remove all animals and feed from premises, vehicles, and enclosures.
2. Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes, and other facilities and fixtures occupied or traversed by animals.
3. Empty all troughs, racks, and other feeding and watering appliances.
4. Thoroughly clean all surfaces with soap or detergent and rinse with water.
5. Saturate all surfaces with the recommended disinfecting solution for a period of 10 minutes.
6. Immerse all halters, ropes, and other types of equipment used in handling and restraining animals, as well as forks, shovels, and scrapers used for removing litter and manure.
7. Ventilate buildings, cars, boats, and other closed spaces. Do not house livestock or employ equipment until treatment has been absorbed, set, or dried.
8. Thoroughly scrub all treated feed racks, mangers, troughs, automatic feeders, fountains, and waterers with soap or detergent, and rinse with potable water before reuse.

**CITRUS CANKER DISEASE CONTROL**

For prevention of Citrus Canker Disease through treatment of equipment. Effective against *Xanthomonas axonopodis* pv. citri (Citrus Canker Disease) at 2000 ppm active quat. Treatments can be applied to trucks, attached trailers, and field equipment including cargo area, wheels, tires, undercarriage, hood, roof, fenders, and any other hard nonporous equipment taken into infested areas.

Saturate surfaces with a 1:70 use-dilution (2¾ oz. per 1½ gallons of water) (or equivalent dilution) (2000 ppm active quat) for a period of 10 minutes. Allow to air dry. All surfaces that come in contact with food or crop must be rinsed with potable water before reuse. To prevent the spread of Citrus Canker Disease by this artificial means of transportation, treatments are made by trigger spraying, dipping or brushing. Thoroughly rinse or launder clothing before reuse. Rinse footwear before reuse.

**VETERINARY CLINICS / ANIMAL LIFE SCIENCE LABORATORY / PET SHOP / KENNELS / BREEDING AND GROOMING ESTABLISHMENT / TACK SHOP DISINFECTION DIRECTIONS:**

For cleaning and disinfecting the following hard nonporous surfaces: equipment, utensils, instruments, cages, kennels, stables, catteries, etc. Remove all animals and feeds from premises, animal transportation vehicles, crates. Remove all litter, droppings and manure from floors, walls and surfaces of facilities occupied or traversed by animals. Thoroughly clean all surfaces with soap or detergent and rinse with water. Saturate surfaces with a use-solution of ½ oz. of product per gallon of water (or equivalent dilution) for a period of 10 minutes. Immerse all halters, ropes and other types of equipment used in handling and restraining animals as well as forks, shovels and scrapers used for removing litter and manure. Ventilate buildings and other closed spaces. Do not house animals or employ equipment until treatment has been absorbed, set or dried. Thoroughly scrub all treated feed racks, automatic feeders, waterers and other equipment that dispenses food or water with soap or detergent and rinse with potable water before reuse.

*(Note to reviewer: If container size is one gallon or less, use the following Storage and Disposal statements)*

**STORAGE AND DISPOSAL**

Store in original container in areas inaccessible to children. Do not reuse empty container. Wrap and discard in trash or recycle.

*(Note to reviewer: If container size is greater than one gallon, use the following Storage and Disposal statements)*

**STORAGE AND DISPOSAL**

Do not contaminate water, food, or feed by storage or disposal.

**PESTICIDE STORAGE**

Open dumping is prohibited. Do not reuse empty container.

**PESTICIDE DISPOSAL**

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL**

*(Plastic Containers):* Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

*(Fiber drums with liners):* Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum is contaminated and cannot be reused, dispose of in the same manner.

*(Metal containers):* Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities

(REFERENCE SHEET FOR COMPLETE LIST OF PATHOGENIC ORGANISMS)

**BACTERICIDAL AGAINST:**

Effective against the following according to the AOAC Use-Dilution Test, modified in the presence of 5% organic serum.

Pseudomonas aeruginosa  
Staphylococcus aureus  
Salmonella choleraesuis

Aeromonas salmonicida  
Campylobacter jejuni  
Enterobacter aerogenes  
Escherichia coli  
Klebsiella pneumoniae  
Listeria monocytogenes  
Mycoplasma gallisepticum  
Proteus mirabilis  
Pseudomonas putida  
Salmonella typhi  
Serratia marcescens  
Shigella flexneri  
Staphylococcus aureus phage 80  
Staphylococcus aureus phage 81  
Streptococcus pyogenes  
Vibrio anguillarum

**FUNGICIDAL & MILDEWCIDAL AGAINST:**

Effective against the following according to the AOAC Use-Dilution Test, modified in the presence of 5% organic serum.

Alternaria tenuis  
Aspergillus glaucus  
Candida albicans  
Fusarium oxysporum  
Geotrichum candidum  
Penicillium digitatum  
Phytophthora infestans  
Rhizopus nigricans (stolonifer)  
Trichoderma harzianum  
Trichophyton mentagrophytes

**VIRUCIDAL AGAINST\*:**

Effective against the following according to the virucidal qualifications modified in the presence of 5% organic serum.

Avian Infectious Bronchitis virus  
Bovine rhinotracheitis virus  
Newcastle virus  
Marek's Disease Virus  
Infectious Bronchitis Virus, Arkansas strain (IBV)