TO: Joint Committee on Drinking Water Additives – Treatment Chemicals
FROM: France Lemieux, Chair of the Joint Committee
DATE: March 24, 2020
SUBJECT: Proposed revision to NSF/ANSI/CAN 60 – Drinking Treatment Chemicals – Health Effects (60i89r1)

Revision 1 of NSF/ANSI/CAN 60, issue 89 is being forwarded to the Joint Committee for consideration. Please review the proposal and submit your ballot by April 14, 2020 via the NSF Online Workspace <www.standards.nsf.org>.

Purpose

The proposed revision will add chlorine dioxide to the list of disinfection and oxidation products in Table 6.2.

Background

NSF has received requests to certify chlorine dioxide solutions for certification. Chlorine dioxide is evaluated under NSF/ANSI/CAN 60, Section 6, but is not listed in the Tables therein, and does not have an established TUL. Chlorine dioxide has an established MRDL (maximum residual disinfectant level) of 0.8 mg/L per 40 CFR 141.65. NSF/ANSI/CAN 600 adopted the 0.8 mg/L MRDL as the TAC, and SPAC was set at 0.08 mg/L.

Chlorine dioxide is typically used as a primary disinfectant or as an oxidizing agent in water treatment. Thus, much of the chlorine dioxide is consumed during the disinfection process. Per US EPA, 70% of chlorine dioxide is typically converted to chlorite during drinking water treatment. Chlorite is a regulated disinfection by-product (DBP) limited to 1 mg/L in drinking water by both US EPA and Health Canada. Thus, US EPA recommends chlorine dioxide treatment be limited to 1.4 mg/L to control chlorite formation. Health Canada recommends chlorine dioxide treatment be restricted to 1.2 mg/L, likewise to control chlorite formation. Utilizing the 70% conversion rate from ClO2 to ClO2-, both treatment doses convert to <1.0 mg/L chlorite ion. Per these considerations, a TUL of 1.4 mg/L may be adopted for municipal applications.

The minimum test analytes shall include metals and VOCs, which is consistent with starting reactants sodium chlorite and sodium chlorate in Table 6.2.

This issue was presented at the 2019 DWA-TC JC meeting and approved for balloting. Please refer to the 2019 JC meeting summary excerpt and the original issue paper (DWA-60-2019-6) under the referenced items for additional information.
If you have any questions about the technical content of the ballot, you may contact me in care of:

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6 Disinfection and oxidation chemicals

6.8 Evaluation of contaminant concentrations

The normalized concentration of each contaminant shall be no greater than the SPAC determined in accordance with the requirements of NSF/ANSI/CAN 600 (previously Annex A).

The following table is a generic listing of the types of products covered in this section of the standard. This table is not intended to be a complete list of all products used for disinfection and oxidation applications. Inclusion of a product does not indicate either a use endorsement of the product or an automatic acceptance under the provisions of this Standard. Annex I-3 includes a cross-reference index of the various chemicals (and the more common synonyms) contained in this table.
### Table 6.2

Disinfection and oxidation products – Product identification, and evaluation

<table>
<thead>
<tr>
<th>Chemical type (primary use)</th>
<th>Synonyms</th>
<th>Formula (CAS number)</th>
<th>Molecular weight (g)</th>
<th>Preparation method</th>
<th>Typical use level (mg/L)</th>
<th>Minimum test batteries of chemistry-specific analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>chlorine^10 (disinfection &amp; oxidation)</td>
<td>chlorine gas</td>
<td>Cl₂ (7782-50-5)</td>
<td>71.0</td>
<td>Method E, Annex N-1, Section N-1.3.6</td>
<td>10⁶</td>
<td>VOCs</td>
</tr>
<tr>
<td>chlorine dioxide (disinfection &amp; oxidation)</td>
<td>—</td>
<td>ClO₂ (10049-04-4)</td>
<td>67.45</td>
<td>Method A, Annex N-1, Section N-1.3.2</td>
<td>1.4</td>
<td>metals³, VOCs</td>
</tr>
<tr>
<td>hydrogen peroxide (disinfection &amp; oxidation)</td>
<td>—</td>
<td>H₂O₂ (7722-84-1)</td>
<td>34.0</td>
<td>Method A, Annex N-1, Section N-1.3.2</td>
<td>23⁷</td>
<td>metals³, VOCs</td>
</tr>
</tbody>
</table>

Rationale: Added chlorine dioxide to Table 6.2 per 2019 DWA-TC JC meeting discussion (Dec. 4, 2019).