

NSF - Developing Standards in Manufacturing and Process Procedures

Water is a vital resource and component to human life. From the municipal water system in your city to the bottled water you purchase from your local grocery store, the potable water you consume must conform to a strict set of standards that govern the safety and cleanliness of the final product that is offered and available to customers.

■ By Chris Morris – Teadit

This important set of standards, which was developed and is maintained by the NSF Organization and is approved by the American National Standards Institute (ANSI), who oversee the consensus for developing standards in manufacturing and process procedures in the United States, is legally recognized nationally as the regulation for governing the human health effects assessment of drinking water contact materials, components, and devices. In other words, it ensures that every component used in a potable water system poses no risk of contamination or harm to consumers.

Before we discuss what it means to be certified and compliant to these standards, let us briefly look at the history of the organization and the standard. The NSF, or National Sanitation Foundation, was founded in 1944, as a global independent public health and environmental organization, and since its inception has been the public health and safety standard. The water treatment and distribution systems programs were created by NSF in 1980, and sought to assist the EPA's mission to regulate and improve drinking water standards in the United States, eventually leading to the development of the NSF/ANSI Standard 61: Drinking Water System Components



– Health Effects in 1988. This standard then set the criteria for health effects in potable water system products, materials, and components.

In order to understand the standard, we need to dive into NSF/ANSI 61 a bit and learn how it identifies important health criteria for potable water. First, we need to understand what is meant by the term potable water? The USDA defines potable water as water that is safe to drink or to use in the preparation of food. One of the primary concerns for potable water is the amount of lead and other contaminants that could possibly make their way into the drinking water itself through contact with the equipment and components used throughout the system that

processes and delivers it to consumers. The presence of many of these contaminants poses a serious health risk to human beings, thus necessitating regulations to minimize or eliminate exposure. Currently in North America those that manufacture, sell, or distribute water or water treatment products are required to comply with NSF/ANSI 61 Standards. Such water systems can include pipes, valves, gaskets, packings, seals, coatings, fixtures, and/or mechanical devices that must all be compliant with the standard. The standard regulates both the requirements for safe levels of various substances within a component's makeup, as well as its potential to release foreign substances into the potable water through contact. It wasn't until 2011 that

the United States came out with legislation defining "lead free" to require that the wetted surfaces of pipes, fixtures, and fittings meet a weighted average lead content of less than, or equal to, 0.25%. Domestically, there are 48 states that require NSF/ANSI 61 for municipal water product components. There is a method to verify these products and their certification to the standards which is outlined in both NSF/ANSI 61 and NSF/ANSI 372: Drinking Water System Components – Lead Content.

These standards do not give any overall approvals for design concepts specifically, rather the product or system in question must be tested by an outside third party that adheres to strict guidelines in order to obtain certification. Taken into consideration are things such as product formulation, material toxicology, and product use information. The product formulation, or make-up, is then reviewed by a third party to ensure that the required content thresholds are being met. Following this review is a visit to the manufacturing plant of the product or system for a detailed inspection, and while on-site, samples are collected and submitted for rigorous testing. A final toxicology report is prepared based on the test results and reviewed against the standard limits. This process is repeated annually to maintain certification. These stringent demands allow NSF to independently ensure that certified products adhere to required safety and quality standards. The certification and compliance of a product and a facility are no easy task, but they are necessary measures to ensure that the products being put into potable water systems adhere to the guidelines laid out by NSF/ANSI 61, and are safe for use.

Concern over the safety of the products we use, the foods and drinks we consume, and the air we breathe is at an all time high. The rise of the internet and





their packaging and marketing materials. Moreover, a database of certified manufacturers and products is maintained on the NSF website. When in doubt, it is important to ask for and specify only certified products and components. Fully traceable compliance to the standard should be a part of your NSF/ANSI 61 product requirements at all times.

One final point of clarification that may be helpful for those who are currently or hope to in the future support customers with NSF certified products; certified raw materials that are then used to manufacture finished parts, for example a sheet of certified gasketing material that is cut into finished parts, requires not only certification of the material and the production facility, but also for the fabricator as well. This has caused a good bit of confusion, with many fabricators incorrectly assuming that because the material is certified, any parts fabricated from that material are by extension also certified. In fact, there are shockingly few certified fabricator locations, particularly in the realm of gasketing.

the information age has opened our eyes to some of the deep, dark secrets of the past. Consumers expect manufacturers to be more responsible than ever before in regard to their impact on public health and the environment. This is an important first step towards reversing and eliminating many of the concerns that have been brought to light in recent years. Progressive manufacturers that find themselves at the forefront of compliance with sustainable manufacturing practices and safe products are poised to thrive in this new arena.

Those who work with customers who process and distribute drinking water need to familiarize themselves with the current requirements of NSF/ANSI 61 to ensure compliance. Just because a product may perform well in water service,

doesn't mean it is NSF/ANSI 61 certified for drinking water. This is an important distinction! Ill-informed suppliers are at risk of making bad assumptions or providing incorrect information and/or products to their customers. Moreover, assuming that municipalities, contractors, and maintenance personnel will inherently "know" about and be familiar with these requirements will often prove to be a risky proposition. The reality is, despite widespread acceptance of the standards at a legislative level, many of those responsible for implementing them are un- or underinformed and untrained. Product manufacturers and distribution partners have had to lead the way in championing conformity to these standards. Only certified products are allowed to incorporate the NSF logo on

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