

THE CONTROL OF HAZARDS ASSOCIATED WITH PARATYPHOID INFECTION AND/OR CONTAMINATION OF TURKEYS AND TURKEY PRODUCTS

(R. H. McCapes — 7/8/75)

A. GENERAL — Complete elimination of the hazards associated with present infection and/or contamination of turkeys and turkey products with paratyphoid organisms presents a unique challenge to industry, the scientific community and society's agencies. For those who feel that the hazards can only be removed through complete elimination of the organism from turkeys, the challenge is the development of the means to eradicate and maintain eradication of a host of nature's most prevalent and hardy microorganisms from a multi-faceted, highly segmented, food producing industry. For those who feel that the hazards can only be removed through the utilization of effective countermeasures to the known presence of the organism, the challenge is the development and implementation of known effective countermeasures. The unique nature of these challenges is that never before has a disease control program of this scope been considered in the turkey industry or any poultry industry. Persons involved in this study must recognize the immensity and complexity of the program being developed and make certain their expertise, experience and good sense are utilized.

Paratyphoid infection and/or contamination of turkeys presents a hazard to society because of potential:

1. Turkey Illness
2. Human Illness
3. Reservoir of Infection to Other Animals

These are the three major hazards threatened by paratyphoid infection and/or contamination of turkeys. Understanding each of these potential

hazards is essential for the development of effective means for their removal in any segment of the industry.

B. TURKEY ILLNESS — Economic loss attributable to paratyphoid infection in turkeys is primarily exhibited by death, stunting and a carrier state of young birds infected by egg transmission or lateral contact during the hatching process or first few days of life. Such losses can be quite high in the absence of specific preventive measures or good husbandry practices.

Contact with paratyphoid organisms following this early age can result in infection and carrier state but usually no overt disease is manifested in well-managed flocks. The presence of concurrent debilitating diseases, poor husbandry practices, etc. can bring about frank mortality or morbidity losses due to paratyphoid in older birds.

Virtually all direct economic loss attributable to paratyphoid infection of turkeys can be prevented by the utilization of specific husbandry practices and drug therapy. In regards to its specific effects on turkeys, then, paratyphoid disease losses should be considered controllable in the same manner as coccidiosis and histomoniasis losses. Eradication would certainly be desirable for all three diseases if it could be achieved more efficiently than the present husbandry-drug method. At present, however, eradication of paratyphoid infection of turkeys for the sole purpose of eliminating the economic effects of the disease is not economically feasible. The cost of such a program would be more than the total cost of present losses plus the husbandry-drug method of control.

The specific husbandry-drug therapy methods which effectively prevent the vast majority of the potential economic losses from paratyphoid infection of turkeys are those aimed at counteracting the egg borne and early life routes of infection.

1. Breeder Flock Premise Sanitation — Paratyphoid infection of turkeys, including breeder flocks, is prevalent. It is not uncommon to identify one or more serotypes of salmonella in a given population. This prevalence contributes to environmental contamination of breeder facilities including nesting areas where hatching eggs are laid. Premise sanitary procedures to reduce salmonella populations in areas where hatching eggs produced (breeder pens, nests, etc.) are an effective means to reduce egg borne infection. Examples of this type of procedure are:

- a. Replacement of nesting materials at certain intervals.
- b. Use of nesting materials that can be disinfected at certain intervals.
- c. Disinfection of breeder pens, houses at certain intervals.

2. Hatching Egg Shell Sanitation — This is without question the most important means to control the vast majority of the losses attributable to paratyphoid infection in turkeys. Attention to this method alone would result in satisfactory control of losses. This method, though effective, has definite limitation and they are brought about by the location of the paratyphoid organism in or on the egg being treated.

The principle means for the greatest number of paratyphoid organisms to be egg borne is passive attachment to the surface of the shell through intestinal content or environmental contamination. A lesser number of organisms, however, with proper conditions can penetrate the shell and be found in the pores, at the shell membranes or in the interior substance of the eggs. An even smaller number of organisms may be transmitted directly on the ova by means of peritoneal infection.

Effective egg shell sanitation will destroy 100% of those organisms on the surface of the shell, is less effective on those in the process of

penetration and ineffective against those in the substance of the egg.

Examples of this procedure are:

a. On the farm shell sanitation — This is the most important aspect of shell sanitation. Its success is dependent on effective egg shell treatment shortly after time of lay to prevent as much shell penetration as possible.

