MEMORANDUM

TO: Joint Committee on Drinking Water Additives – System Components

FROM: France Lemieux, Chairperson

DATE: November 23, 2015

SUBJECT: Proposed revision to NSF/ANSI 61 – *Drinking water system components-Health effects* (61i130)

Draft 1 of NSF/ANSI 61 issue 130, is being forwarded to the Joint Committee for balloting on behalf of the DWA Task Group on Table 3.2. Please review the changes proposed to these standards and **submit your ballot by December 8, 2015** via the NSF Online Workspace.

Purpose

This proposed revision will add material specific analyses under Table 3.2 of NSF/ANSI 61.

Background

At the 2014 DWA-SC JC meeting, a task group was formed to review proposed material specific analyses under Table 3.2. There are often components that contain materials for which it is not possible to obtain the specific material type as currently listed under Table 3.1, such as a subcomponent in a mechanical device that may contain an elastomer material, but for which formulation information is not available. Table 3.2 will cover such materials not covered under Table 3.1 including metals, plastics, elastomers, adhesives, and lubricants.

Please see the attached 2014 JC meeting summary excerpt and the original issue document (DWA-61-2014-10) under the referenced items for additional background information.

If you have any questions about the technical content of the ballot, you may contact me in care of:

Chairperson, Joint Committee
c/o Monica Leslie
Joint Committee Secretariat
NSF International
Tel: (734) 827-5643
E-mail mleslie@nsf.org

[Note – the changes are seen below using strikeout for removal of old text and gray highlights to show the suggested text. ONLY the highlighted text is within the scope of this ballot.]

NSF/ANSI Standard
for Drinking Water System Components – Health Effects

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3 General requirements

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3.2 Information and formulation requirements

The following information shall be obtained and reviewed for all materials with a water contact surface to determine the appropriate analytical testing and to ensure that the potential health effects of products and materials are accurately and adequately identified:

– the product section(s) under which the product, component, or material is covered and the intended function or end use of the product or the material;

– for assemblies, sub-assemblies, products or components, a list of all materials and their corresponding surface areas that come into direct contact with water;

– when appropriate, the total volume of water that the product can hold when filled to capacity;

– the expected service life of the product;

– the anticipated minimum, maximum, and average volumes of water that come into contact with the product, component, or material during a 24-h period;

– complete formulation information (equal to 100.0%) for each water contact material. This shall include:

~~NOTE 1 – The complete formulation information may be omitted for a component material if the generic material type is contained in Table 3.1 and:~~

~~– its diluted surface area in the application is less than or equal to 0.001 in^2/L or 0.0001 in^2/L for static or flowing conditions respectively; or~~

~~if the material is in a high flow device exclusively and used exclusively at public water treatment facilities. For the purposes of this section high flow devices are limited to chemical feeders, disinfectant generators (e.g. chlorine dioxide, hypochlorite, ozone and ultraviolet), electrodialysis technologies, microfiltration technologies, nanofiltration technologies, reverse osmosis and ultrafiltration technologies; or~~

~~– if (1) used in a mechanical device or mechanical plumbing device and (2) the material is not a coating, and (3) the component is not a process media.~~

~~If the product is to be considered compliant to a lead content standard, the lead content (percent by weight) and wetted surface area of each component that comes into contact with the direct flow of water~~

~~under the normal operation of the product is required. Complete documentation shall be submitted in accordance with NSF/ANSI 372 – Drinking water system components – Lead content.~~

~~NOTE 2 – A material is defined as a combination of ingredients used to: manufacture (mold, extrude, stamp, cast, machine, mix etc.) a part or component used in the assembly of a device. To include but not be limited to plastics, elastomers, metallic components, media, lubricants, adhesives, process aid, preservatives, coatings and surface treatments.~~

– a complete formulation shall result in the identity by CAS# or chemical name of each component of the formulation including but not limited to the activators, antioxidants, antimicrobials, co-solvents, fillers, initiators, peroxides, pigments, plasticizers, process aids, solvents, stabilizer, surfactants and terminators;

– percent or parts by weight for each chemical in the formulation or reference to a national or international standardized material specification for metallic materials (e.g. UNS copper alloy specifications);

NOTE 1 – The complete formulation information may be omitted for a component material if:

– the generic material type is contained in Table 3.1 and its diluted surface area in the application is less than or equal to 0.001 in^2/L or 0.0001 in^2/L for static or flowing conditions respectively; or

– the generic material type is contained in Table 3.1 and if the material is in a high flow device and used exclusively at public water treatment facilities. For the purposes of this section high flow devices are limited to chemical feeders, disinfectant generators (e.g. chlorine dioxide, hypochlorite, ozone and ultraviolet), electrodialysis technologies, microfiltration technologies, nanofiltration technologies, reverse osmosis and ultrafiltration technologies; or

– the generic material type is contained in Table 3.1 and if (1) used in a mechanical device or mechanical plumbing device and (2) the material is not a coating, and (3) the component is not a process media;or

– if (1) the material is not listed in Table 3.1, and (2) it is used in a mechanical device or mechanical plumbing device and (3) the material is not a coating, and (4) the component is not a process media, and the material is tested to the requirements of Table 3.2.

