

North Carolina Cooperative Extension Service

NC STATE UNIVERSITY

College of Agriculture and Life Sciences

Department of 4-H Youth Development
Campus Box 7606
Raleigh, North Carolina 27695-7606
919.515.3242(phone)
919.515.7812 (fax)

May 11, 2006

TO: 4-H Agents



FROM: Dr. Marshall Stewart
Department Head
4-H Youth Development

Dr. Sam Pardue
Department Head
Poultry Science

RE: Response to concerns from Dr. Linda Stroud regarding the 4-H Embryology School Enrichment Program

1. Liability: Teachers must be aware that they are liable for any diseases that may result from handling the eggs or the chicks. Examples are:
 - A. Salmonellosis: When children handle the eggs and chicks, they may be exposed to the bacteria *Salmonella, sp.* The liability issue results from the child developing salmonellosis, the disease caused by the bacteria.
 - B. Histoplasmosis: The environment where the chicks are housed may have feces that have been contaminated with the fungus *Histoplasma capsulatum*. The liability issue results from the child developing histoplasmosis, the disease caused by the fungus. A second risk develops from the spores that may form. The spores may become airborne and the disease may result from inhaling the contaminated air. Should the spores get into the schools ventilation system, the contamination may become school wide.

The zoonotic potential for Salmonella is and always will be of some concern. That being said, it is not unmanageable. Salmonella populations must be present in sufficient numbers to produce disease. Simple hand washing and disinfection of the surfaces where birds have contact are sufficient to keep Salmonella populations very low or absent. (Drs. Donna Carver and Brian Sheldon)

Histoplasmosis while a potential issue is most often associated with bats and other mammals. While birds have been diagnosed with histoplasmosis, it is very rare in commercial poultry. In fact, I have never seen a case of histoplasmosis in poultry. I consider the risk of contracting histoplasma from an embryology project very low. (Dr. Donna Carver)

2. All incubators used in the classroom must meet UL (Underwriters Laboratory) approval to ensure proper safety compliance. Accidents resulting from incubators without UL approval increase liability.

The safety of the incubator is being addressed. GQF manufacturing has developed an incubator that will both have a grounded plug and a flame retardant. The incubator has been submitted to Underwriters Laboratories for approval. It should be noted, that in 30 years of Embryology programming, not a single incubator has caught fire or caused a fire (Dr. Ed Maxa)

3. Hand washing: Children tend to be more susceptible to the spread of diseases from animals due to a lack of proper hand washing techniques. Children tend to put their hands in their mouth and on their face after handling the animals without washing their hands. When encouraged to wash their hands, students must use proper hand washing techniques, i.e. wash hands for a minimum of 15 – 20 seconds with warm water. The water supply is usually limited for elementary classrooms. Children must not use communal buckets as a water supply. Clean, flowing water is best for washing hands.

We agree that proper hand washing techniques should be taught as part of the curriculum, and view this as a life skill that students may not get in other classes or with other projects. The instructions in the workers manual should clearly outline procedures for effective hand washing and sanitizing. The question of whether the students will use warm water in hand washing should not necessarily increase their risks. Using a good detergent soap and following that up with one of the commercial hand sanitizer gels or sprays should effectively reduce the microbial risks.

Proper classroom instruction of these techniques including following recommended personal hygiene practices should be taught. Part of the discussion should be what is reasonable risk? There doesn't exist a zero risk scenario in our opinion. Limited or controlled risk yes, but not the elimination of it. With the eggs & chicks, Salmonella is a risk. Does the risk rise to the level that we would eliminate a very successful and educational program? Although students learn better by active participation in the project (i.e., touching, seeing, etc.), minimizing physical contact with eggs and chicks would reduce the risks of exposure. This might be achieved by using disposable gloves (however, even the smallest glove size may not fit their hands) when contacting eggs or chicks or using more teacher demonstrations. (Drs. Pardue, Carver, and Sheldon).

The current curriculum is currently up for revision and we have the opportunity to make suggestions. I will send to the coordinator of the project the need for hand washing instructions. The current curricula have 5 places in which hand washing is mentioned. (Dr. Maxa)

4. Use of chicken eggs is not in the North Carolina Standard Course of Study. Teachers must be willing to assume the liability of implementing programs not covered in the NC SCS.

Although the use of chicken eggs is not specifically mentioned in the SCOS, they are a viable option for teaching some of the concepts in the SCOS. It is my understanding that the SCOS is a guide for what needs to be accomplished but not necessarily the means by which it should be accomplished

5. Today's youth are growing up in a more sterile environment, which may produce a weaker immune response to infectious microbes. Therefore, children may be more susceptible to the diseases they may encounter when handling the eggs and baby chicks.

There is no direct and validated evidence to support the claim that we are growing up in a more sterile environment and thus more susceptible to disease. We are all exposed to an array of microorganisms every day and including our own normal resident microflora. For example, food

borne disease has been a problem for generations and continues to be a significant problem both in the U.S. and in most undeveloped countries. (Dr. Sheldon)

School Enrichment became an official delivery mode of the NC 4-H Program in 1987. Since that time 574,964 elementary aged youth have been documented to have been through the program until individual counts of participation stopped in 2004. During that time there have been no instances of problems associated with the program and it enjoys wonderful support from dedicated teachers, who recognize the curricula as a tool to assist them in reaching their students.

Responders:

Dr. Sam Pardue – Department Head, Poultry Science

Dr. Brian Sheldon – Professor and Department Extension Leader, Poultry Science

Dr. Donna Carver – Extension Veterinarian, Poultry science

Dr. Ed Maxa – Associate Professor and Department Extension Leader, 4-H Youth Development

A meeting was held with Beverly Vance and Bonnie Curtis, Educational Consultants, Mathematics/Science Section Elementary Education Division on April 21, 2006 concerning the concerns and responses. Local Education Agencies (LEA's) will individually decide as to whether the Embryology Program will be offered within their respective schools. The information contained in this letter can be used in presenting a case for embryology. It is noted that the Department of Public Instruction Attorney did not rule as to what constitutes acceptable risk and deferred this to the LEA's.