1) Gas fumigation — use of formaldehyde gas is a common and effective process, although unpleasant and dangerous to those working in the area.

2) Liquid disinfection — use of certain effective disinfectants which do not effect hatchability.

b. Hatchery Level — Subsequent re-sanitation of the egg shells following handling, placing in machines and mixing of eggs from various premises is a further safeguard to prevent shell contamination. Gas fumigation is most commonly used.

3. Hatching Egg Drug Treatment — Effective antibiotics and anti-bacterial drugs can be utilized to destroy paratyphoid organisms on or in the ^{egg} ~~shell~~. This is not presently a commonly used procedure, however, it has potential use in eggs utilized for commercial meat turkey production and very definite use ⁱⁿ eradication programs aimed at eliminating paratyphoid infection from primary breeding stock.

The same rationale for antibiotic therapy should be followed with this type usage as with any other antibiotic therapy. Indiscriminate present use of specific antibiotics invaluable to well planned, but future eradication programs, can lead to the ineffectiveness of such drugs.

The effect of such treatment on hatchability will govern to a large extent its applicability for routine, non-eradication use on commercial or breeding stock eggs. If such treatment is economically feasible, then only those antibiotics not planned for use in future eradication programs and whose use will not result in transferable resistance toward essential antibiotics should be utilized.

It is critical to understand that if eradication is a goal, it can only be achieved with the help of effective antibiotics utilized to destroy organisms in the eggs of primary breeding stock. Misuse of these antibiotics can result in eradication being an unattainable goal.

Examples of this type of treatment are:

a. Egg Dipping —

b. Egg Injection —

4. Hatchery Sanitation — This is another essential step in the control of paratyphoid infection. The intact hatching eggs spend approximately 25-28 days and newly hatched poults one to four days in large machines and rooms exposed to surfaces, air currents and personnel potentially contaminated with paratyphoid organisms. Strict, comprehensive sanitary procedures can effectively eliminate this area of exposure.

5. Day Old Poult Drug Injection — In terms of present day industry practices, this method of treatment utilizing effective antibiotics, is second only to egg shell sanitation in effectiveness in eliminating economic loss due to paratyphoid infection in turkeys.

Infection originating from egg borne organisms beyond the reach of egg shell treatment and transmitted laterally during the hatching process are effectively treated at this time and overt disease and economic loss largely prevented.

The advantage of day-old poult injection with antibiotics is the ability to deliver known amounts of effective drug to infected individuals in a manner which prevents clinical disease. Disadvantages are the fact that infected individuals so treated often remain carriers of the organism in the absence of clinical symptoms. Misuse of antibiotics needed for use in eradication programs may lead to their ineffectiveness. Carrier birds, infected with other debilitating disease or the victims of poor husbandry practices may suffer losses due to paratyphoid infection.

6. Brooding — Growing Management — Effective husbandry practices in this area are very important in the reduction of potential economic losses in turkeys due to paratyphoid infection and the perpetuation of infection.

Present day control of paratyphoid infection losses is based on eliminating as much egg-borne infection as possible and counteracting that which comes through and laterally spreads with effective drug therapy. This system does not prevent the presence of carrier populations resulting from such infection or the introduction of infection from the environment.

The recognition of a widespread and prevalent salmonella carrier state in turkey populations places a large responsibility on husbandry

practices to prevent the occurrence of overt disease in such populations.

Examples of such practices are:

- a. Brooder house temperature and ventilation
- b. Population density
- c. Range and growout house management
- d. Nutrition

7. Brooding-Growing Premise Sanitation — This area of husbandry practice is most important to prevent the perpetuation of paratyphoid infection in the turkey production cycle. Present day commercial practices are totally ineffective and environmental introduction of paratyphoid organisms into turkey populations is common.

Such introduction seldom leads to economic loss in populations so contaminated, but does perpetuate infection.

8. Feed Sanitation — The sanitation of turkey feed in a manner which guarantees freedom from salmonella contamination is essential to any program aimed at eliminating paratyphoid organisms from turkeys. Feed is a frequent source of paratyphoid infection of turkeys, but rarely results in the development of overt disease and economic loss in populations so contaminated. Salmonella-free feed is essential to eradication, but not to the control of the economic effects of the disease in turkeys.

9. Slaughter of Breeder Fock with Paratyphoid Infection — This is an effective means to eliminate egg transmission and would be one of the many control measures utilized in any eradication effort.

