NSF International - The Public Health and Safety Organization

Emerging Drinking Water Contaminants

You may have seen media reports in recent years about the presence of emerging or incidental contaminants in drinking water. In fact, 82 percent of consumers report that they are concerned about the negative effects these emerging contaminants may have on their health although at trace levels they are not a public health issue. Contaminants of most concern include pesticides and herbicides followed by prescription drugs and detergents.

What Are Emerging Contaminants?

Most contaminants found in drinking water have traditionally fallen into one of two categories — health effects, for contaminants known to adversely affect health when present in drinking water; or aesthetic effects, for contaminants not affecting health but rather the taste, appearance or odor of drinking water.

Emerging contaminants are a new category of water quality concerns for which evidence of health effects has not yet been established due in part to the trace levels at which these compounds are currently being detected. For this reason, it was decided that a separate testing standard should be developed for product testing purposes.

American National Standard NSF/ANSI 401

NSF/ANSI 401: *Emerging Contaminants/Incidental Compounds* is an American national standard that verifies the ability of a water treatment device to reduce up to 15 of the emerging contaminants shown below. This list includes some prescription/OTC drugs, new types of herbicides and pesticides and chemicals used as flame retardants and detergents that have been found at trace levels in drinking water.

Products covered by NSF/ANSI 401 include several types of point-of-use (POU) and point-of-entry (POE) systems including pitchers, faucet mount, counter top, refrigerator, under sink, plumbed-in and sports bottle type filtration systems as well as POU reverse osmosis systems. A list of products that are currently NSF certified to meet this standard can be found on NSF's drinking water listings page.

Substance	Average influent challenge ng/L*	Maximum effluent concentration ng/L*
Meprobamate	400 ± 20%	60
Phenytoin	200 ± 20%	30
Atenolol	200 ± 20%	30
Carbamazepine	1,400 ± 20%	200
TCEP	5,000 ± 20%	700
TCPP	5,000 ± 20%	700
DEET	1,400 ± 20%	200
Metolachlor	1,400 ± 20%	200

Substance	Average influent challenge ng/L*	Maximum effluent concentration ng/L*
Trimethoprim	140 ± 20%	20
Ibuprofen	400 ± 20%	60
Naproxen	140 ± 20%	20
Estrone	140 ± 20%	20
Bisphenol A	2,000 ± 20%	300
Linuron	140 ± 20%	20
Nonyl phenol	1,400 ± 20%	200

*While a majority of regulated contaminants like arsenic and lead are measured either in milligrams or micrograms per liter, many contaminants covered by NSF/ANSI 401 are only found in trace amounts and thus are measured in a smaller increment known as nanograms per liter (ng/L). To put this in perspective, 1 ng/L is the equivalent of 1/1000th of a microgram per liter, which would be the same as 1 ounce in 7.5 billion gallons of water.