8.6 Chemical feeders and generators

Samples for the testing of chemical feeders and generators shall be selected according to the requirements of Annex B, sections B2.3 and B 4.1. Chemical feeder and generator samples shall be conditioned as indicated in Annex B 4.3. Following conditioning the samples shall be exposed as indicated in Annex B, Section B.4.4.3. Normalization shall be as specified in Annex B, section B.8.5.

8.6.1 Solid chemical feeders

Solid chemical feeders shall be evaluated only with the specific types of chemical formulations and forms that are recommended by the feeder manufacturer. The specific chemical formulation shall also comply with the requirements of NSF/ANSI 60: Drinking Water Treatment Chemicals – Health Effects. The manufacturer shall include information regarding the specific chemical and form for which the product is certified and shall also include a warning in their installation, maintenance and operating instructions or dataplate, regarding the dangers of misuse that could result from using the wrong chemical or form, and whether or not such use would render the warranty invalid.

8.6.2 Cu/Ag generator electrodes

In addition to the evaluation of the chemical generator under 8.6, the electrodes for Cu/Ag generator shall be evaluated for potential non-silver and non-copper contaminants in accordance with B.4.4.3.2.

The normalized concentration of contaminants shall be calculated in accordance with 8.5.1 and shall be no greater than their respective SPACs, determined in accordance Annex A.

8.6.3 Chemical feeders for building water systems

In addition to evaluating the contribution of chemical contaminants to drinking water, chemical feeders for building water systems shall be evaluated for the control of the intentionally dosed chemical(s) to prevent exceeding the manufacturers stated maximum use level which shall not exceed the total allowable concentration of the chemical in accordance with Annex A.
The device label shall identify the maximum use level for the dosage of the treatment chemical.

A direct means of controlling chemical feed or generation shall be provided.

The product use instructions shall identify a recommended monitoring frequency for measuring the concentration of the dosed chemical(s) at each representative outlet.

Product use instructions and literature referencing NSF 61 shall specify that: NSF 61 addresses health effects only and does not address the disinfection efficacy of the product.

Annex B

B.4.3 Conditioning

Conditioning shall be conducted either in the device or in a vessel. Table B7 provides examples of typical exposures for the various products covered by this section. The test samples shall be preconditioned by exposure at room temperature 23 ± 2 °C (73 ± 4 °F) to the extraction water used for testing (Annex B, section B.2.5) for 14 d or less if specified by the manufacturer. The water shall be changed at least 10 times (during the 14-d conditioning period), or fewer if specified by the manufacturer. There shall be a minimum period of 24 h per exposure. Chemical feeders and generators are conditioned per manufacturer’s instructions.

B.4.4.3 Chemical feeder and generator exposure

B.4.4.3.1 Complete devices

Complete devices shall be operated per manufacturer’s instructions until target dose levels are achieved. The unit is then turned off for a minimum of 4 hour period. The samples shall be exposed to the appropriate drinking water treatment chemical or chemical mixture for a minimum of 4 h (or for a longer period as recommended by the manufacturer) at 23 ± 2 °C (73 ± 4 °F). For devices that normally operate at lower or higher temperatures, the exposure shall be at the normal operating temperature. The extractant shall be collected in a vessel appropriate for shipping and storage. For chemical feeders, a sample of the chemical prior to feeding shall be collected if possible. For chemical generators, samples of the raw precursor chemicals if applicable shall be collected. For all devices where the extractant is a mixture of water and the chemical(s), a sample of the influent water shall be collected and preserved as described in Annex B, section B.6. Analysis of the extractant shall be in accordance with the requirements of NSF/ANSI 60. Samples of the chemicals prior to feeding samples of raw materials, and influent water samples, shall be analyzed for background levels of contaminants only if, after
normalization, the concentration of a contaminant(s) exceeds the SPAC (Annex B, section B.8.5.2).

**B.4.4.3.2 Components of chemical feeders and generators exposure**

The samples shall be exposed to the appropriate drinking water treatment chemical or chemical mixture for a minimum of 4 h (or for a longer period as recommended by the manufacturer) at 23 ± 2 °C (73 ± 4 °F). For devices that normally operate at lower or higher temperatures, the exposure shall be at the normal operating temperature. The extractant shall be collected in a vessel appropriate for shipping and storage. For chemical feeders, a sample of the chemical prior to feeding shall be collected if possible. For chemical generators, samples of the raw chemicals shall be collected. For all devices where the extractant is a mixture of water and the chemical(s), a sample of the influent water shall be collected and preserved as described in Annex B, section B.6. Analysis of the extractant shall be in accordance with the requirements of NSF/ANSI 60. Samples of the chemicals prior to feeding samples of raw materials, and influent water samples, shall be analyzed for background levels of contaminants only if, after normalization, the concentration of a contaminant(s) exceeds the SPAC (Annex B, section B.8.5.2).

**B.4.4.3.3 Cu/Ag generator electrodes**

In addition to the evaluation of the chemical generator under B.4.4.3.1, the electrodes for Cu/Ag generator shall be evaluated for potential non-silver and non-copper contaminants.

**B.4.4.3.2.1 Sampling**

Samples from components can be obtained by various methods, such as drilling, turning, sawing, or milling. Where possible, blend material from a minimum of three areas taken at random locations across the electrode, so as to obtain a sample that is representative of the properties of the entire unit. With the exception of very large parts, test pieces should be drilled or sawn completely through in order to avoid over- or underrepresentation of the center portion.

**B.4.4.3.2.2 Sample preparation**

Dissolve a minimum of 1.0 gram of sample in accordance with U. S. EPA SW-846 Method 3050B, Method 3052, or equivalent. Other applicable sample preparation methods may be employed, provided that adequate performance can be demonstrated for the analytes and matrices of interest.

Analysis of the dissolved sample for the analytes of interest shall be performed in accordance with section 7.

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B.8.5.1 Normalization of Cu/Ag electrode contaminants

The following normalization equation shall be used to estimate the normalized concentration of a contaminant in finished drinking water (mg/L) based on the concentration of the contaminant in the electrode (mg/kg).

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NF = \frac{\text{Copper maximum use level (mg/L)}}{\text{Copper content of electrode (mg/kg)}}
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