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**Section 1417 of the Safe Drinking Water Act and the NSF Standard
Commonly Asked Questions**

STATE OF ILLINOIS
Pollution Control Board

SUMMARY

P.C.#3

This document describes the requirements of Section 1417 of the Safe Drinking Water Act (SDWA), in particular, as they relate to plumbing products covered under NSF Standard 61, Section 9.

Section 1417 (a)(1) of the SDWA states that “no person may use any pipe, any pipe or plumbing fitting or fixture, any solder, or any flux, in the installation or repair of any public water system or any plumbing in a residential or nonresidential facility providing water for human consumption that is not lead free.” Under section 1417(d), “lead free” means that solders and flux may not contain more than 0.2 percent lead; pipes, pipe fittings, and well pumps may not contain more than 8.0 percent lead; and plumbing fitting and fixtures must meet standards established under section 1417(e).

Section 1417(a)(3) of the SDWA makes it unlawful for any person to introduce into commerce any pipe, or any pipe or plumbing fitting or fixture that is not lead free after August 6, 1998. The Agency interprets Section 1417(a)(3) to mean that no one, including the manufacturer or distributor, may distribute any pipe or plumbing fitting or fixture that is not lead free after the August 6, 1998 deadline. The statute makes no distinction between wholesale or retail sales of these materials. Thus, the Agency believes this provision covers not only initial offering of products for sale but sale or distribution from an inventory of products referred to in Section 1417(a)(3) after August 6, 1998, except for manufacturing or industrial processes.

Section 1417(e) of the SDWA, states that “lead free” with regard to plumbing fittings and fixtures intended to dispense water for human consumption means those fittings and fixtures that are in compliance with a standard established under that section. A voluntary standard, NSF International’s (NSF) consensus Standard 61, Section 9, a health effects-based performance standard, limiting the leaching of lead into the drinking water for devices that are intended by the manufacturer to dispense water for human ingestion has been established. The Agency recognized in a Federal Register Notice, 62 FR 44684-44685, [August 22, 1997] that the standard for lead free plumbing, fittings and fixtures had been established in Section 9 of NSF Standard 61.

Thus, plumbing fittings or fixtures dispensing water for human ingestion, listed in NSF Standard 61, Section 9, must contain less than 8.0 percent lead and in addition, must comply with the performance-based standard contained in Section 9. The devices specifically listed in NSF Standard 61, Section 9 include kitchen and bar faucets, lavatory faucets, water dispensers, drinking fountains, water coolers, glass fillers, residential refrigerator ice makers, supply stops

and endpoint control valves. Devices that are not covered by section 9 of NSF 61 are not subject to any performance-based standard, but must contain no more than 8.0 percent lead.

PART I - BACKGROUND

1. What are the sources of lead in drinking water?

Lead in drinking water results primarily from corrosion of materials containing lead installed in building plumbing such as lead solder, brass, bronze and other alloys containing lead in contact with the water. The amount of lead attributable to corrosion by-products in the water depends on a number of factors, including the amount and age of lead bearing materials susceptible to corrosion, the way they were manufactured, how long the water is in contact with the lead containing surfaces, and how corrosive the water is toward these materials. The corrosivity of water is influenced by a number of factors, including acidity, alkalinity, dissolved solids and hardness. In general, soft acidic waters are more corrosive to lead than hard waters.

2. How much lead can a faucet or plumbing device contain?

Under the 1996 amendments to the Safe Drinking Water Act (SDWA), no plumbing product used in the installation or repair of any plumbing providing water for human consumption can contain more than 8.0 percent lead. The amount of lead contained in the plumbing product is usually governed by its manufacturing process. In order to find out how much lead is contained in a plumbing product, one should contact the manufacturer or the importer/distributor. Another approach is to send the plumbing product to a laboratory and have it analyzed for lead content. However this approach may not be practical, since the cost of the test could be several times of the purchase price of the product.