If the product is to be considered compliant to a lead content standard, the lead content (percent by weight) and wetted surface area of each component that comes into contact with the direct flow of water under the normal operation of the product is required. Complete documentation shall be submitted in accordance with NSF/ANSI 372 – Drinking water system components – Lead content.

NOTE 2 – A material is defined as a combination of ingredients used to manufacture (mold, extrude, stamp, cast, machine, mix etc.) a part or component used in the assembly of a device. To include but not be limited to plastics, elastomers, metallic components, media, lubricants, adhesives, process aid, preservatives, coatings and surface treatments.

– when the chemical composition of an ingredient or component cannot be determined based on the information submitted by the material supplier, the information shall be obtained by the certifier from the ingredient supplier prior to determining all formulation dependant analytes;

– the composition of the materials ingredients and their components shall be known to determine the identity of formulation specific analytes.

– the maximum temperature to which the product, component, or material is exposed during its intended end use;

– a description/classification of the manner in which the product or material is manufactured (including any process parameters that affect product surface areas in direct contact with water), handled, and packaged. The manufacturing process variability shall be verified by the manufacturer as to its effect on contaminant leachate levels, and the manufacturer shall establish and demonstrate appropriate ongoing process controls to ensure ongoing product conformance with this Standard;

NOTE – The methods used to alter the water contact surfaces of product components during manufacturing, either mechanically (e.g., metal cutting, molding, stamping) or chemically (e.g., washing, coating, plating, brite-dip cleaning), may have a significant effect upon contaminant leachate performance.

– when available, a list of the known or suspected impurities within the product or material and the maximum percent or parts by weight of each impurity;

– when available, the solubility, hydrolysis products, and extraction rates of chemicals within the product or material; and

– when available, a list of published and unpublished toxicological studies relevant to the chemicals and impurities present in the product, component, or material.

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3.3 Identification of analytes

For all products and materials, the formulation information required in 3.2 shall be reviewed for completeness (e.g., all formulations total 100.0%), and to determine whether a minimum test battery has been established for each water contact material (see Table 3.1). In addition to selecting the minimum testing parameters decribed in Table 3.1, a formulation review to identify any formulation-dependent analytes shall be performed for all water contact materials (see 3.3.1).

In instances where the complete formulation has not been obtained for a material that is used in a component of a mechanical device or mechanical plumbing device as allowed through Note 1 of 3.2, testing shall include the material specific analyses in Table 3.1~~,~~ or as directed in Table 3.2.

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3.3.2 Established minimum test batteries

The materials listed in Table 3.1 or Table 3.2 shall be tested for the indicated analyses and any formulation-dependent analyses identified during the formulation-dependent analyte selection. Products, components, or materials made exclusively from materials in Table 3.1 shall not require testing if:

– their diluted surface area in the application is less than or equal to 0.001 or 0.0001 for static or flowing conditions respectively, or

– the material is in a high flow device and used exclusively at public water treatment facilities. For the purposes of this section, high flow devices are limited to chemical feeders, disinfection generators (e.g. chlorine dioxide, hypochlorite, ozone and ultraviolet), electrodialysis technologies, microfiltration technologies, nanofiltration technologies, reverse osmosis and ultrafiltration technologies.

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Table 3.2

Material specific analyses not listed in Table 3.1 or Materials without Formulation Information (excluding coatings and process media).

