NSF International

MEMORANDUM

TO: Joint Committee on Drinking Water Additives - System Components

FROM: France Lemieux, Chair of the Joint Committee

DATE: February 2, 2023

SUBJECT: Proposed revision to NSF/ANSI/CAN 61 – *Drinking Water System Components – Health Effects* (61i166r1)

Revision 1 of NSF/ANSI/CAN 61, issue 166 is being forwarded to the Joint Committee for consideration. Please review the proposal and **submit your ballot by February 23, 2023** via the NSF Online Workspace <www.standards.nsf.org>.

Purpose

The proposed revision will add cesium (Cs) to the list of material-specific analyses under Table 3.1 of NSF/ANSI/CAN 61 for concrete and portland and hydraulic cements.

Background

During the 2020 DWA Joint Committee meeting, a task group was formed to identify best practices for cement mortar cube sample preparation used for testing cementitious materials under section 5. Such products often exceed health-based criteria for cesium (Cs). During the course of the task group discussions, it was noted that although cementitious products frequently leach Cs at levels than exceed health-based criteria, the minimum test battery for these materials under Table 3.1 does not include Cs as a required analysis. Because of this, Cs is not directly analyzed by all certification laboratories. Therefore, the Cs task group voted to recommend the addition of Cs to Table 3.1 for cementitious materials (concrete and portland and hydraulic cements) within Table 3.1.

The proposal was reviewed at the 2022 JC meeting and approved to send to ballot. Please refer to the 2022 JC meeting excerpt under the referenced items included with this ballot 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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[Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by gray highlighting. Rationale statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI/CAN Standard
for Drinking Water Additives –

Drinking Water System Components – Health Effects

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3 General requirements

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Table 3.1
Material-specific analyses

Material type	Required analyses
pipe / fitting / device materials	
aluminum	regulated metals,[1] aluminum
aluminum oxide ceramics	regulated metals,[1] aluminum
asphaltic-coated ductile iron	GC/MS,[2] VOCs, regulated metals,[1] polynuclear aromatic hydrocarbons (PNAs), molybdenum, vanadium, manganese
brass	regulated metals,[1] zinc, nickel, bismuth[3]
carbon graphite nonimpregnated	GC/MS,[2] VOCs, polynuclear hydrocarbons (PNAs), regulated metals[1]
carbon graphite (phenol formaldehyde impregnated)	GC/MS,[2] VOCs, polynuclear hydrocarbons (PNAs), formaldehyde, regulated metals[1]
carbon steel	regulated metals[1]
cast iron	regulated metals[1]
chrome / nickel plating	regulated metals,[1] nickel
concrete[4]	regulated metals[1], cesium
concrete aggregate[4]	regulated metals,[1] radionuclides
. . . .	
Barrier materials	

Table 3.1
Material-specific analyses

Material type	Required analyses
asphaltic coatings	GC/MS,[2] VOCs, regulated metals,[1] molybdenum, vanadium, manganese, PNAs[2]
epoxy coatings (liquid and powder)	GC/MS,[2] VOCs, bisphenol A,[3] bisphenol A-diglycidyl ether,[13] bisphenol A-diglycideryl ether,[13] bisphenol A-propoxylate,[3,13] epichlorohydrin,[3] bisphenol F,[3] bisphenol F-diglycidyl ether,[3,13] bisphenol F-diglycideryl ether,[3,13] bisphenol F-propoxylate,[3,13] solvent and reactive diluent additives[3,14]
polyester coatings	GC/MS,[2] VOCs, residual monomers[15]
polyurethane coatings	GC/MS,[2] VOCs
portland and hydraulic cements[4]	GC/MS,[2] regulated metals,[1] dioxins and furans, radionuclides, glycols and ethanolamines[16], cesium

[1] 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 N-1.7.3 and shall be evaluated against the pass/fail criteria listed in Table 4.1 of NSF/ANSI/CAN 600 (previously Table D.1) for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.

[2] See Section N-1.7

[3] The testing may be waived for a this specific analyte where formulation information indicates that it is not present. In instances where the complete formulation has not been obtained for the material as allowed through Note 1 of 3.2, testing shall include this analyte.

[4] 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.

[5] 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, rhenium, rhodium, ruthenium, samarium, selenium, silver, strontium, tantalum, tellurium, thallium, tin, titanium, tungsten, uranium, vanadium, tungsten, 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 N-1.7.3 and shall be evaluated against the pass/fail criteria listed in Table 4.1 of NSF/ANSI/CAN 600 (previously Table D.1) for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.

[6] *tert*-Butyl alcohol analysis is required for PEX materials except those crosslinked via e-beam methodology.

[7] The analysis for tin is required when tin-based stabilizers are used.

[8] The analysis for antimony is required when antimony-based stabilizers are used.

[9] The level of RVCM within the walls of PVC or CPVC products and materials shall be directly determined (Section N-1.7).

[10] 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.

[11] The analysis for zinc is required when zinc-based stablilizers are used.

[12] Analysis for n-nitrosodimethylamine, n-nitrosomethylethylamine, n-nitrosodiethylamine, n-nitrosodi-n-propylamine, n-nitrosopyrrolidine, n-nitrosomorpholine, n-nitrosopiperidine, n-nitrosodi-n-butylamine and n-nitrosodiphenylamine are required when material is sulfur cured.

[13] Analysis shall be performed using liquid chromatography with ultraviolet detection (LC/UV).

Table 3.1
Material-specific analyses

Material type	Required analyses
[14] Analysis shall be performed for the specific solvent and reactive diluent additives used in the individual product formulation, such as benzyl alcohol.	
[15] Analysis shall be performed for residual concentrations of the specific ester monomers used in the individual product formulation.	
[16] Glycol and ethanolamine analyses shall be performed on cements containing these compounds as grinding aids.	

Rationale: Added per 2022 DWA-SC JC meeting discussion (12/1/23). During the 2020 DWA Joint Committee meeting, a task group was formed to identify best practices for cement mortar cube sample preparation used for testing cementitious materials under section 5. Such products often exceed health-based criteria for cesium (Cs). During the course of the task group discussions, it was noted that although cementitious products frequently leach Cesium at levels than exceed health-based criteria, the minimum test battery for these materials under Table 3.1 does not include cesium as a required analysis. Because of this, cesium is not directly analyzed by all certification laboratories. Therefore, the cesium task group voted to recommend the addition of Cesium to Table 3.1 for cementitious materials (concrete and Portland and hydraulic cements) within Table 3.1.