The use of this husbandry procedure for the sole reason of preventing economic loss resulting from paratyphoid infection, however, cannot be justified because the economic losses from slaughter would be greater than the cost of the disease controlled by other means.

The above nine husbandry-therapy procedures are the means at our disposal for control and/or elimination of the hazards associated with paratyphoid infection of turkeys. Utilization of several of these does result in the elimination of the economic loss associated with paratyphoid infection, however, all would be necessary to totally eliminate infection from turkey populations.

C. HUMAN ILLNESS — This hazard associated with paratyphoid infection and/or contamination of turkey products is well recognized and will not be dealt with at length in this report.

The factor, the potential threat to human health, is, however, the major reason for considering any control measures beyond those now being utilized in controlling the economic effects in turkeys. This fact must be well understood as it has definite effects on the type of controls necessary. The goal for effectively removing this hazard should either be the complete elimination (eradication) of salmonella from turkeys and turkey products or the development of the means to eliminate the hazard to people in purchasing known contaminated turkey products for consumption.

A goal and development of a program aimed at "reduction" of salmonella infection and/or contamination in turkeys is not realistic, will not remove the public health hazard and would not be attainable. All efforts to rely on such a program should be opposed. Programs aimed at specific serotypes of salmonella are unrealistic in respect to human illness as well as turkey illness.

D. RESERVOIR OF INFECTION TO OTHER ANIMALS — The only way to assure that turkey populations do not serve as reservoirs of infection to other animal species is to eradicate the disease from turkeys and the other

species of animals involved. The only reason for contemplating such efforts would be public health hazard considerations.

