HEALTH EFFECTS OF HDPE PIPES AND FITTINGS FOR POTABLE WATER APPLICATIONS

HOW DO I KNOW PLUMBING PRODUCTS ARE SAFE FOR USE?

Most U.S. state and Canadian province drinking water regulations and local plumbing codes require pipes and fittings conveying drinking water to meet the requirements of NSF/ANSI/CAN 61 to ensure components will not contribute harmful levels of contaminants to the drinking water.

WHAT IS NSF/ANSI/CAN 61?

NSF/ANSI/CAN 61: *Drinking Water System Components - Health Effects* is the American National Standard and also the Canadian National Standard that establishes the health effects requirements for chemical contaminants and impurities that are indirectly imparted to drinking water from products, components and materials used in drinking water systems.

NSF/ANSI/CAN 61 is overseen by NSF's Drinking Water Additives Joint Committee comprised of balanced representation from the regulatory community, the manufacturing industry and user groups. The American National Standards Institute and Standards Council of Canada accredit NSF standards development procedures to ensure a balanced committee of stakeholders develop the standards in an open process. NSF's Council of Public Health Consultants, a group of representatives from academia and local, state and federal regulatory agencies, provides technical advice and oversight of the NSF standards.

In addition, NSF's Health Advisory Board is a standing task group of toxicologists from the U.S. EPA, Health Canada, state and provincial agencies, and industry and private consulting firms. This group is responsible for reviewing and approving all allowable contaminant concentrations that are published in NSF standards.

HOW ARE HDPE PIPES AND FITTINGS TESTED?

First, a formulation review is performed on the material to determine what possible contaminants could leach into drinking water and what type of chemical extraction testing is necessary.

HDPE pipes and fittings are tested by exposing the products to formulated exposure waters, and the exposure waters are then analyzed for contaminants. A pH 8.0 water is used during the exposure for both organic and metallic-based contaminants. HDPE products are commonly tested at an ambient temperature of 73° F (23° C).

Product is conditioned by exposure to the formulated waters with 2 mg/L available chlorine for 14 days with water being changed on 10 of those days. The water collected from a final 16-hour exposure period is then analyzed for contaminants. Any contaminants found must be below EPA or Health Canada levels for regulated contaminants. For non-regulated contaminants found, NSF/ANSI/CAN 61 sets health-based pass/fail levels based on review of available toxicity data using the risk assessment procedures in the section Health Effects Evaluation and Criteria for Chemicals in Drinking Water of NSF/ANSI/CAN 600.

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WHAT TYPES OF ANALYSES ARE PERFORMED ON HDPE PIPES AND FITTINGS?

Water exposed to HDPE pipes or fittings is tested for the following contaminants as required by NSF/ANSI/CAN 61:

- Volatile organic compounds (VOCs)
- Semi-volatile base/neutral/acid target and scan by GC/MS
- Regulated metals including antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium and thallium
- Any other potential contaminant identified during the formulation review

HOW DO I KNOW IF HDPE PIPES OR FITTINGS MEET THIS REQUIREMENT?

HDPE pipes or fittings certified by NSF will bear either the NSF®-61 mark or the NSF® pw (potable water) mark on the print string. The NSF® pw mark indicates the product meets the health requirements of NSF/ANSI/CAN 61 as well as performance, long-term strength and quality control requirements in NSF/ANSI 14: *Plastic Piping Components and Related Materials.*

WHERE CAN I FIND NSF LISTED PRODUCTS?

NSF certified products can be found on our website in two locations, depending on whether the product is certified to NSF/ANSI/CAN 61 (nsf.org/Certified/PwsComponents/) or NSF/ANSI 14 (nsf org/Certified/Plumbing/).

WHAT ENSURES THE PRODUCT CONSISTENTLY MEETS THESE REQUIREMENTS?

For HDPE products listed for potable water applications, NSF performs at least two unannounced audits of each production facility annually. During the audit, NSF verifies there are no modifications to the product formulation or processing. In addition, NSF verifies quality control tests being done by the manufacturer. NSF also collects samples for laboratory retesting of each product family on an annual basis.

WHOM CAN I CONTACT WITH QUESTIONS?

If you have questions about the testing and certification of any NSF certified product, please contact our consumer and regulatory affairs hotline at +1.800.673.8010 or **info@nsf.org**.

WHO IS NSF?

NSF International is an independent, global organization that facilitates standards development, and tests and certifies products for the water, food, health sciences and consumer goods industries to minimize adverse health effects and protect the environment. Founded in 1944, NSF is committed to protecting human health and safety worldwide. With operations in more than 175 countries, NSF International is a Pan American Health Organization/ World Health Organization (WHO) Collaborating Center on Food Safety, Water Quality and Indoor Environment.

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