

MAIL ORDER HATCHERIES:

OPERATIONAL AND DISTRIBUTION LOGISTICS,
SALMONELLA INTERVENTION ACTIVITIES AIMED AT
PREVENTION OF HUMAN SALMONELLOSIS

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WHAT IS A MAIL-ORDER HATCHERY?

- A hatchery or business that sells live baby poultry to either a private individual customer or to commercial retail businesses in the USA.
- The distribution of these live baby poultry to their customers is by the United States Postal Service “ by MAIL”

MAIL-ORDER HATCHERY BUSINESS IN THE USA

- Mail-order type hatcheries have operated in the USA for decades.
- Exact historical numbers for hatcheries are hard to come by.
 - 1930's to 1960's thousands existed in Missouri alone, Michigan and other states had hundreds to maybe a few thousand during this time frame.
- Since the 1970's most of these hatcheries have went out of business at a dramatic rate.
- Now approximately 15 of the remaining hatcheries supply about 85% of the mail-order poultry. Primarily sales are limited to Chicks, Guineas, Bantams, Ducks, and Turkeys. NPIP subpart E includes games birds etc.
- The consumer demand has increased over the last 15 years, so hatcheries have expanded their offerings and production volume to met the demand. Very few new hatcheries have opened.
- These hatcheries are the primary source for the Urban and Back Yard chicken phenomenon offering 100's of different breeds. Small farmers, organic, free range poultry producers obtain most of their poultry from these hatcheries.
- Almost all of these hatcheries are multi-generation family own and operated businesses.



TERMS AND DEFINITIONS

- Closed Operation
- Semi-closed Operation
- Open Operations
- Drop-Shipping
- Supplier
- Pullets
- Breeders
- Setters
- Hatchers
- Sexing
- Chick boxes
- Feather Sexing
- Vent Sexing
- Straight Run
- Sexed
- Assorted Pullets
- Hatchery Choice
- Ducklings
- Pullet Chicks
- Cockerels
- Poult
- Chicks
- Replacement Pullets
- Roosters
- Egg Trays
- Sexing Table
- Hatch Debris
- Chick Paper
- Coops, Houses, Pens, Barns
- Delivery Truck/Van
- Collection Truck/Van
- Rodents
- Environmental Swabs
- Drag Swabs
- Litter
- Chick Wash
- Internal Organs
- Egg Baskets
- Sorting Tables
- Hatch Trays
- Interventions
- PulseNet
- Trace Back
- Shipping Labels
- Zip Codes
- Invoices
- Hatch Date
- Breeds / Breed Codes
- Number Shipped
- Local Post Office
- Distribution Center
- Retail Stores

NPIP SUB PART 145.53 E

- 2010 – First inclusion of the current Salmonella Monitoring Program
- 2018 – 35 active participants in the Salmonella Monitoring Program
- This is a Voluntary Program
- **Actual monitoring includes** sample collections from, manure, litter, pullet houses, laying houses, egg shell surfaces, hatchery environment, setters, hatchers, hatch debris, chicks, adults rodents, etc., for Salmonella culturing and serotyping.
- **Functional Reality:** Results of this voluntary program have increased the awareness of the prevalence of Salmonella and the importance of implementing control interventions. Effectiveness of interventions have been documented, new and improved interventions have been developed, and the prevalence and incidence of Salmonella has dramatically decreased

FOCUSED INTERVENTIONS TO REDUCE SALMONELLA

- Goals

- Reduce the prevalence of Salmonella with seasonal eradication of certain serotypes
- Reduction of the environmental (including on equipment) prevalence of Salmonella
- Reduce the prevalence of Salmonella on or in the current breeding stock
- Prevention of salmonella colonization of the next generation of breeders
- Prevent new or the re-introduction of Salmonella of all serotypes
- Prevent or reduce sources of introduction and eliminate reservoirs of Salmonella (including breed types)
- Reduce or prevent Salmonella presence on newly hatched chicks

MONITORING FOR SALMONELLA BY CULTURE

- The attainment of the Interventions Goals require monitoring.
- Identify Salmonella Serotypes present within the operational flow of a hatcheries supply chain
- The monitoring data provides:
 - Determination of the prevalence of Salmonella
 - Awareness of contaminated in specific areas or processes
 - The degree of or amount contamination within an operational unit
 - Clarity of the sources of introduction and reservoirs of Salmonella
 - Direction for targeted interventions to be implemented
 - Guidance for Allotment of resources and man power to areas that will have the greatest impact
 - Objective evidence of success or failure of process interventions
 - Objective evidence of compliance of intervention protocols
 - Guidance for future monitoring activities