E. SUMMARY OF REASONS FOR CONTROL AND METHODS TO DO SO:

1. Elimination of Turkey Illness

a. Husbandry-drug therapy means most suitable — eradication not justified

2. Elimination of Human Illness

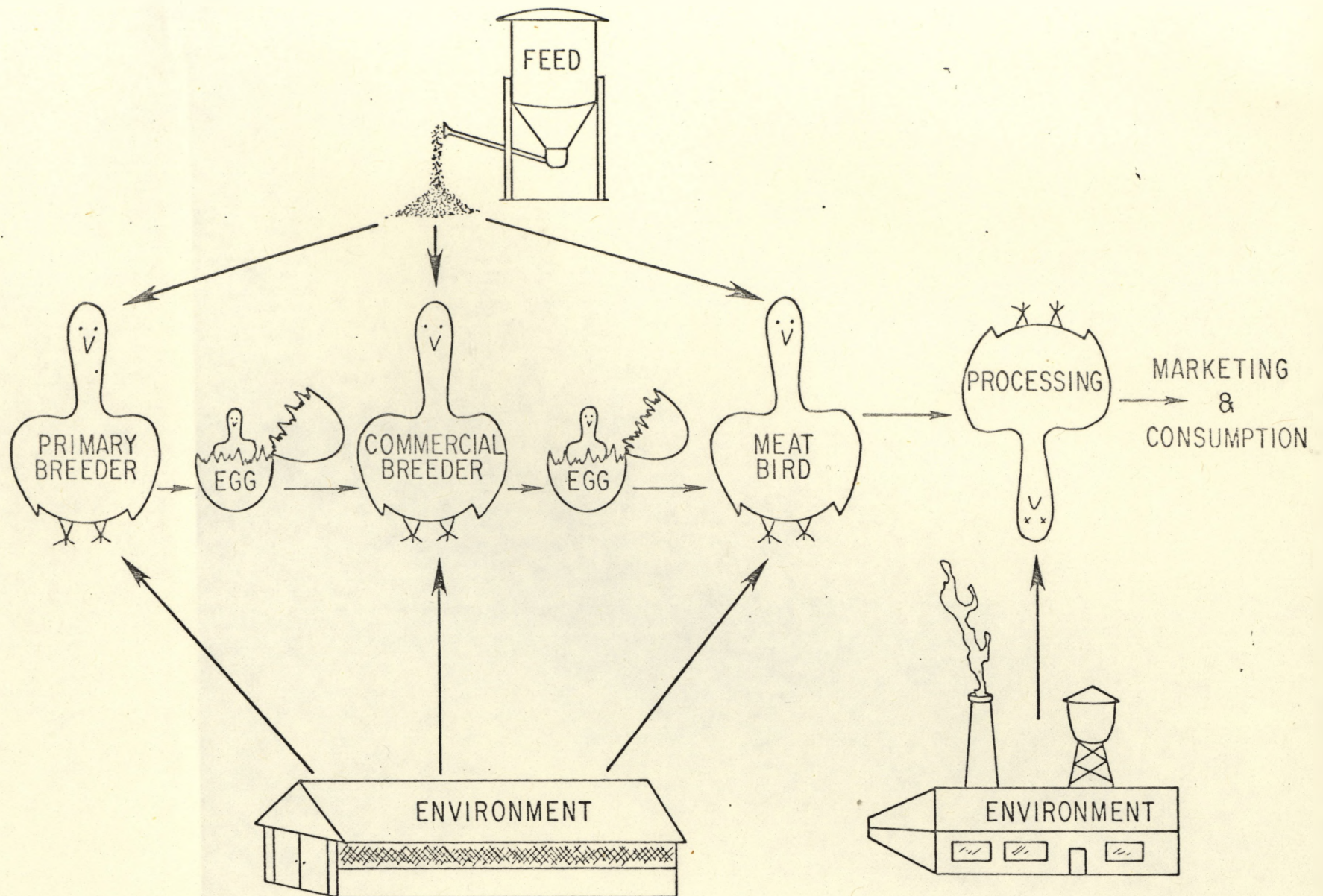
a. Eradication

or

b. Enlightened marketing of known contaminated products

F. ERADICATION OF PARATYPHOID FROM TURKEYS — The goal of a paratyphoid eradication program in turkeys is the production of salmonella-free turkey products for consumption. To achieve this goal requires the elimination of all factors contributing to the perpetuation of infection in all segments of the industry including primary breeding, commercial egg production, commercial meat production and processing. These factors are egg transmission, environmental contamination and feed contamination. (See figure #1). It is totally irresponsible and wrong to consider regulations to eradicate paratyphoid infections in one segment of the industry without similar regulations in the total industry. The achievement of salmonella-free turkey products for human consumption can come about only through a highly integrated, intense, mandatory industrywide effort — a regulatory program of a scope never contemplated before.

TURKEY SALMONELLOSIS-MAJOR PRODUCTION FACTORS CONTRIBUTING TO INFECTION AND CONTAMINATION



Two of these factors perpetuating the current presence of paratyphoid infection in turkeys pose particularly formidable obstacles to the achievement of eradication. They are:

1. Feed Contamination — An eradication program cannot be effective and should not be initiated until all segments of the industry can be guaranteed the availability of salmonella-free feed. Intense developmental research must be initiated to bring about the means to eliminate feed contamination.

2. Environmental Contamination — The ability to maintain turkeys free of salmonella in present day commercial production environments will be extremely difficult due to the inability to sterilize large buildings, range areas, etc. Intense work is needed to develop the means to correct this situation prior to initiating an eradication program.

The third factor, elimination of egg transmission, is within our capability to achieve today. The utilization of effective egg shell sanitation and egg drug treatments to produce negative nucleus populations of primary breeding strains from infected primary breeding pedigree stock and the maintenance of subsequent generations through test and slaughter methods will effectively and efficiently eliminate egg transmission. This state can only be maintained, however, in turkeys being fed uncontaminated feed and raised in an uncontaminated environment. The initiation of the test and slaughter method for control of egg transmission prior to feed and environmental control would be folly and ineffective. This has been conclusively demonstrated in the Dillon's Beach Project.

The entire industry — breeding, growing and processing — must prepare for eradication concurrently. Standards for environmental sanitation, feed sanitation and prevention of egg transmission must be equal at all levels of production. In other words, the commercial meat growout segments must be able to guarantee their ability to maintain turkeys free of salmonella

prior to demanding salmonella negative poult from the commercial breeder. Likewise, the primary breeder cannot be asked to produce negative breeding stock if the commercial breeder cannot guarantee the ability to maintain its negative status. The processor must also be able to guarantee their ability to prevent contamination of the negative stock flowing into the plants.

Realistically, it can be seen that the eradication of salmonella from turkey products will be extremely difficult to achieve and not possible in the immediate future principally because of feed and environmental contamination problems. Attachment #1 "A Program for Eradication of Salmonella Infection in Turkeys and Turkey Products" is an example of the type of regulations necessary for eradication.