Material Type	Material Specific Analyses[1]	Suggested Method[2]
Metallic materials not listed in Table 3.1	Aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, cerium, cobalt, chromium, hexavalent 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, silicon, 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 B.7.3 and shall be evaluated against the pass/fail criteria listed in Table D3 for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.	EPA 200.8
Plastic materials not listed in Table 3.1	Bisphenol A, caprolactam, dimethyl phenol, terephthalic acid, isophthalic acid, hexamethylene diamine, acrylic acid, methacrylic acid, Bisphenol A-Propylene oxide adducts, hydroquinone, phthalic acid, 1,4-butanediol, p-phenylenediamine, o-phenylenediamine, m-phenylenediamine, melamine, 1,6-hexanediol, triethylene diamine, Trimethylolpropane	LC/UV
	nylon monomers =11-aminoundecanoic acid, 1,10-diaminodecane, laurolactam, adipic acid, 2-Methyl-1,5-pentanediamine	LC/UV
	sulphone monomer, 4,4'-Dichlorodiphenyl sulfone, diphenyl sulfone	LC/UV
	Formaldehyde	EPA8315A
	RVCM, 1,2-Dichloro-3-propanol, 1,3-Dichloro-2-propanol, methyl butenol isomers, Methylene bis-cyclohexylamine 4,4'-, Cyclohexanamine methylenebis methyl propyl, Methylenedianiline, Methanol	GC/FID
	dimethylphthalate, diethylphthalate, di-n-butylphthalate, bis(2-Ethylhexyl)phthalate (DEHP)	EPA525.2
	1,3-butadiene, styrene, *tert*-butyl alcohol, VOCs, epichlorohydrin, Methyl-tert-Butyl Ether (MTBE), Vinylidene Fluoride, Hexafluoropropylene, acrylonitrile.	EPA 524.2
	antimony, arsenic, barium, beryllium, cadmium, chromium, hexavalent chromium, copper, lead, mercury, selenium, thallium, tin. 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 D3 for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.	EPA 200.8
	phenolics, acetal oligomers, dimethyl terephthalate, diethylphthalate, diisobutylphthalate, di-n-butylphthalate, butylbenzylphthalate, di-n-octylphthalate	EPA 625 BNA
	perfluorooctanoic acid	LC/MS ES

Table 3.2

Material specific analyses not listed in Table 3.1 or Materials without Formulation Information (excluding coatings and process media).

Material Type	Material Specific Analyses[1]	Suggested Method[2]
Elastomer materials not listed in Table 3.1	phenolics(by GC/MS base/acid scan), PNAs, Semivolatile compounds, bisphenol F, bisphenol F – propylene oxide adducts, dimethyl terephthalate, diethylphthalate, diisobutylphthalate, di-n-butylphthalate, butylbenzylphthalate, di-n-octylphthalate	EPA 625 BNA
	VOCs, and 2-chloro-1,3-butadiene, isoprene monomer, chloroprene, 1,3-butadiene, acrylonitrile, vinylidene fluoride, hexafluoropropene, 2,4-dichlorobenzoic acid, alpha-methyl styrene, styrene, isobutylene, ~~aniline~~	EPA524.2
	aniline	GC/ECD
	perfluorooctanoic acid	LC/MS ES
	dimethylphthalate, diethylphthalate, di-n-butylphthalate, bis(2-Ethylhexyl)phthalate (DEHP), p-phenylenediamine, o-phenylenediamine, m-phenylenediamine, diphenylamine, o-toluidine	EPA 525.2
	N-nitrosodimethylamine, N-nitrosomethylethylamine, N-nitrosodiethylamine, N-nitrosodi-n-propylamine, n-nitrosopyrrolidine, n-nitrosomorpholine, n-nitrosopiperidine, N-nitrosodi-n-butylamine, N-nitrosodiphenylamine	EPA 521
	Metals	EPA 200.8
Adhesives	Tetraethylene glycol, Ethylene glycol, 2-ethyl-1,3-hexanediol,	LC/MS
	m-Phenylene diamine, Methacrylic Acid, Bisphenol A Bisphenol A - propylene oxide adducts, Melamine, Maleic Acid, Hydroquinone, Acrylic Acid, Ethyl-2-Cyanoacrylate	LC/UV
	Acetates and Acrylates, 1,3-Butylene glycol dimethacrylate, Semivolatile Compounds,	EPA 625
	Formaldehyde	EPA 8315A
	Epichlorohydrin, 1,3-Butadiene, Acrylonitrile	EPA 524.2
	1,3-Dichloro-2-propanol in water, Methylenedianiline Micro/derivatization, 1,3-Dichloro-2-propanol, Aniline, micro/derivatization, 1,2-Dichloro-3-propanol	GC/FID
	*1,4- Butanediol, Cyanoacetic Acid, Benzyl alcohol	LC/MS
Lubricants	phenolics	EPA 625
	2,4-Dichlorobenzoic acid, acrylic acid,	LC/UV
	Perfluorooctanoic acid	LCMS/ES-
	propylene glycol; Ethylene glycol,	LC/MS

Table 3.2

Material specific analyses not listed in Table 3.1 or Materials without Formulation Information (excluding coatings and process media).