3. Can plumbing fixtures or devices containing 8.0 percent or less lead contribute lead to drinking water?

Yes, **any** plumbing device or fixture, **domestically produced or imported**, that contains any amount of lead and is in contact with the water is a potential source of contamination. Brass fittings and plumbing fixtures, containing 8.0 percent or less lead, have been found to contribute high lead levels for a considerable period of time after their installation, even in cases where these devices are in contact with relatively non-corrosive waters. The amount of lead that may leach into the water from a brass faucet or fixture is not solely related to the amount of lead contained in the product. The amount of lead leaching from a plumbing product is greatly, but not exclusively influenced, by the manufacturing process. The leaching of lead from certain plumbing products into water used for human consumption, is addressed by NSF Standard 61, Section 9.

PART II - THE SAFE DRINKING WATER ACT AND LEAD IN DRINKING WATER

1. Is there any law or regulation controlling lead in drinking water?

Yes. The National Primary Drinking Water Regulations (NPDWR) for Lead and Copper, 40 CFR Parts 141 and 142, promulgated in 1991, established an action level of 15 parts per billion (ppb) for lead in drinking water. Public water systems are required to optimize corrosion control. Public water systems exceeding the lead action level are also triggered into other requirements including public education, and, if appropriate, source water treatment and/or lead service line replacement. In addition, lead in plumbing materials is addressed in the Lead Ban provisions in Section 1417 of the SDWA.

2. How does the Lead Ban limit lead in pipe, plumbing fittings, fixtures, faucets, solder and flux?

Section 1417(a)(1) of the Safe Drinking Water Act (SDWA) requires that only "lead free" pipe, solder or flux may be used in the installation or repair of (1) Public Water Systems, or (2) any plumbing in a residential or non-residential facility providing water for human consumption. In addition, section 1417 (a)(3) prohibits the sale of pipe, plumbing fittings, fixtures, faucets that are not lead free, except for industrial and manufacturing processes. Section 1417 (a)(3) also prohibits the sale of solder and flux that is not lead free, unless the solder or flux bears a prominent label stating that it is illegal to use the solder or flux in the installation or repair of any plumbing providing water for human consumption.

3. What is the definition of lead Free under the SDWA?

Under section 1417(d), "lead free" as defined in the SDWA means that solders and flux may not contain more than 0.2 percent lead, and pipes, pipe fittings, and well pumps may not contain more than 8.0 percent lead. In addition to the 8.0 percent limitation of lead content, certain plumbing fittings and fixtures must comply with standards established in accordance with section 1417(e) of the SDWA. As discussed further below, plumbing fittings and fixtures must comply with the standards contained in NSF Standard 61, section 9.

4. What is the deadline for selling non lead-free products?

The law prohibits any person from **introducing into commerce** any pipe, or plumbing fitting or fixture that is not lead free after August 6, 1998, except for a pipe that is used in manufacturing or industrial processing. This exception applies to any process where the water conveyed by the plumbing or distribution system is not used directly or indirectly for human consumption. EPA interprets "introducing into commerce" to include the wholesale and retail sales of these materials. Thus, the sale or distribution of any pipe, or any pipe or plumbing

fitting or fixture, that is not lead free, is prohibited after the deadline established by the SDWA subject to the exception described above.

PART III -THE NSF STANDARD AND LEAD IN DRINKING WATER

1. Is there an NSF performance standard limiting the leaching of lead into drinking water?

NSF International's consensus Standard 61, (ANSI/NSF Standard 61: Drinking Water System Components-Health Effects), herein referred to as "NSF Standard", has been established to control leaching of lead into drinking water. The criteria for lead in the NSF Standard limits the amount of lead that can leach into the water from a particular product. The standard does not specify the lead content in that product but it is a performance standard.

NSF Standard 61, section 9 covers "endpoint devices." The NSF Standard defines endpoint devices as mechanical plumbing devices, components, and materials which are typically installed within the last liter of the distribution system and are intended by the manufacturer to dispense water for human ingestion. The devices include kitchen and bar faucets, lavatory faucets, water dispensers, drinking fountains, water coolers, glass fillers, residential refrigerator ice makers, supply stops and endpoint control valves. These devices are regulated under section 1417(e) of the SDWA. For details, refer to Part IV of this document. Products that are not covered under NSF Standard 61, Section 9 include in-line devices, point of use and point of entry water treatment devices, bath and shower valves, drains, backflow preventers, utility, laundry, bidet, self closing or electronic faucets, faucets with hose thread spout, and non lavatory hand wash stations.