MONITORING FOR SALMONELLA BY CULTURE

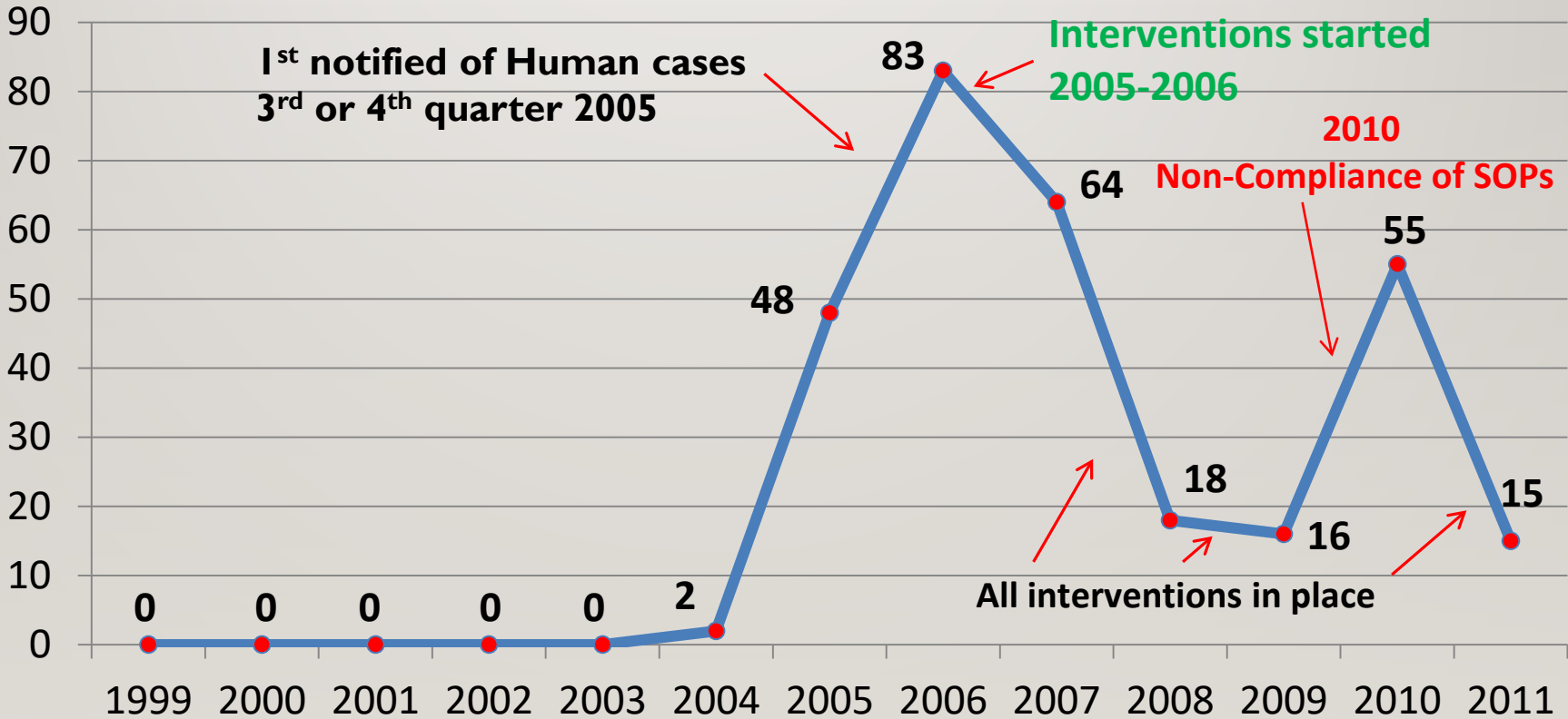
- Initiating a Monitoring Program for the First Time
 - First prepare a detailed map of the logistical flow of birds, eggs, chicks, equipment, supplies, and people
 - From this map strategic monitoring locations are determined
 - All areas of the operational flow are sampled to determine the current prevalence
 - Following the evaluation of the culture results it may or may not be possible to narrow the focus of future sampling locations and new locations may be added
 - Positive sample locations will be given monitoring and intervention priority and repeated continuously
 - Interventions will be assigned to positive areas and improvements or reductions of Salmonella determined by culture results

MONITORING FOR SALMONELLA BY CULTURE

- The Strategic Monitoring Locations
 - The strategic monitoring locations are associated with areas identified where interventions can be implemented. Monthly sampling is typical, but daily, weekly or bi-weekly sampling maybe indicated.
 - Similar concept to control points and the critical control point for a HACCP protocol
 - Examples of strategic locations and sample types
 - Replacement pullet selection
 - Pullet and layer house environment and manure or litter
 - Rodents
 - Egg handling equipment/people
 - Setter and hatchers
 - Hatchery environment: ventilation ducts, filters, tables, trays, floor, boxes
 - Hatch debris
 - Chicks

