

January 2006

Dear Parents and Youth Educators:

The purpose of this letter is to shed some light on concerns that individuals have expressed about the Chick Embryology program in pre-school and elementary classrooms. The main concerns that we have heard are concerns about avian influenza and salmonella.

The majority of 4-H Educators and teachers who use 4-H Embryology lessons obtain fertile eggs from commercial hatcheries that are cleaned and sanitized each week. These commercial hatcheries are periodically tested for disease organisms by in-house technicians and by the New York State Department of Agriculture and Markets. The inspection system is linked to a National Poultry Improvement Plan that is a federal/state/industry partnership to guarantee disease free eggs.

Health inspections are standard practices poultry breeders use to monitor their egg producing farms and hatcheries on a regular basis and institute best management practices to reduce the possibility of Salmonella organisms; due to their keen interest, in food safety. The egg also possesses its own defense mechanisms. There are egg white proteins such as conalbumin and avidin that are antimicrobial in that they either chelate iron needed by bacteria for growth (conalbumin) and bind biotin (avidin) that is also needed by some bacteria for growth. There are some other enzymes, i.e., B-acetylglucosaminidase, that is thought to be inhibitory against gram-negative bacteria such as Salmonella. Besides these chemical barriers there are also the physical barriers such as the cuticle, shell, and shell membranes that physically keep out bacteria. The shell membranes are known to contain several of the chemical inhibitors (lysozyme and B-acetylglucosaminidase) that may act to inhibit invading organisms. The pH of the egg white is also inhibitory to some organisms (alkaline) as well as the viscosity of the egg white may retard the movement of microorganisms. All of these factors plus the maternal and chick immune system help to control microorganisms.

It is scientifically documented that rodents are mechanical vectors of Salmonella, specifically mice moving in and out of food animal production facilities. Thus, poultry companies use a variety of rodent control systems to reduce Salmonella infection risk. In the public school system, especially in the classroom setting, rodents do not present a risk. The classroom chick is basically hatching from a semi sterile environment. Since newly hatched chicks in the classroom are not put into a poultry house on litter, with feed, and with thousands of other chicks, the likelihood of them having Salmonella even in their feces is very small.

**The 4-H Embryology Curriculum recommends and advocates that all children thoroughly wash their hands before and after handling fertile eggs, live chicks, or any**

**live animal.** If Salmonella is still a concern, fertile eggs can be sanitized before placing them in an incubator. A diluted bleach solution (1 part bleach to 10 parts water) can be lightly misted on eggs with a spray bottle prior to setting in the incubator. The 4-H Embryology Curriculum advocates and highly recommends that incubators be thoroughly cleaned with a mild disinfectant after the project is completed.

The 4-H embryology program has been underway for over 30 years in the New York school systems, yet to our knowledge, Salmonella infection from kids who handled these eggs or chicks has not been reported. The collective numbers of children (e.g. 50,000/year x 30 years = 1,500,000 kids!!!) that have been involved, and the fact that none have ever been reported to become sick from being involved is important to keep in mind. In addition, over 400,000 youth are involved in 4-H Embryology each year nationwide.

Neither do people get sick from handling eggs in their kitchens except when they mishandle them by leaving them at room temperature for long periods of time which allows the small numbers of bacteria that might be present in the egg to multiply to where, if not cooked properly, they might receive an infective dose.

Lastly, there are many types of flu viruses, classified according to their ability to cause disease. The great majority of avian influenza viruses (AIVs) are of low pathogenicity. **The H5N1 Asian Human/Avian Influenza virus is not present in the American Continent.**

Americans consume an average of over 200 eggs per person per year. While eggs are important sources of protein in the diet, an estimated 1 in 20,000 eggs in the U.S. supply will contain the Salmonella Enteritidis (SE) bacteria and can cause illness if not thoroughly cooked before consumption. The federal agencies responsible for ensuring the safety of eggs, under the auspices of the President's Council on Food Safety, have jointly developed an Action Plan to eliminate SE illnesses due to the consumption of contaminated eggs. We don't have the statistics on breeder eggs for SE but we do know the incidence is much smaller for SE.

If after all that has been presented, there was still a concern, schools could get disposable gloves to wear when handling chicks. Sources for donations are numerous. Please let us know if you need further information regarding this or other questions related to the 4-H Embryology program. We would also be pleased to answer any questions that might arise.

Sincerely,

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Cc: Barbara Schirmer, Assistant Director, State 4-H Youth Development Program Leader