Issue Paper: Update to Nitrosamine Method

DWA Joint Committee
Kathryn Foster | NSF International | November 29, 2018
• EPA Method 521 is the best method for analysis of most nitrosamine compounds
• Extremely sensitive with very low detection limits
• Most nitrosamines have pass/fail criteria in the ppt range
• N-nitrosodiphenylamine has a TAC/SPAC of 70/7 ppb
• Easily detectable under GC/MS analysis under EPA method 625.

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1 see Annex B, section B.7
2 Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, thallium. Chromium shall be evaluated against the pass/fail criteria of chromium VI as a screening level. If the normalized result exceeds this criteria, the sample shall be tested according to the method described in section B.7.3 and shall be evaluated against the pass/fail criteria listed in Table D1 for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.
3 tert-Butyl alcohol analysis is required for PEX materials except those crosslinked via e-beam methodology.
4 The analysis for tin is required when tin-based stabilizers are used.
5 The analysis for antimony is required when antimony-based stabilizers are used.
6 The level of RVC in the walls of PVC or CPVC products and materials shall be directly determined (Annex B, section B.7).
7 The analysis for phthalates is required when phthalate ester plasticizers are used. Analysis shall be for the specific phthalate ester(s) used in the formulation.
8 The analysis for zinc is required when zinc-based stabilizers are used.
9 Analysis shall be performed using liquid chromatography with ultraviolet detection (LC/UV).
10 Analysis shall be performed for the specific solvent and reactive diluent additives used in the individual product formulation, such as benzyl alcohol.
11 Analysis shall be performed for residual concentrations of the specific ester monomers used in the individual product formulation.
12 Glycol and ethanoamine analyses shall be performed on cements containing these compounds as grinding aids.
13 Analysis for N-nitrosodimethylamine, N-nitrosodimethylamine, N-nitrosodiethylamine, N-nitrosodi-n-propylamine, N-nitrosopropylamine, N-nitrosodi-n-butylamine and N-nitrosodiphenylamine are required when material is cured. Analysis shall be in accordance with USEPA Method 521 (USEPA 503R 05/04).
14 Aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, cerium, cobalt, chromium, cesium, copper, dysprosium, erbium, europium, gallium, gadolinium, germanium, hafnium, indium, lanthanum, lead, lithium, lutetium, manganese, mercury, molybdenum, niobium, neodymium, nickel, palladium, praseodymium, platinum, rubidium, rhodium, ruthenium, samarium, silver, strontium, tantalum, tellurium, thallium, tin, titanium, tungsten, uranium, vanadium, ytterbium, zinc, zirconium. Chromium shall be evaluated against the pass/fail criteria of chromium VI as a screening level. If the normalized result exceeds this criteria, the sample shall be tested according to the method described in section B.7.3 and shall be evaluated against the pass/fail criteria listed in Table D1 for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.
15 The testing may be waived for a specific analyte, where formulation information indicates that it is not present.
16 Concrete aggregate sampling is required only if the method for testing for individual concrete components is used. Aggregate sampling is not required if concrete cylinders are tested for the constituents in Portland and hydraulic cements.
• Current Section B.7.4.1 already requires organics analysis shall be performed in accordance with currently accepted EPA methods when provided.

B.7.4.1 General requirements for analysis of organics

Analyses for organics shall be performed, except as otherwise provided for herein, in accordance with currently accepted EPA methods (see 40 CFR Part 141 and Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020). When no EPA method is provided, analyses shall be performed in accordance with Standard Methods for the Examination of Water and Wastewater (most current edition). If neither of these two documents addresses the required parameters and matrix, or if an alternate method is desired, method validation shall be completed prior to the application of the method (see Annex B, section B.7.2.5).

• Removal of footnote to the method reference in table 3.1 will direct testing allow for use of EPA 625 for n-nitrosodiphenylamine, while still directing the use of EPA 521 for other nitrosamine compounds.
Questions?
Motion to ballot change removing reference to EPA 525 from Table 3.1?