Material Type	Material Specific Analyses[1]	Suggested Method[2]
Other Materials not listed in Table 3.1 without formulation information (excluding coatings and process media).	Chlorobenzenediamine, and dichlorobenzenediamine isomers	derivatization GC/ECD
	Volatile Organic Compounds including 2-Methylpropene (Isobutylene), Tetrahydrofuran, Cyclohexanone, Acetone, 1,3-Butadiene, 2-Chloro-1,3-butadiene (chloroprene), Epichlorohydrin, Methyl Ethyl Ketone, 2-Methyl-1,3-butadiene (isoprene), Divinyl benzene (vinyl styrene), 2,4-Dichlorobenzoic acid, 2-Methylpropene (Isobutylene) Methyl-tert-Butyl Ether (MTBE), alpha-Methyl Styrene, Hexafluoropropylene, Vinylidene Fluoride, Hydroquinone Monomethyl Ether, acrylonitrile	EPA 524.2
	Semivolatile Compounds, PNAs, Acetates and Acrylates, Ethyl acetate, Vinyl acetate, 1,4-Dioxane, Ethylhexyl acrylate, dimethyl terephthalate, diethylphthalate, diisobutylphthalate, di-n-butylphthalate, butylbenzylphthalate, di-n-octylphthalate	EPA 625 BNA
	Gross Alpha and Beta Radioactivity in Drinking Water	EPA 900.0
	Acrylamide by derivitization, Captan, Methylenedianiline Aniline, micro/derivatization, Methylene bis-cyclohexylamine 4,4'-, microextraction	GC/ECD
	Methyl-2-propanol, 2-, (t-butylalcohol), Methanol, n-Butanol, sec-Butyl alcohol, Methyl Butenol Isomers, 1,2-Dichloro-3-propanol, 1,3-Dichloro-2-propanol in water, 1-Propanol, 2-Propanol	GC/FID
	Aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, cerium, cobalt, chromium, hexavalent 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, silicon, 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 B.7.3 and shall be evaluated against the pass/fail criteria listed in Table D3 for the tested product. Regardless of chromium species, the total chromium pass/fail criteria shall not be exceeded.	EPA 200.8
	Triethylene diamine, 1,6-Hexanediol, 2-ethyl-1,3-hexanediol, Trimethylolpropane, Propylene glycol, Perfluorooctanoic acid, Ethylene Glycol, Diethylene glycol, Ethylene glycol, Propylene glycol, Hexalene glycol, Tetraethylene glycol, Triethylene glycol ,Dipropylene Glycol, Dipropylene Glycol	LC/MS

Table 3.2

Material specific analyses not listed in Table 3.1 or Materials without Formulation Information (excluding coatings and process media).

Material Type	Material Specific Analyses[1]	Suggested Method[2]
Other Materials not listed in Table 3.1 without formulation information (excluding coatings and process media).	Benzyl alcohol, Bisphenol A , Bisphenol A - propylene oxide adducts, Bisphenol F, Diphenyl sulfone, 4,4'-Dichlorodiphenyl sulfone, Dimethylformamide, N,N-Dimethylacetamide, Diphenylamine, Di-t-butyl-4-alkyl phenols, Ethylenethiourea (2-imidazolidinethione), Hydroquinone, Methyl-2-pyrrolidinone, N,N-Diethyl-p-toluidene, isomers of Phenylene diamine, Toluenediamine, 2,4-, Toluenediamine, 2,6-, Tetramethyl Thiuram Monosulfide, Diethylene triamine, Ethylene Diamine, 2-Methyl-1,5-pentanediamine, Ethyl-2-Cyanoacrylate, Laurolactam, 1,3-Butylene glycol dimethacrylate, Caprolactam, Acrylic Acid, Adipic Acid11-Aminoundecanoic acid, Hexamethylene Diamine, Maleic Acid, Methacrylic Acid, Melamine Trimellitic Acid, Cyanoacetic Acid	LC/UV
	N-nitrosodimethylamine, N-nitrosomethylethylamine, N-nitrosodiethylamine, N-nitrosodi-n-propylamine, n-nitrosopyrrolidine, n-nitrosomorpholine, n-nitrosopiperidine, N-nitrosodi-n-butylamine, N-nitrosodiphenylamine	EPA 521
	1,4-Butanediol,	LC/MS
	Formaldehyde	EPA 8315A
	4,4'-methylenebis[N-(1 -methylpropyl)- Cyclohexanamine, 2-methylimidazole	LC/MS
	Isophthalic Acid, Phthalic Acid, Terephthalic Acid, o-toluidine, N,N-Diethyl-p-toluidene, dimethylphthalate, diethylphthalate, di-n-butylphthalate, bis(2-Ethylhexyl)phthalate (DEHP)	EPA 525.2
Notes		

[1]The testing may be waived for a specific analyte when partial information indicates that it is not present.
[2]Refer to Section B.7 for analytical methods. Alternate methods that have been validated may be used.