Until the time arises that these obstacles to eradication are overcome, it is recommended that paratyphoid control measures in the production segments of the industry be based on the following interim program:

1. Primary Breeding and Commercial Breeding Phase
 - a. Breeder flock premise sanitation
 - b. Hatching egg shell sanitation
 - c. Hatchery sanitation
 - d. Day-old poult injection or hatching egg treatment with antibiotics
 - e. Brooding and growing premise sanitation and husbandry
 - f. Use of pelleted feed
2. Commercial Meat Production
 - a. Brooding-growing premise sanitation and husbandry
 - b. Use of pelleted feed

During the "Interim Program" period, the public health hazards of salmonella contaminated turkey products, which will be prevalent, should be dealt with as a part of an intensive public education program informing

society of the actual problems of salmonella contamination of all food products and how this problem can be effectively avoided.

This "Interim Program" would provide effective control of the potential economic losses of salmonella infection and reduce the hazards to public health. Attachment #2 "Interim Control Program for Paratyphoid Infection and/or Contamination in Turkey and Turkey Products."

G. IMPLEMENTATION OF CONTROL PROGRAMS —Effective implementation of an "Interim" or "Eradication" program for salmonellosis will require close, effective working relationships between industry and regulatory agencies with program responsibility. It is recommended that the "United States Poultry Health Program" (Attachment #3) be utilized as a framework for development and implementation of any national salmonella program for turkeys.

Attachment #1

Eradication of Paratyphoid Infection and/or Contamination
from Turkeys and Turkey Products

(Draft in process of being written)

Attachment #2

Interim Control Program for Paratyphoid Infection
and/or Contamination in Turkey and Turkey Products

I. GENERAL — The goal of the "Interim" program is to eliminate the economic losses associated with paratyphoid infection in turkeys, to contain the level and potential spread of residual infection and/or carcass contamination during processing, and effective education of the public in the means to avoid illness from contaminated turkey products.

II. PRODUCTION OF DAY OLD POULTS FOR BREEDER FLOCK REPLACEMENT AND/OR MEAT PRODUCTION

A. Breeder Premise Sanitation — All premises and facilities utilized in the brooding, growing and breeding of turkeys utilized to produce hatching eggs shall be sanitized prior to placement of new populations and maintained in a sanitary manner after such placement. The method of sanitation shall be one acceptable to the (agency overseeing the program) and monitoring procedures will be utilized to assess effectiveness. These methods will include:

1. Houses — Walls, ceilings and floors scrubbed of dirt and debris and disinfected.

2. Outside pens and dirt floors — soil soaked with formalin or other suitable soil sanitizing substances or methods.

3. Nests — Sanitized prior to new season with nesting material replaced periodically during the breeder season or, in the case of materials such as washed river pebble, sanitized periodically in a manner acceptable to the (agency).

4. Vector control — Vectors of contamination such as rodents, birds, reptiles, people, equipment, etc. should be controlled and/or sanitized in a manner acceptable to (agency).

B. Hatching Egg Shell Sanitation — Eggs will be collected and the shells immediately sanitized at the breeder farm level in a manner acceptable to (agency). Following initial handling at the hatchery and within 24 hours of onset of incubation, the egg shells will be re-sanitized in a manner acceptable to (agency). Monitoring procedures will be utilized to access effectiveness to (agency). Methods of sanitation will include:

1. Fumigation

2. Liquid Disinfectants

3. Antibiotic Treatment — use prohibited if decreased effectiveness of drugs needed for eradication results from such use.

C. Feed Sanitation — All feed fed to potential breeder and breeder populations must be pelleted in a manner acceptable to (agency). Monitoring procedures will be utilized to access effectiveness.

D. Breeder Husbandry Practices — Recommendations involving brooding, growing and breeding, such as ventilation, temperature control, nutrition and insemination practices will be outlined by (agency) to reduce possible losses from paratyphoid.

E. Hatchery Sanitation — Hatchery grounds, buildings, equipment and personnel will be kept in a sanitary manner acceptable to (agency). Monitoring procedures will be utilized to access effectiveness.

F. Hatching Egg Drug Treatment and/or Day-Old Poult Inspection — Use of antibiotic therapy to counteract egg transmitted infection by pre-incubation treatment of the hatching eggs or individual treatment of the newly hatched poults shall be done in a manner acceptable to (agency). Use of drugs which will result in reduced effectiveness of antibiotics needed for eventual eradication programs will be prohibited.

G. Breeder Flock Infection Monitoring — Testing as deemed necessary by (agency) will be carried out for the purpose of determining infection only. Flock slaughter will not be part of this "Interim Program."

