ISSUE PAPER

NSF standard(s) impacted: NSF/ANSI 6

Purpose and background:

NSF/ANSI Food Equipment Standards include performance tests that involve a microbial challenge suspension to be applied to food contact surfaces at a minimum density. In order to ensure all food contact surfaces are exposed to the minimum density, positive control samples should be collected at the dispense point of the equipment. The annexes of the standards have procedures for analyzing control samples but lack the specific details of where they are taken and how they are applied.

Recommendation:

6.1 Cleaning and sanitization procedures

6.1.1 Performance requirement

The cleaning and sanitization procedures recommended by the manufacturer shall effectively clean and sanitize the food contact surfaces of the dispensing freezer.

NOTE — This requirement applies to manual cleaning and sanitizing procedures used in conjunction with mechanical sanitization and to CIP procedures recommended by the manufacturer.

6.1.2 Test method

Microbiological methods for stock culture preparation, and enumeration / analysis *Escherichia coli* (ATCC [8] #11229), shall be performed as specified in Annex N-1.

6.1.2.1 The equipment shall be filled with the *E. coli* and product mix suspension.

If a remote product supply system is being tested, the product supply lines shall be configured to the manufacturer's recommended installation restrictions (see Section 7.3) indicated in the manual prior to testing.

6.1.2.2 The equipment shall be operated so that food contact surfaces are exposed to the *E. coli* and product mix suspension. If a remote product supply system is being tested, the remote line set shall be filled with E. *coli* and product mix suspension so that all food contact surfaces are exposed (i.e., no air in remote line set). E. *coli* and product mix suspension shall be dispensed through the equipment, collecting three 200-mL positive control samples from the dispense point to ensure the entire food contact flow path is exposed to sufficient challenge. The average of the positive control samples shall serve as the initial inoculum density (Ni).

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6.1.2.3 The equipment shall then be ~~CIP~~ cleaned in place according to the manufacturer's instructions and refilled with sterile buffered dilution water (SBDW). The SBDW shall be dispensed and five ~~1~~200-mL samples shall be collected at intervals from the start of the dispensing until the unit is empty. When adequate sample volumes cannot be realized, more SBDW shall be added accordingly. The equipment shall then be operated so that food contact surfaces intended for CIP are exposed to the SBDW. Sufficient SBDW shall then be dispensed. The challenge organisms present in each sample shall be collected and enumerated using the Standard Total Coliform Membrane Filter Procedure in accordance with APHA *Standard Methods for the examination of Water and Wastewater.*[6]

6.1.3 Acceptance criteria

For each sample, the total counts on the initial inoculum density (*Ni*) of at least 1,000,000 (1×10^6) and the total counts on the colony-forming units (cfus) recovered (*Nf*) shall demonstrate a reduction equal to or greater than 99.9999% (6 log). The log reduction, *R*, is calculated from the following equation:

R = log10 (Ni / Nf) where

Ni = initial inoculum density (cfu/mL)
Nf = the number of cfu recovered in each sample(cfu/mL)

If $Nf < 1$, the samples shall be considered acceptable.

[6] American Public Health Association, American Water Works Association, and Water Environment Federation.
<www.standardmethods.org>

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Supplementary materials (photographs, diagrams, reports, etc.):

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**Type written name will suffice as signature*

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