**Section 1422.125 Periodic Verification Tests**

a) The effectiveness of the treatment unit is verified by the Periodic Verification Tests. The manufacturer, owner, or operator of a treatment unit must perform Periodic Verification Tests that satisfy at least one of the following:

1) Passing the Initial Efficacy Test by using Option 1, 2, or 3 (see Appendix A) (whichever is applicable). The three challenge loads described in Appendix A, Table C do not need to be used. The test microorganisms or indicator microorganisms must be placed in a representative load in compliance with Section 1422.124(e)(1). For example, an autoclave may use Option 3 (e.g., demonstrate the destruction of 1,000,000 Bacillus stearothermophilus spores) to meet the Periodic Verification Test requirement. In the case of an incinerator, a stainless steel pipe with threaded ends and removable caps lined with a ceramic insulation may be used to contain a glass culture vial with Bacillus subtilis spore strips. The pipe with the spore strips may be placed in a load of PIMW for the Periodic Verification Test. After the treatment, the pipe with the spore strips may be recovered and the spores may be cultured to assess whether 1,000,000 spores have been destroyed to meet the Periodic Verification Test requirement.

2) Correlating the log kill of the test microorganisms in the Initial Efficacy Test to an equivalent log kill of the indicator microorganism spores in compliance with Appendix B. The equivalent log kill of the indicator microorganism spores must be used for all subsequent Periodic Verification Tests. The correlation must be done with the three challenge loads identified in Appendix A, Table C. (See subsection (b) for further requirements.); or

3) Submitting and obtaining written approval by the Agency for a procedure that is equivalent to subsection (a)(2).

A) Examples of alternatives include use of another indicator microorganism or measurement of disinfectant concentrations in the treated residue.

B) For incinerators only, an example of an alternative is visually inspecting the ash from each load of treated PIMW to ensure that all PIMW within the load is completely combusted.

C) The approval of an alternative by the Agency may require more frequent testing and monitoring of the treatment unit.

b) For the Correlating Periodic Verification Test, which provides the correlation of log kill of the test microorganisms with the equivalent log kill of the indicator microorganisms, the following procedures apply:

1) Use an initial population of 1,000,000 indicator microorganism spores per gram of waste solids in each challenge load;

2) Use the fraction of surviving indicator microorganisms that correlates to a log kill of six for each test microorganism in future Periodic Verification Tests.

A) For example, if a log kill of four for the indicator microorganism spores per gram of waste solids is achieved during this demonstration, then a population of 10,000 of the indicator microorganism must be used in all future Periodic Verification Tests.

B) For future Periodic Verification Tests, the three challenge loads described in Appendix A, Table C do not need to be used.

C) The test microorganisms or indicator microorganism spores must be placed in a representative load in compliance with Section 1422.124(e)(1);

3) The minimum threshold death rate is an equivalent log kill of three for the indicator microorganism spores to ensure that all test microorganisms are destroyed;

4) Test microorganisms or indicator microorganisms must be cultured and enumerated compliant with instructions provided by the supplier of the microorganisms and Standard Methods for the Examination of Water and Wastewater (see 35 Ill. Adm. Code 1420.103); and

5) The Periodic Verification Test and the Initial Efficacy Test may be run concurrently to verify the correlation.

c) If a load of PIMW fails a Periodic Verification Test, the Periodic Verification Test must be repeated.

1) The operator must implement the quality assurance program (see Section 1422.122(a)(4)) and contact the manufacturer, if applicable, to identify and correct the problem or problems until the unit can eliminate the infectious potential of the PIMW.

2) If the operating parameters are altered, another Initial Efficacy Test must be performed to demonstrate the effectiveness of the unit and, if applicable, another Periodic Verification Test correlation, under subsection (a), must also be repeated.

3) Loads of PIMW that were first processed prior to receiving results showing a failure of the Periodic Verification Tests are considered treated.

4) A second Periodic Verification Test must be run immediately after the first Periodic Verification Test indicates a failure. The second Periodic Verification Test is to determine whether the treatment unit is eliminating the infectious potential of the waste.

5) After the second Periodic Verification Test shows a failure of the treatment unit, the processed waste is considered PIMW and must be managed in compliance with this Subtitle.

d) Results of the Period Verification Tests must be received, verified, and made available for inspection by the Agency within two weeks of when the test was conducted. When a Periodic Verification Test is used to confirm the failure of a treatment unit, the results of the Periodic Verification Test must be received, verified, and made available for inspection by the Agency within one week of when the test was conducted. Results of Periodic Verification Tests must be made available in compliance with the requirements of subsection (g).

e) Periodic Verification Tests must be conducted monthly or more frequently if required by the permit or recommended by the manufacturer.

f) A Document of Correlating Periodic Verification Demonstration must be prepared by and kept at the treatment facility, and must be available at the treatment facility during normal business hours for inspection and photocopying by the Agency. The Document of Periodic Verification Demonstration must include:

1) A detailed description of the test procedures used and documentation showing the correlation between the log kill of the test microorganisms and the equivalent kill of the indicator microorganism spores. An evaluation of the test results must include: All test data generated, with description of data handling, and a presentation and interpretation of final test results;

2) A detailed description of the operating parameters (e.g., temperatures, pressures, retention times, chemical concentrations, irradiation dose, and feed rates);

3) A description of quality assurance and quality control procedures and practices for the culture, storage, and preparation of test or indicator microorganisms (including organism history, source, stock culture maintenance, and enumeration procedures). The purity of the test microorganisms or indicator microorganism spores must be certified by a commercial or clinical laboratory;

4) A description of microorganism preparation and packaging, challenge load weight and composition, unit testing scheme (numbers of test rows), and sampling strategy (e.g., number and weight of solid and liquid samples);

5) A description and demonstration of microorganism recovery including sample processing, incubation, and effective neutralization, and absence of toxic compounds due to neutralization;

6) Appendices containing raw data and assumptions in tabular form;

7) The name, date, signature, title, and qualifications of the person or persons conducting the Periodic Verification Test; and

8) A list of references used to evaluate the data and obtain the conclusion.

g) Records of Periodic Verification Tests must be prepared by and kept at the treatment facility, and made available at the treatment facility during normal business hours for inspection and photocopying by the Agency. These records must include:

1) The dates the Periodic Verification Tests were performed;

2) Operating parameters (e.g., temperatures, pressures, retention times, chemical concentrations, irradiation dose, and feed rates);

3) Test protocols;

4) Evaluation of test results; and

5) The name, date, signature, title, and qualifications of the person or persons conducting the Periodic Verification Tests.

h) Periodic Verification Tests must be conducted under the same operating conditions the treatment unit operates on a day-to-day basis. The feed rate for the treatment unit is the maximum feed rate at which the unit operates on a day-to-day basis. The feed rate must remain constant throughout the Periodic Verification Test. This feed rate must never be exceeded during the operation of the treatment unit.

(Source: Amended at 43 Ill. Reg. 10072, effective August 30, 2019)