III. PRODUCTION OF MEAT TURKEYS

- A. Premise Sanitation — to be written
- B. Feed Sanitation — to be written

IV. PROCESSING OF TURKEY MEAT

- A. Premise Sanitation — to be written
- B. Infection Containment Procedures — to be written

V. CONSUMER EDUCATION

- A. Facts about Salmonellosis in All Animals
- B. Safe Utilization of Contaminated Products for Consumption

THE UNITED STATES POULTRY HEALTH PROGRAM

A Proposal From California Concerning National Poultry Health
Presented to NTF Summer Meeting, San Diego, June 26, 1975
by R. H. McCapes

It is proposed that the "United States Poultry Health Program" be formed for the purpose of implementing uniform and effective programs for:

1. The eradication of undesirable exotic diseases of poultry introduced from foreign countries.
2. The eradication of those domestic poultry diseases for which the technology for eradication and the justification for eradication exists.
3. The control of various poultry diseases for which the technology to eradicate does not exist or the justification to eradicate does not exist, but the need for and the technology for the control of such diseases does exist.

These purposes would be accomplished through cooperative efforts of the United States Department of Agriculture, the Departments of Agriculture of each state and each of the nation's poultry industries (broilers, egg type chickens, turkeys, game birds and waterfowl).

The structure of the USPHP would be such as to assure:

1. Efficient and effective industry relationships with all levels of the APHIS veterinary services of the USDA.

2. Efficient and effective industry relationship with each State Department of Agriculture's veterinary services.
3. The effective and equitable industry representation in decision making processes affecting national poultry health programs.

The proposed structure of the USPHP is shown on page number 1 of the appendix (USPHP Structure). The regional breakdown of the U. S. would follow APHIS, USDA regions. Each of the four poultry industries will have a separate program with liaison occurring at a national level and optionally at a state level. The turkey section of the USPHP is shown as an example. The broiler, egg type chicken, and the game bird and waterfowl industries would have similar programs.

The structure of the USPHP would be as follows:

1. State Turkey Health Advisory Board
 - a) This board would be made up of four industry members¹, two of which represent the turkey hatching egg industry and two of which represent the commercial meat producing industry.
 - b) This would be the official industry advisory board to the State Department of Agriculture and the area office of the veterinary services of APHIS, USDA.
 - c) The State Director of Agriculture (or his equivalent) would select the members from a slate of names nominated by the industries involved. All members must be participants in USPHP programs.
 - d) Duties of the state advisory boards would be:
 - 1) Assist in the coordination of USPHP on a state basis.

¹ Industry member - A person actively employed by or who has ownership in the turkey industry.

- 2) Suggest changes in present programs to Regional Turkey Health Advisory Boards and the U. S. Turkey Health Advisory Board (USTHAB).
- 3) Determine state's position on proposed changes and designating state's voting rights on such proposals to be considered at the biennial meeting of the turkey section of the U. S. Poultry Health Program.
- 4) Selection of representatives to serve on the Regional Turkey Health Advisory Board.
- 5) Appoint a Technical Advisory Committee.
- 6) Conduct a meeting once a year to include officials of the area office of APHIS and officials of the State Department of Agriculture and any participant of the USPHP.
- 7) Hold periodic statewide hearings and elections concerning any proposed program requiring mandatory participation of all industry members.

2. Regional Turkey Health Advisory Board

- a) This board will be made up of 1 representative from the hatching egg industry and 1 representative from the meat growing industry from each state.
- b) This board will be the official industry advisory board to the regional office of the veterinary services of APHIS, USDA.
- c) Duties of the regional board would be:
 - 1) Maintain effective industry relationships with the regional office of the veterinary services of APHIS, USDA.

- 2) Assist in the coordination and implementation of regional programs for the control and eradication of turkey health diseases.
- 3) Consider regional problems.
- 4) Discuss proposed changes in the USPHP.
- 5) Select regional representatives to the U. S. Turkey Health Advisory Board.
- 6) Conduct annual meetings chaired by an official of the regional office of the veterinary services of APHIS.
- 7) Appoint a Technical Advisory Committee.

