CHAPTER 4.14.

GENERAL RECOMMENDATIONS ON DISINFECTION AND DISINSECTION

Article 4.14.1.

General provisions

Veterinary Authorities are requested to draw up regulations in their respective countries concerning the use of disinfectants and insecticides on the basis of the principles described below:

1) The choice of disinfectants and of procedures for *disinfection* should be made taking into account the causal agents of *infection* and the nature of the premises, *vehicles* and objects which are to be treated.

2) Disinfectants and insecticides should be authorised only after thorough tests have been carried out under field condition.

3) The following should be considered:

   a) few universal disinfectants exist;

   b) whereas hypochlorite, which is very often used, may be regarded as a universal disinfectant, its effectiveness is diminished by prolonged storage and it is therefore necessary to check its activity before use; a concentration of 0.5% active chlorine appears necessary for satisfactory *disinfection*;

   c) no matter what substances are used, *disinfection* techniques should comprise the following:

      i) thorough soaking of bedding and litter as well as faecal matter with the disinfectant;

      ii) washing and cleaning by careful brushing and scrubbing of the ground, floors and walls;

      iii) then further washing with the disinfectant;

      iv) washing and disinfecting the outside of *vehicles*; these procedures will be carried out, if possible, with liquids applied under pressure and the washing, disinfecting or destroying of articles used for tying up the *animals* (ropes, reins, etc.) should not be omitted.

Article 4.14.2.

Pathogen-specific disinfection

1) Foot and mouth disease virus is easily destroyed by a high or low pH but the disinfectants used may be caustic or corrosive in concentrated form.

2) Mycobacteria are very resistant to disinfectants and a high concentration is required to destroy the organisms, as well as prolonged action.

3) *Bacillus anthracis*

   a) In situations in which manure, dung or bedding may be contaminated with *Bacillus anthracis (B. anthracis)* spores, the following are recommended:

      i) small volumes by incineration; or

      ii) chemothermal treatment by composting as follows:

         – mix with one of the following at a rate of 1–1.5 litre/m³;

            – 10% formaldehyde (approximately 30% formalin), or

            – 4% gluteraldehyde (pH 8.0–8.5);

         – turn the material after five weeks;

         – leave for a further five weeks.

         [Note: Spontaneous combustion of the composting pile is possible. Also note: Formalin is a dangerous chemical and as such the appropriate personal protective equipment should be used and safety training on the handling of this chemical should be provided.]

b) In situations in which liquid manure (slurry) may be contaminated with *B. anthracis* spores, *disinfection* with formalin (35% aqueous solution of formaldehyde) with stirring for one hour daily is recommended:

   i) for slurry up to 5% dry matter, 50 kg formalin per m³ for 4 days;

   ii) for slurry >5% and <10% dry matter, 100 kg formalin per m³ for 4 days.

   [Note: Formalin is a dangerous chemical and as such the appropriate personal protective equipment should be used and safety training on the handling of this chemical should be provided.]

c) In situations in which surfaces in animal houses, stables, *vehicles*, etc. may be contaminated with *B. anthracis* spores, the following three-step approach is recommended:

   i) a preliminary *disinfection* should be carried out using one of the following disinfectants at a rate of 1–1.5 litres/m³ for 2 hours;

      – 10% formaldehyde (approximately 30% formalin); or

      – 4% glutaraldehyde (pH 8.0–8.5);

   ii) all surfaces should be washed and scrubbed using ample hot water and, when cleaned and waste water is free from dirt particles, dried;

   iii) a final *disinfection* step should be carried out using one of the following disinfectants applied at a rate of 0.4 litre/m³ for 2 hours;

      – 10% formaldehyde (approximately 30% formalin), repeated after one hour; or

      – 4% glutaraldehyde (pH 8.0–8.5), repeated after one hour; or

      – 3% hydrogen peroxide; or

      – 1% peracetic acid, repeated after one hour; or

      – 5–10% sodium hypochloride solution.

   [Note: Formaldehyde and glutaraldehyde should not be used at temperatures below 10°C. Hydrogen peroxide and peracetic acid are not suitable in the presence of blood. As with all chemicals the appropriate personal protective equipment should be worn and appropriate safety training should be provided to staff handling dangerous chemicals.]

d) Contaminated rooms which cannot be cleared before cleaning and *disinfection* can be fumigated to eliminate *B. anthracis* spores. The following procedure is recommended:

   i) all windows, doors and vents to the outside should be sealed with heavy adhesive tape; and

   ii) for rooms up to 30 m³, 4 litres of water containing 400 ml of concentrated formalin (37% w/v formaldehyde) in an electric kettle (with a timing switch to turn it off) should be boiled away and the room left overnight. Room temperature should be >15°C.

   [Note: Formaldehyde fumigation is hazardous and proper respirators should be on hand for operator safety. The effectiveness of the fumigation process should be verified by exposing dried discs of filter paper which have been dipped in a suspension of spores of B. subtilis *var.* globigii *or* B. cereus *or Sterne vaccine strain of* B. anthracis *and placed in the room before fumigation is started. At the end of fumigation, the discs should be placed on nutrient agar plates containing 0.1% histidine and incubated overnight at 37°C. If fumigation has been effective, there will be no bacterial growth.]*

NB: FIRST ADOPTED IN 1976; MOST RECENT UPDATE ADOPTED IN 2014.