MONITORING FOR SALMONELLA BY CULTURE

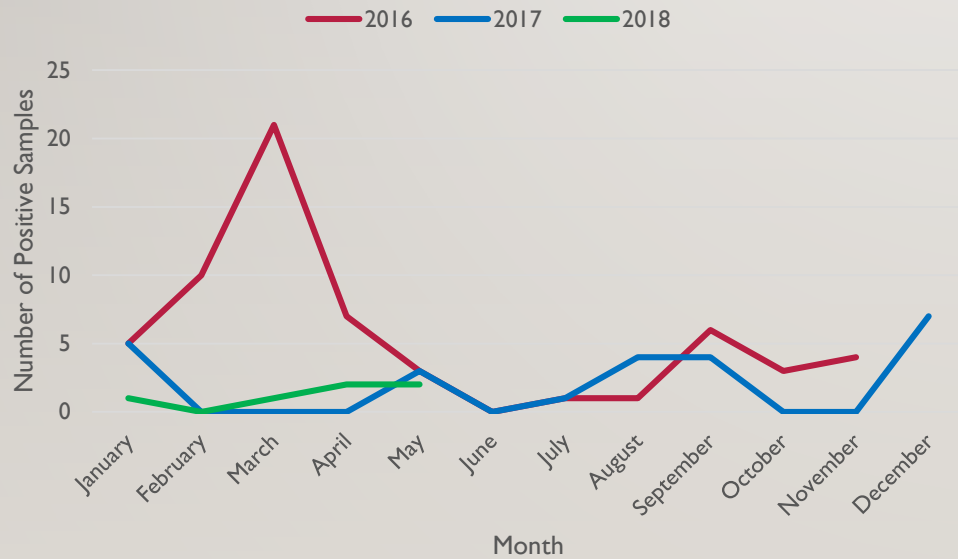
S. MONTEVIDEO CASE



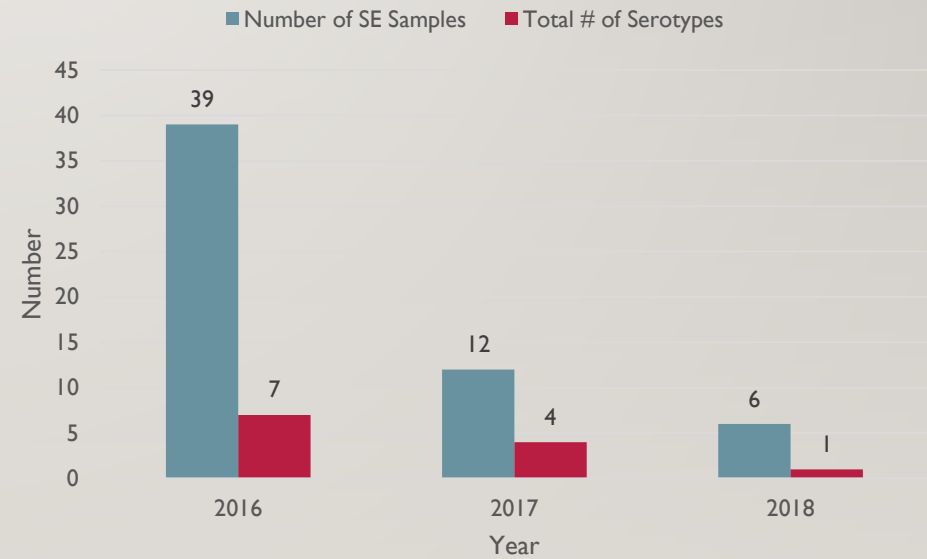
MONITORING FOR SALMONELLA BY CULTURE

S. ENTERITIDIS CASE

Hatchery 2 Salmonella Positives for 3 years
2016, 2017, 2018



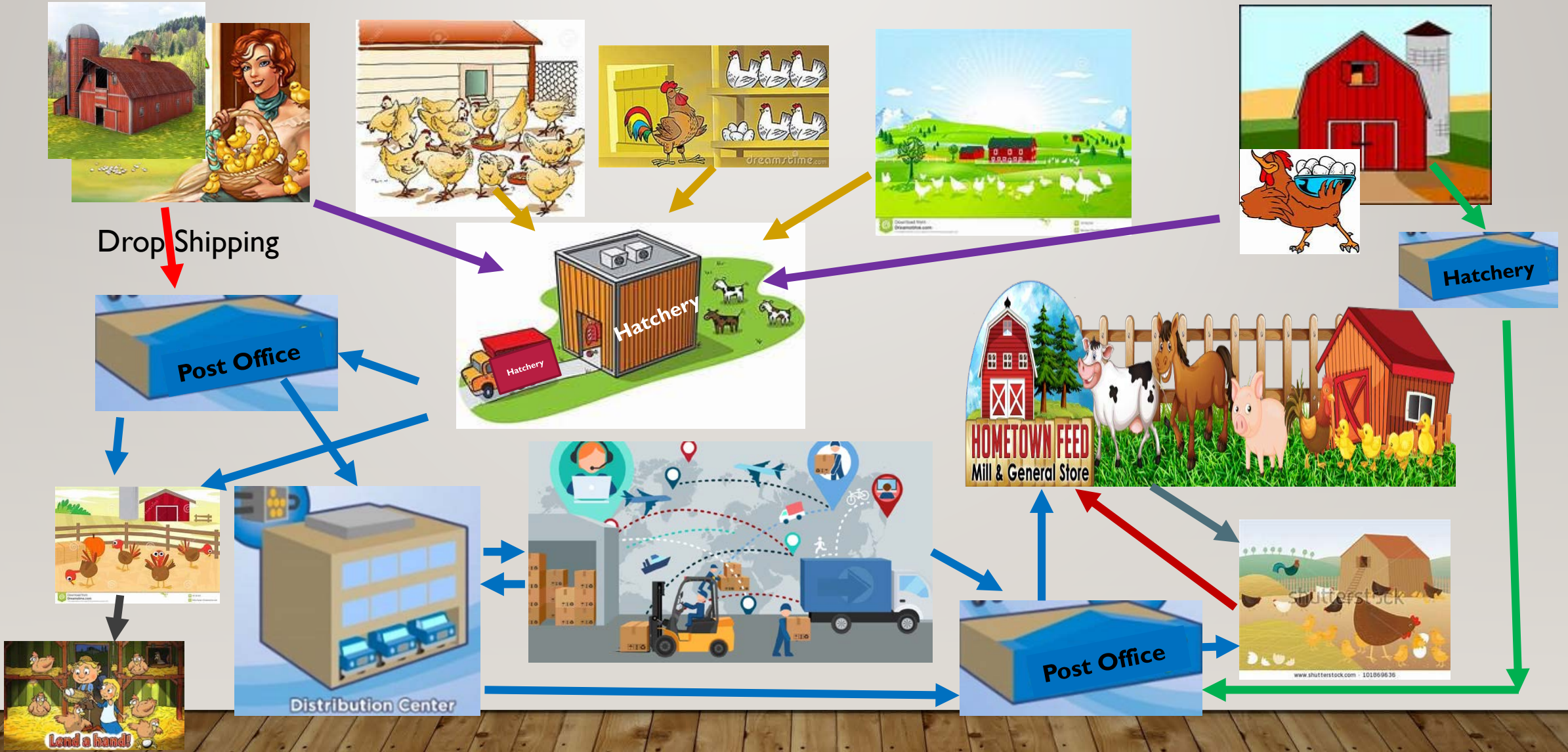
Number of Different Serotypes and Number of SE Isolations per Year 2016, 2017, 2018



HUMAN SALMONELLOSIS AND TRACE BACK INVESTIGATIONS

- Logistics
- PulseNet
- Questionnaires
- Correlation with On-Farm / On Hatchery Monitoring Results
- Retail outlets
- Additional data required for accurate functional and effective Trace Break Investigations

Mail-Order Hatchery Egg and Chick Distribution Pathways



HUMAN SALMONELLOSIS AND TRACE BACK INVESTIGATIONS

- PulseNet:
 - Public Health Laboratory Network used to Identify Salmonella serotype strains from Human Salmonellosis cases and classify or organize them by Pulse Field Gel Electrophoresis patterns (PFGE) to identify cases with of the same pattern into clusters to define an outbreak. Some whole genome sequencing (WGS) has been performed on some isolates. An cluster or outbreak classification requires 2 or more cases with the same pattern.
- Questionnaires
 - CDC, regional and state public health officials try to interview each individual identified in a cluster to determine and record meaningful epidemiological data to be used to identify the source fomite for the infection and conduct a traceback investigation to identify the origin of the Salmonella.
 - There is an specific interview questionnaire for live poultry associated human salmonellosis cases.
 - Some reported live poultry associated outbreaks with a specific PFGE have documented that recent exposure to live poultry has been less than 70 %, yet all of the individual cases with the same PFEGP were classified under the same live poultry associated outbreak leaving open the question of whether there was another source for the Salmonella exposure.
 - The trace back questionnaires rely heavily on the point of purchase data supplied by the individual. Many people don't recall purchase details accurately or even know the breed of chicks they purchased.