3. U. S. Turkey Health Advisory Board

- a) This board will be made up of 1 representative from the hatching egg industry and 1 representative from the meat growing industry of each region.
- b) This board will be the official Industry Advisory Board to the United States Department of Agriculture in the area of turkey disease control.
- c) Duties of this board will include:
 - 1) Maintain effective relationships between industry and the veterinary services of APHIS, USDA.
 - 2) Assist in the coordination and implementation of national programs for the control and eradication of turkey diseases.
 - 3) Conduct biennial meetings of the turkey section of the USPHP to consider proposals for changes from state and regional advisory boards and other sources. Each state advisory board with one or more votes may send an official delegate to cast its vote(s) or may designate the delegate from another state to represent them.

- 4) Conduct annual meetings chaired by an official from the veterinary services of the APHIS central office.
- 5) Select representatives to serve on the U. S. Poultry Health Program Coordinating Committee.
- 6) Recommends to the USDA programs adopted by majority industry vote for the control or eradication of designated turkey diseases.
- 7) Appoint Technical Advisory Committee.

4. U. S. Poultry Health Program Coordinating Committee

- a) This committee would be made up of 1 representative from the hatching egg segment and 1 representative of the commercial (meat or egg) segment of each of the 4 U. S. industry advisory boards (broilers, egg type chickens, turkeys, game birds and waterfowl).
- b) This committee will be the official coordinating committee between the 4 poultry industry advisory boards to the USDA.
- c) Duties of this board will include:
 - 1) Maintain effective relationships between the 4 U. S. poultry industries in the area of disease control.
 - 2) Provide liaison to assure compatible disease control programs within the 4 poultry industries.
 - 3) Conduct an annual meeting to be chaired by an official of the central office of the veterinary services of APHIS, USDA.

A state's voting rights will be determined by the following method:

1. Voting rights will be evenly divided on a national basis between the commercial meat growing segment of the industry and the hatching egg segment of the industry.
2. Utilizing the publication "Agricultural Statistics" published by USDA. The total number of turkeys raised in the U. S. during the marketing season prior to the biennial February meeting of the turkey section of the USPHP (September through August 31---see appendix pages 2 and 3) will be divided by the total number of breeder hens on the farm as of December 1 two years prior to the year of the conference. The resulting figure will represent the average number of turkeys hatched per breeder hen and also how many meat birds equals one breeder hen in voting rights. This number multiplied by 10,000 would give the basic number of meat birds necessary to increase a state's vote by one.

a) Examples of voting rights to be held by states for a February, 1973 turkey section conference of USPHP would be:

1) Total U. S. turkeys Sept. 1--Aug. 31, 1972 128,808,000
 Total U. S. turkey breeders on farm Dec. 1, 1971 3,370,000
 $128,808,000 / 3,370,000 = 38.5$ poults hatched/breeder hen

2) California

Meat Bird Votes -

$17,636,000 / 385,000 = 48.4$ votes

Breeder Votes -

$\frac{771,000 \times 38.5}{385,000} = \frac{77.1}{125.5}$ votes

3) Minnesota

Meat Bird Votes -

$$20,880,000/385,000 = 54.2 \text{ votes}$$

Breeder Votes -

$$\frac{481,000 \times 38.5}{385,000} = \frac{48.1 \text{ votes}}{102.3}$$

4) Maine

Meat Bird Votes -

$$4,000/385,000 = 1.0^* \text{ votes}$$

Breeder Votes -

$$\frac{0.0 \times 38.5}{385,000} = \frac{0.0 \text{ votes}}{1.0}$$

b) Appendix page 4 shows the relative voting right of each state based on the 1972 marketing season.

c) Appendix pages 5 and 6 show the relative voting rights of the 5 APHIS regions based on the 1972 marketing season.

The general philosophy of the USPHP is to establish a vehicle to carry out effective national programs for the improvement and protection of poultry health and to do so through orderly processes having full support and understanding of the industries involved and the regulatory agencies involved. It is an interest of the program to avoid unilateral decision making by regulatory agencies or industry groups in the area of national poultry health programs.

Participation in the USPHP by industry would be mandatory in all programs directed towards eradication of designated exotic or domestic diseases. Participation in control programs of designated

* Minimum of 1 vote/producing state

domestic diseases will be either mandatory or voluntary, depending on the nature of the program as recommended by the various industry national advisory boards.

Responsibility for supervision and implementation of the programs of the USPHP will be with the veterinary services of APHIS, USDA and cooperative agreements with State Departments of Agriculture.

Costs of the program will be borne by the poultry industries involved through a per bird assessment. Such assessment fees will provide for costs incurred by APHIS, State Departments of Agriculture, staff of advisory boards, and expenses of advisory boards or coordinating committee members.