NSF Standard 61, section 8 covers mechanical devices which include in line devices in building distribution systems including any device that is used to measure or control the flow of water that is used in treatment/transmission/distribution systems, and are in contact with the drinking water. In line devices in a building used to measure or control the flow of water include water meters, building valves, check valves, meter stops, valves and fittings backflow preventers, etc. The NSF Standard defines in line devices as any device installed on a service line or building distribution system downstream of the water main and before endpoint devices.

NSF Standard 61, Section 4 covers pipes, fittings and small drinking water storage devices having domestic or residential applications including the products or water contact materials of pipes, fittings, tubing, hoses, well casing, drop pipes and screens etc.

2. Which products are required to meet NSF Standard 61 under the SDWA?

Only those products that are specifically listed in NSF Standard 61, Section 9 are required to meet the standard for the purposes of section 1417 of the SDWA. The devices include kitchen and bar faucets, lavatory faucets, water dispensers, drinking fountains, water coolers,

glass fillers, residential refrigerator ice makers, supply stops and endpoint control valves.

3. How much lead does NSF Standard 61, Section 9 allow to be leached from endpoint devices?

The NSF Standard is designed to result in limiting the amount of lead from endpoint devices to 11 ppb when normalized to 1 Liter. This approach is based on the 15 ppb action level established in the Lead and Copper rule, considering the 11 ppb lead contributed from the endpoint device as well as from sources other than the endpoint device, which is assumed to be 4 ppb.

4. What is the NSF test procedure for endpoint devices?

The NSF test procedure requires that at least three endpoint devices be exposed to specially formulated water for a period of 19 days. On days 3, 4, 5, 10, 11, 12, 17, 18 and 19, water samples from the endpoint devices are collected. The observed lead dosage levels, (lead concentration times the volume of the endpoint device) normalized to 1 Liter are determined and statistically compared to the 11 ppb limit.

5. Is NSF the only organization that can determine whether a particular fitting or fixture meets the NSF Standard?

Any organization or independent laboratory can test products against the NSF standard. The American National Standards Institute (ANSI) accredits organizations and laboratories to certify products against NSF Standard 61. For an up-to-date list of organizations certified, contact AINSI at 301-469-3362. There are no specific requirements in the SDWA for testing and certifying of plumbing products by an accredited laboratory. However, currently a number of states have regulations requiring products to meet NSF Standard 61. This requirement is usually implemented and enforced through State or local plumbing codes. Check with your state or local government regarding their regulations and requirements for testing against NSF Standard 61, Section 9.

6. How can I be sure that the faucet or plumbing device meets the NSF Standard?

Federal law does not require listing, labeling, markings or third party certification indicating whether a product meets NSF Standard 61, Section 9. However the absence of such Federal requirements does not preclude State or local governments from adopting such requirements. Check with your State or local jurisdiction to determine whether if they require labeling of certification for the product.

Products certified under the NSF standard carry a certification mark of the certifying organization. Certifying organizations such as NSF International, Underwriters Laboratories

(UL) and Truesdail Laboratories list products that they have tested and Certified against the NSF Standard. One can obtain Listing books from NSF International at 1-800-NSF-MARK, or by visiting their website at www.nsf.org. One can contact UL at 847-272-8800 or visit their website at www.ul.com. Listing of products certified by Truesdail Laboratories may be obtained by contacting them at 714-730-6239. For additional information about other organizations contact AINSI at 301-469-3362. If you are in doubt whether the product is in compliance with the lead free requirement of the SDWA, you may also inquire with the distributor or manufacturer for verification.

In summary, products containing 8.0 percent or less lead and meeting NSF Standard 61, Section 9, are in compliance with the SDWA. NSF Standard 61, Section 9, also addresses contaminants other than lead. However, products are not required by the SDWA to meet the NSF Standard for contaminants other than lead. Third party certifiers may issue a letter of certification for those products that pass the lead leaching portion of NSF Standard 61, Section 9, even though the product may not meet other portions of the standard. Products that successfully pass the performance requirement for lead leaching are considered "lead free" under the SDWA.