HUMAN SALMONELLOSIS AND TRACE BACK INVESTIGATIONS

- Correlation with On-Farm / On Hatchery Monitoring Results
 - What is the on-farm monitoring data showing:
 - When a CDC organized trace back investigation has accurately linked the source of the specific Salmonella serotype to a hatchery operation
 - The implicated serotype is easily found and frequently found at the hatchery and associated locations
 - The incidence of the implicated serotype on the “farm” or hatchery is often higher than 80%.
 - The specific Salmonella serotype is not hard to find.
 - There are confusing and controversial trace break conclusions that have been linked to a hatchery that has monitoring records that do not show the presence of the particular serotype identified as the cause of the outbreak. One issue is the outbreak PFGE may have been linked several years ago to a hatchery however, since then the hatchery has had an effective implementation of interventions and the serotype is no longer detected. The current link is based solely on past association without considering all current and relevant data.

HUMAN SALMONELLOSIS AND TRACE BACK INVESTIGATIONS

- Retail outlets

- There is not 100% consistency of C&D and chick handling practices between retail stores even within the same corporate structure
- These stores have not been officially considered to be a possible reservoir or multiplier of the Salmonella implicated in human salmonellosis cases and they should be. Discussions concerning mitigation options are occurring.
- Routine Salmonella monitoring of the retail stores still has not been initiated even though requests have been made for years to do so.
- Records of co-mingling of chicks from different sources and delivery dates is not good and mostly is non-existent.
- Records of breed type and chick age sold to individuals is almost non-existent.
- There are specific retail store locations that have had repeated cases of human Salmonellosis between year and during a specific year yet no action is directed to help these stores or identify specific risk factors associated with these stores.
- Most retail stores never have a live poultry associated case of Human salmonellosis linked to a purchase from the store.
- There are known risk factors associated with the retail stores that have repeated cases. Additional risk evaluations are needed.
- Targeting manpower and intervention resources toward these retail stores with repeated cases of human Salmonella is a critical missing step in the overall mitigation process from farm to consumer.
- The trace back questionnaires rely heavily on the point of purchase data supplied by the individual. Most individuals don't recall details accurately and the stores have limited records.

HUMAN SALMONELLOSIS AND TRACE BACK INVESTIGATIONS

- Additional data required for accurate functional and effective Trace Break Investigations
 - Accurate Point of Purchase data is critical information that is required for proper trace back investigations.
 - The point of purchase data can be used to identify the hatchery that supplied the poultry if accurate shipping, receiving, co-mingling records are available.
 - The hatchery can narrow down the breed types, if they are given the arrival or shipping dates.
 - Many chicks are sold and shipped as assorted pullets...multiple breeds, which prevents accuracy of breed source identification.
 - Historically retail stores frequently and typically receive chicks from multiple hatcheries making source trace backs difficult. Single source suppliers is gaining ground and will remove a layer of complication in trace back investigations.
 - The prevalence of Salmonella carry-over within a store year to year or season to season is unknown.
 - The breed and date shipped are needed for effective implementation of short and long term on Farm/Hatchery and Retail Store interventions.
 - Having a process for an earlier notification of suspected retail stores and hatcheries link to outbreaks would be helpful to implement immediate mitigations to stop or reduce cases during the current season.
 - The current method and timing of outbreak notifications is not conducive to adding mitigations toward stopping or reducing an outbreak within the active season. The current timing has been so late in the season that the implemented mitigations primarily effect the next year.

CONCLUSIONS

- The current NPIP 145.53 E Salmonella Monitoring Program has been successful in bringing awareness of Salmonella and a focus on Salmonella reduction interventions.
- The larger hatcheries have been very proactive in implementing and maintaining effective Interventions. They have dedicated hundreds of thousands of dollars and manhours to Salmonella reduction processes, which go well beyond the requirements of the voluntary program.
- The results of these efforts has been documented by the monitoring programs that were established as a results of the 2010 NPIP 145.53 Subpart E program.
- Some of the Salmonella interventions and remodeling programs implemented by many of the larger hatcheries are some of the most effective mitigations in the industry and in the world.
- The hatchery owner's commitments to Salmonella reduction should be recognized as being leaders in the development and implementation of proactive and innovative interventions and monitoring programs.
- We need help with Retail Store monitoring and interventions.

THANK YOU

