Biosecurity refers to management measures taken to prevent disease agents from being introduced and spreading to and/or from animal populations or their proximity.

Why do I need to be aware of biosecurity?
Economically speaking, it is worth it because it:

- Minimizes risk of new disease,
- Controls and eradicates existing diseases, and
- Increases consumer confidence in the final product.

Biosecurity has three main components. These are:

1. **Isolation** = the confinement of animals away from other animals.
2. **Traffic control** = movement of people, animals, vehicles and equipment.
3. **Sanitation/Husbandry** = cleanliness and care of animals and their environment.

1. Isolation: the confinement of animals away from other animals.

The most common way that new diseases are introduced into a flock is through new animal additions. New animals and animals returning from exhibitions should be quarantined from resident animals for 4 weeks to allow for incubation periods of certain diseases.

Isolation areas (buildings and pens) should not share the same airspace as resident animals. A distance of 100 feet, if feasible, should separate buildings and pens. The farther away new animals are kept away from resident animals, the better the isolation will be.

During the isolation period:

- Animals should be observed closely. A veterinarian should promptly examine those showing any sign of illness.
- Animals can be tested for specific diseases of concern.
- It is the appropriate time to vaccinate and treat for internal and external parasites.
- Other preventative health measures should also be performed during this period.

* All feet should be trimmed, inspected for foot rot and foot bathed in a 10% zinc sulfate solution.
* New purchases should not be allowed to join the resident sheep until they have been tested and proven to be free of drug-resistant (anthelmintic) internal parasites or worms. (Your veterinarian can assist you with this test, also known as the fecal egg count reduction test.)
Strict precautions should be taken to avoid spreading contaminants:

- Equipment should not be shared between isolated animal areas and resident animal areas.
- People tending these animals should take precautions to avoid spreading disease agents from the

isolated animals to other animals and equipment.

Precautions include hand washing, wearing different clothing and footwear, disinfecting feeding and watering equipment and other fomites.

Before adding animals to your flock remember these principles:

- The health status of the source flock/s should be evaluated. Ask specific questions about the diseases that concern you. Find out specifics about management practices that might affect the flock's health.
- Number of source flocks should be minimized.
- It is best to use a "closed" flock of verifiable good health status as the source for flock additions. A "closed" flock is defined as one where new animals have not been brought in for three or more years.

2. Traffic Control: movement of people, animals, vehicles and equipment.

Flock owners and employees should avoid taking biosecurity risks with their own livestock. These include:

a. Exposure of the owner or employees to other flocks or other livestock. Be a good neighbor!Don't carry diseases from your place to someone else's place. Avoid unnecessary animal contact when visiting other livestock facilities. Take precautions so you don't carry diseases back to your own place. Change overalls or clothes in between farms. Also either clean and disinfect your boots before entering and when leaving another livestock premises or wear disposable plastic boot covers. Dispose of plastic boots at the farm when your visit is finished.
Require all visitors to maintain strict sanitation standards. Assess risk factors posed by visitors and take steps to limit their contact with your animals and premises. Do not allow visitors to enter pens or feed alleys, or touch animals unless necessary. Disposable boots or boot washing stations should be available for visitors and required to be used. Provide visitors with protective coveralls and disposable boots or make thorough boot washing and disinfection required before and after the visit.

a. Poor traffic control (vehicle and personnel) and poor sanitation of vehicles, equipment and clothing may lead to the introduction of disease and is a breach of biosecurity.Livestock haulers, feed delivery trucks, dead-stock haulers, etc., should be allowed limited access, and should be held to strict sanitation standards. These standards vary between operations and their physical set-up; however the principles include:

- Keep visiting vehicles at a distance (and down-wind) from livestock concentration areas.
- Make separate routes for visiting vehicles versus that farm/ranch's routine livestock and operation traffic, if at all possible and practical.
- Commercial livestok hauling vehicles should be cleaned and disinfected prior to entering your facility to load your livestock.

Shearing crews should sanitize their equipment between flocks and wear freshly laundered clothing and clean, disinfected footwear.

Veterinarians, brand inspectors and others who may have close contact with your animals should be very

aware of the need for sanitation and take appropriate sanitary measures for their footgear, outerwear and equipment. They should arrive in clean vehicles and wear protective clothing or boots that can be changed or disinfected before leaving.

3. Sanitation: the practice of maintaining a clean, healthy environment for animals.

Keep things clean and picked up! Good sanitation is a necessity in biosecurity.

- Regularly cleaning and disinfecting equipment with appropriate disinfectants;
- Providing proper and timely removal and disposal of manure;
- Providing for the prompt removal and appropriate disposal of dead animals supports the other aspects of biosecurity; and
- Rodent, pest and insect control assists in preventing the spread of disease.

