Biosecurity refers to a series of practices designed to prevent disease-causing organisms from coming in contact with resident birds on the farm. It begins with isolating the farm from off-farm disease agents and continues with the isolation of individual chicken houses from agents that are on the farm. Biosecurity is the most efficient and cost-effective method of disease prevention available. Disease management and eradication are difficult and expensive alternatives to a failed disease prevention program.

28-A. COMPONENTS OF BIOSECURITY

- Isolation
- Traffic control
- Sanitation

Isolation refers to time, distance, and physical barriers that reduce or prevent entry onto the farm and or into the poultry house. Traffic control includes restricting human, equipment, and animal movement onto the farm, and movement patterns while on the farm. Sanitation refers to the cleaning and disinfection of poultry houses, people, materials, and equipment (see Cleaning and Disinfecting of Poultry Facilities, Chapter 29).

28-B. THE NATURE OF PATHOGENS

All biosecurity programs should take into consideration the nature of pathogens in terms of their level of infectivity for chickens and their ability
to survive in the environment. Infectivity and survivability affect the level of biosecurity that should be employed and the exclusion methods that are needed. Pathogens are transmitted in the following ways:

- Fecal to oral
- Aerosol
- Mechanical vectors
- Biological vectors

Infective viruses, bacteria, and parasites transmitted by the fecal-to-oral route are shed in the feces of infected sources (birds and other animals) and then are consumed by susceptible chickens. Pathogens that are transmitted by the aerosol route travel in microscopic droplets of moisture and dust particles and are inhaled. Mechanical transmission occurs when the pathogen is carried on the surface of people and their clothing, equipment, wild animals, or insects and brought into physical contact with a susceptible chicken. Biological vectors carry the pathogen in their bodies and transmit the disease either by being consumed by the bird, by biting the bird, or through the spread of infectious particles, usually in the feces. Biological vectors are living animals that are themselves infected with a disease agent. Some examples of biological vectors that can spread disease in chicken flocks are mosquitoes (fowlpox), rats and mice (Salmonella), and wild-migrating water fowl (avian influenzae).

The level or extent of on farm biosecurity efforts should be based on a balance between disease risk and cost. During times of high risk, biosecurity efforts should be reinforced but can be more routine during normal risk periods. Determination of high and normal risk should be made based on disease surveillance in the surrounding area as well as the purpose and value of the flock (commercial chickens vs breeders), the age of the flock (young chickens vs older chickens near market age), and on farm management factors such as housing style (open sided vs closed environmentally controlled houses).

28-C. THE IMPORTANCE OF ISOLATION

Isolation can be considered in terms of time (the amount of time between depopulating and refilling a poultry house or farm), distance between farms or houses on a farm, and physical barriers (fences, showers, foot baths) all of which limit the spread of disease agents.

Time

There should be ample time separating succeeding flocks on a premise to prevent the transmission of pathogens. Under normal conditions, two