



**Summary of Substantive Changes between
the 2019 and the 2020 editions of
NSF/ANSI/CAN 60 “Drinking Water Treatment Chemicals – Health Effects”**

Presented to the IAPMO Standards Review Committee on December 7, 2020

General: The changes to this standard may have an impact on currently listed products. The substantive changes are:

- Revised and added some tamper evidence requirements for packaged products (see Sections 3.9.2, and 3.9.3)
- Updated the labeling requirements for sodium hypochlorite products (see Section 6.3.3)
- Added biological substrate as an acceptable chemical for use in drinking water applications, and added its definition (see Sections 7.1, and 7.2)
- Added 3-chloro-1,2-propanediol to the minimum test battery for poly products (epichlorohydrin / dimethylamine) (polyamines) (polyelectrolytes) (see Table 4.1)
- Added bromochlorodimethylhydantoin (BCDMH) and chlorine dioxide to the list of disinfection and oxidation products (see Table 6.2)

Section 3.9, Product security: Revised and added some tamper evidence requirements for packaged products as follows:

3.9.2 Security requirements for packaged products

Packaged product shall be stored, shipped, and delivered in ~~tamper-evident~~ T/E packaging as defined in Section 3.9.1. Properly constructed, labeled, and sealed multi-wall containers such as bags, fiber drums, and multi-layer stretch-wrap / shrink-wrap / pallet sleeves with T/E labeling, T/E tape, or unique features constitute three forms of acceptable ~~tamper-evident~~ T/E packaging.

Smaller containers do not require individual T/E seals when shipped in a larger container from the manufacturer with acceptable seals or closures on the larger container, as noted in the prior paragraph, provided the smaller containers are not intended to be sold individually as certified product (i.e., not labeled for individual sale / use for drinking water applications). Valve bags are an exception and it is permissible to label them for individual sale as described in Section 3.9.2.1.

3.9.2.1.1 Individual bags with valve closures

Individual bags that utilize valve closures do not require T/E seals when shipped in a larger container from the manufacturer with acceptable seals or closures on the larger container as noted in Section 3.9.2. (See Annex I-5 for photo example.) It is permissible to label individual valve bags for sale, including labeling according to Section 3.5.



3.9.3.1 Tamper-evident (T/E) seals

Containers used for bulk shipments shall have tamper protection provided at all openings capable of loading or unloading chemicals. Vents shall have tamper protection provided, unless they are protected by construction that makes them incapable of receiving chemicals. Bulk containers may be sealed with a uniquely numbered, nonreusable ~~tamper-evident T/E seal~~, or a T/E seal which contains a unique company identifier or logo, on each opening in the container. If ~~tamper-evident T/E seals~~ are used, the seals shall remain in place until removed at the point of delivery. Seal numbers, or the unique company identifier or logo, shall be recorded and disclosed on shipping documents provided to the purchaser at the time of delivery and kept available for review by the certification body. If ~~tamper-evident T/E seals~~ are used in milk run deliveries, a new seal shall be applied after each partial off-loading and noted in the consignment records after each partial delivery.

Section 6, Disinfection and oxidation chemicals: Updated the labeling requirements for sodium hypochlorite products as follows:

6.3.3 Required labeling for sodium hypochlorite products (production dates and repackage dates)

6.3.3.1 ~~Manufacturer's use instructions~~

Because aged solutions of sodium hypochlorite may contain elevated levels of chlorate and perchlorate, certification listings, ~~and the manufacturer's use instructions, or documentation supplied with the product that reference this Standard~~, shall reference the recommended handling and storage practices contained in AWWA B300 – Hypochlorites.

6.3.3.2 ~~Production dates and repackaging dates~~

For sodium hypochlorite products, the manufacturing date, and if applicable the repackaging date, for the product shall be included on the documentation supplied with any shipment. This alerts the end user of the bleach product age, as aged solutions of sodium hypochlorite may contain elevated levels of chlorate and perchlorate. Reference the AWWA B300 Standard Appendix: Recommendations for the Handling and Storage of Hypochlorite Solutions for additional information.

Section 7, Miscellaneous treatment applications: Added biological substrate as an acceptable chemical for use in drinking water applications, and added its definition as follows:

7.1 Coverage

This section covers those chemicals, chemical compounds, blends, and mixtures intended for use in a variety of drinking water applications. These uses include fluoridation, defluoridation, algae control, dechlorination, antioxidants, dyes, biological substrate, and tracers. These products are generally applied directly to the water supply. Residuals of chemicals used for fluoridation, algae control, dyes, and tracers are likely to persist in the finished drinking water. Chemicals used for dechlorination, defluoridation, and antioxidation, and biological substrate are intended to be consumed by reaction, and residuals of these products are not likely to be found in the finished drinking water.

7.2 Definitions

7.2.3 biological substrate: a product added to the water treatment process to serve as an electron donor for reduction reactions in biological treatment systems.



Table 4.1, Coagulation and flocculation products – Product identification and evaluation: Table 4.1 was revised to add 3-chloro-1,2-propanediol to the minimum test battery for poly (epichlorohydrin / dimethylamine) (polyamines) (polyelectrolytes).

Table 6.2, Disinfection and oxidation products – Product identification, and evaluation: Table 6.2 was revised to add bromochlorodimethylhydantoin (BCDMH) and chlorine dioxide to the list of disinfection and oxidation products. A new footnote was added as follows:

⁵ *Based on mg of dry chemical and a bromochlorodimethylhydantoin SPAC of 9 mg/L*

Table 7.1, Miscellaneous treatment application products – Product identification, and evaluation: Table 7.1 was revised to add acetic acid (biological substrate) and citric acid. New footnote was added as follows:

⁵ *Based on a weight to weight ratio of 1:1 between copper sulfate pentahydrate and citric acid monohydrate.*

Table 8.1, Miscellaneous water supply products – Product identification and evaluation (limited contact): Table 8.1 was revised to add organic acid (citric acid). A new footnote was added as follows:

⁵ *Based on a weight to weight ratio of 1:1 between copper sulfate pentahydrate and citric acid monohydrate.*

Figure 14, Example of outer packaging providing tamper evidence for valve bags via stretch-wrap / shrink-wrap or pallet sleeves. This figure was added to Informative Annex 5.

Figure 15, Example of valve bag. This figure was added to Informative Annex 5.