Disinfectants are commonly used on vehicles and boots as well as feeding, manure handling and shearing equipment.

- Disinfectants should be used AFTER cleaning the item.
- Disinfectant(s) used should be active in hard water and in the presence of organic material.
- They should also be relatively non-toxic and inexpensive and still be effective against a broad spectrum of pathogens.
- The ortho- and chlorophenyl phenols, such as Amphyll, Wexcide, One Stroke Environ and others meet these criteria.

* One Stroke Environ is available in many farm stores and veterinary supply houses.

* Vikron S is a relatively new compound now available in many farm supply outlets. It is active against many viruses and bacteria, and the manufacturer indicates that it can be used on a variety of types of equipment. It comes as a powder that must be mixed with water before use, and the powder must be kept in a sealed container.

* Common bleach can be a good disinfectant for clean, relatively non-porous surfaces where there is little organic matter contamination. It is usually mixed at about 4 ounces of bleach per gallon of water. Bleach can cause rusting; it should not be used on galvanized surfaces, and should not be used with ammonia-containing compounds because this may generate toxic fumes.

- This is not an all-inclusive list and there are other products that you can learn about by viewing Web sites.
- Extension staff, state veterinarian and state veterinary labs can also be a source of information.
- Contact your local practitioner for detailed disinfectant recommendations for your operation.

Always follow the label when using disinfectants. Many of them will need to be rinsed off the surface if animals, or their food will have intimate contact.

Husbandry: the care of animals and their environment.

Husbandry is associated with care of animals, but is defined as the management of resources. Poor husbandry practices facilitate disease transmission within and between flocks. Animals in good physical condition will have a better chance recovering from disease and may be more resistant to challenges from minor disease.

- Always provide good nutrition. Work with your veterinarian and extension specialist/feed-mill nutritionist to ensure that your sheep have all their nutritional needs met.
- Always provide a clean source of feed and water. Routinely clean and disinfect common equipment used for feeding and cleaning.
- Exercise good insect control. Check with your local veterinarian for effective products.
- Know the source and quality of your feed and feed ingredients and assess the risk that feed might introduce disease to your flock.
- Immediately isolate sick animals away from the rest of the flock. Animals with infectious diseases may be shedding millions of doses of infectious agents daily that will contaminate the environment.

Husbandry is associated with care of animals, but is defined as the management of resources. One way of managing resources is by performing your own risk assessment. When conducting your risk assessment regarding biosecurity, realize that if it is not practical it will not be a success. Take into account when conducting your risk assessment for the following practicalities:

- How much biosecurity you need.
- Use common sense.
- Measure the economics of a plan.
- Consider your ability to enforce your biosecurity plan.
- Be committed.
- Don't over-react to news headlines; seek the facts on reported issues. However, be aware of specific risks, specific to your farm, and educate yourself about those diseases that might pose a threat to you or your flock. Learn to recognize their signs and what you could do to prevent them from occurring.
- Be alert to anything suspicious, including requests for information about your farm from people you don't know and unusual vehicle traffic.
- Watch for new or unrecognized illnesses.
- Increased or unexplained death loss is a "red flag" and warrants immediate investigation (Frequent observation of your livestock is important in reducing risks),

- Don't be complacent... we do live in a changed and volatile world; we are food and fiber producers and we can't take security for granted. Find out whom to contact in the event of an animal health emergency; your veterinarian, the state veterinarian's office, the APHIS'AVIC in your state and/or your local emergency management agency.
- Conducting your own risk assessment can be done with or without your veterinarian. Your veterinarian can be very helpful in assessing your farm situation. Questions to ask when conducting your own risk assessment:
- Do you add new animals to your flock?
- How near are other sheep or goat flocks, and, are they up-wind and above you in a watershed?
- What other kinds of livestock are nearby?
- What kinds of wildlife are nearby?
- What diseases are endemic in your flock that you are already "living with?"
- Presence of pets, predators and scavengers? Animals may act as the vectors of disease agents and carry contaminated materials to/from your place.
- Do you sanitize your footgear and outerwear after your visit other operations or livestock concentration areas?
- Does your vehicle(s) likely carry disease agents from other locations back to your operation?

Use your veterinarian to assist you in developing a biosecurity plan. Routine consultation by an impartial eye can spot areas that might become a problem. Plan a routine flock health program with your veterinarian that includes vaccination and other disease prevention measures; it is less costly and more economical than cleaning up problems. Have your veterinarian perform necropsies on a regular basis to alert you to developing problems - it provides answers and eliminates guesswork. Follow import/export requirements for your flock that you and your veterinarian establish together.

Biosecurity is important in maintaining good flock health. If you have questions regarding biosecurity, contact your local veterinarian, agricultural extension agent or state veterinarian