7. Which parties helped develop the NSF Standard?

The standard was developed using a voluntary consensus process. All interested parties were represented, including regulatory agencies, industry, water suppliers, consultants, and other users of products covered by the standard.

PART IV - NSF STANDARD 61, SECTION 9 AND THE SAFE DRINKING WATER ACT

1. How does NSF Standard 61, Section 9 relate to the definition of lead free?

NSF Standard 61, Section 9 relates to the amount of lead *leached* from a product while the definition of "lead free" for pipe and pipe fitting corresponds to a maximum of 8.0 percent lead content. By amending Section 1417 of the SDWA, Congress incorporated a performance standard into the law for endpoint devices intended to "dispense water for human consumption." Section 1417(e) of the SDWA, states that "lead free" with regard to plumbing fittings and fixtures intended to dispense water for human consumption means those fittings and fixtures that are in compliance with a voluntary standard established pursuant to the Act. The Agency stated in the Federal Register Notice, FRL-5880-2, published on August 22, 1997 that section 9 of NSF Standard 61 meets the requirement of the SDWA.

EPA believes Congress enacted the requirement for a performance standard for lead leaching because some brass fittings and plumbing fixtures containing 8.0 percent or less lead have been found to contribute elevated levels for a considerable period of time after their

installation, even in contact with relatively non-corrosive water. Because of low flow and infrequent usage, lead concentration levels in water in contact with endpoint devices dispensing water for human consumption were found, in some cases, to exceed the 15 ppb action level for lead, established by EPA in the Lead and Copper Rule.

- 2. Can an endpoint plumbing device, listed in NSF Standard 61, Section 9, meeting the 8 percent limitation specified by the SDWA, but not meeting the performance requirement for lead leaching specified in NSF Standard 61, Section 9, be used in the installation or repair of public water supply systems or residential plumbing?**

No. In order to be legally used in the installation or repair of any water distribution system, providing water for human consumption, such products must meet the performance requirement for lead leaching established by section 9 of NSF Standard 61 *and* meet the 8.0 percent lead free criteria.

- 3. Are replacement components for plumbing components covered under the “lead free” definition of the SDWA?**

As indicated in Part III, response to question 2, only those products that are specifically listed in NSF Standard 61, Section 9 are required to meet the standard for the purposes of section 1417 of the SDWA. Since replacement components for plumbing components are not specifically listed in NSF Standard 61, Section 9, only the 8.0 percent "lead free criteria" is applicable to them.

- 4. Are valves dispensing water from point of use treatment devices covered under the “lead free” definition of the SDWA?**

As indicated in the response to question 1, Part III, point of use water treatment devices are not covered under NSF Standard 61, Section 9. Therefore only the 8.0 percent lead free criterion is applicable to them. Point of use treatment devices are tested and certified under NSF Standard 58. Thus, while EPA encourages the industry to conform with this standard, the industry is not currently required to do so.

- 5. Are in line devices regulated under the SDWA? Does the SDWA require in line devices to meet health effects based performance standards?**

The SDWA prohibits the use of **any** pipe, **any** pipe or plumbing fitting or fixture that is not lead-free (containing more than 8.0 percent lead) in the installation or repair of any public water system or **any** plumbing in residential or non-residential facility providing water for human consumption.

However, there is no language in the SDWA which requires that in line devices meet health effects-based performance standards limiting the leaching of lead into the drinking water.

Therefore, EPA has not recognized these standards as requirements for in line devices for purposes of Section 1417 of the SDWA. Thus, while EPA encourages the industry to conform with these standards, the industry is not currently required to do so. However, the absence of explicit statutory requirements that such devices comply with NSF Standard 61 does not preclude State or local governments from adopting such requirements.

In most instances, in line devices installed in building plumbing systems handle a large volume of water used for showering, laundry etc. compared to endpoint devices dispensing water for human consumption. Although some in line devices containing 8.0 percent or less lead may leach certain quantities of lead, the amount of lead leached from these devices would generally be expected to be levels below those of concern.