(4) Seal each plate with a plastic sealer or place unsealed in a tight incubation box as described in ''Applied Microbiology,'' volume 23, No. 5, May 1972, pages 931–937. Incubate at 37 °C. for 18–24 hours.

(5) Read the test results as described in paragraph (f) of this section.

(e) The recommended procedure for a microagglutination test titration is as follows:

(1) Add 50 microliters (0.05cc.) of 0.85 percent physiological saline to each well of the microplate.

(2) To the wells representative of the lowest dilution in the titration, add an additional 50 microliters (0.05 cc.) of 0.85 percent physiological saline making a total of 100 microliters in these wells.

(3) Transfer each serum sample as described in §147.5(d)(2) of this section to the first well containing 100 microliters (0.10cc.) in the titration, which represents the lowest dilution.

(4) Make twofold serial dilutions of each serum by transferring 50 microliters (0.05cc.) of diluted serum from one well to the next using twelve 50 microliter microdiluters fitted in a multimicrodiluter handle. When transfers have been made to all of the wells of the desired series, the 50 microliters remaining in the microdiluters are removed by blotting, touching the microdiluters to the surface of the distilled water wash, and blotting again.

(5) Dilute the desired microtest antigen with 0.50 percent phenolized saline and add 50 microliters (0.05 cc.) to each microplate well.

(6) Seal each plate with a plastic sealer or place the unsealed microplates in a tight incubation box and incubate at 37 °C. for 18–24 hours.

(7) Read the test results as described in paragraph (f) of this section.

(f) Read the test results with the aid of a reading mirror. Results are interpreted as follows:

(1) N, or − (negative) when the microplate well has a large, distinct button of stained cells; or

(2) P, or + (positive) when the microplate well reveals no antigen button; or

(3) S, or ? (suspicious) when the microplate well has a small button. Suspicious reactions may tend to be more positive than negative [±] or vice versa [∓] and can be so noted if desired.

(Approved by the Office of Management and Budget under control number 0579–0007)

[41 FR 48726, Nov. 5, 1976. Redesignated at 44 FR 61586, Oct. 26, 1979, and amended at 57 FR 57342, Dec. 4, 1992; 59 FR 12799, Mar. 18, 1994; 59 FR 67617, Dec. 30, 1994; 61 FR 11521, Mar. 21, 1996; 63 FR 3, Jan. 2, 1998; 67 FR 8469, Feb. 25, 2002; 76 FR 15797, Mar. 22, 2011]

§ 147.6 Procedure for determining the status of flocks reacting to tests for Mycoplasma gallisepticum, Mycoplasma synoviae, and Mycoplasma meleagridis.

Procedures for isolation and identification of Mycoplasma may be found in Isolation and Identification of Avian Pathogens, published by the American Association of Avian Pathologists; Kleven, S.H., F.T.W. Jordan, and J.M. Bradbury, *Avian Mycoplasmosis* (*Mycoplasma gallisepticum*), Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Fifth Ed., Office International des Epizooties, pp 842–855, 2004; and §§147.15 and 147.16.

(a) The status of a flock for Mycoplasma shall be determined according to the following criteria:

(1) If the tube agglutination test, enzyme-labeled immunosorbent assay (ELISA), official molecular examination procedure, or serum plate test is negative, the flock qualifies for the classification for which it was tested.

(2) If the tube agglutination, ELISA, or serum plate test is positive, the hemaglutination inhibition (HI) test or a molecular examination procedure shall be conducted: *Provided*, for the HI test, that if more than 50 percent of the samples are positive for *M. gallisepticum*, *M. meleagridis*, or *M. synoviae*, the HI test shall be conducted on 10 percent of the positive samples or 25 positive samples, whichever is greater. HI titers of 1:40 or more may be interpreted as suspicious and appropriate antigen detection samples should be taken promptly (within 7 days of the original sampling) from 30 clinically affected birds and examined by an approved cultural technique individually, or pooled (up to 5 swabs per test) and used in a molecular examination procedure or in vivo bioassay.

(3) If the in vivo bioassay, molecular examination procedure, or culture procedure is negative, the Official State Agency may qualify the flock for the classification for which it was tested. In the event of contaminated cultures, the molecular examination technique must be used to make a final determination.

(4) If the in vivo bioassay, molecular examination procedure, or culture procedure is positive, the flock will be considered infected.

(b) [Reserved]

[40 FR 1504, Jan. 8, 1975. Redesignated at 44 FR 61586, Oct. 26, 1979]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §147.6, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.fdsys.gov*.

§ 147.7 Standard test procedures for mycoplasma.[5]

The serum plate agglutination test, the tube agglutination test, and the enzyme-linked immunosorbent assay (ELISA) test should be considered basic screening tests for mycoplasma antibodies. The test selected will depend on preference, laboratory facilities, and availability of antigen. These three tests, though quite accurate, determine flock status rather than individual bird status, since occasional reactions are nonspecific. Under normal circumstances, the rate of such nonspecific reactions is low. Nonspecific reactions may occasionally be high, particularly after the use of erysipelas bacterin in turkeys and where mycoplasma antibodies are present for closely related mycoplasma other than for the species being tested. The hemagglutination inhibition (HI) test is too cumbersome for routine screening use. Positive reactions are extremely accurate however, and are useful in evaluating serum samples that react with the ELISA, plate, and/or tube antigens. The test should be conducted with 4 HA units. Titers of 1:80 or greater for both chicken and turkey sera are considered positive, while a 1:40 or 1:20 titer would be strongly suspicious and additional tests should be required.

(a) *Serum plate agglutination test.* (1) The serum plate agglutination test for mycoplasma is conducted by contacting and mixing 0.02 ml of test serum with 0.03 ml of serum plate antigen on a glass at room temperature. The standard procedure is:

(i) Allow antigen and test serums to warm up to room temperature before use.

(ii) Dispense test serums in 0.02 ml amounts with a pipette or standardized loop (rinsed between samples) to 1½ inch squares on a ruled glass plate. Limit the number of samples (no more than 25) to be set up at one time according to the speed of the operator. Serum should not dry out before being mixed with antigen.

(iii) Dispense 0.03 ml of antigen beside the test serum on each square. Hold antigen dispensing bottle vertically.

(iv) Mix the serum and antigen, using a multimixing device if large numbers are to be run at one time.

(v) Rotate the plate for 5 seconds. At the end of the first minute, rotate the plate again for 5 seconds and read 55 seconds later.

(2) A positive reaction is characterized by the formation of definite clumps, usually starting at the periphery of the mixture. Most samples that are highly positive will react well within the 2-minute test period. Reactions thereafter should be considered negative, although partial agglutination at 3 and 5 minutes may warrant further retesting. High-quality antigen contacted with negative serum will usually dry up on the plate without visible clumping. Whenever samples are run, the antigen should be tested against known positive and negative control serums. Standard reference antigens and negative and positive titered sera are available from the National Veterinary Services Laboratories (NVSL), P.O. Box 884, Ames, Iowa 50010.

[5] For additional information on mycoplasma test procedures, refer to the following references: Proc. 77th Annual Meeting, U.S. Animal Health Association, 1973; Isolation and Identification of Avian Pathogens, 3rd Edition; Methods for Examining Poultry Biologics and for Identifying and Quantifying Avian Pathogens, 1991.