



Emerging Contaminants

An “emerging contaminant” is defined by the U.S. Environmental Protection Agency (EPA) as a chemical or material that is characterized by a perceived, potential, or real threat to human health or the environment or by a lack of published health standards. A contaminant may also be emerging because a new source or a new pathway to humans has been discovered, or a new detection method or treatment technology has been developed. EPA maintains a list of emerging contaminants in the drinking water that may warrant further possible study and regulation.

The sources of drinking water — both tap and bottled water — include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;
- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- Pesticides and herbicides, which may come from a variety of sources such as agricultural, urban stormwater runoff and residential uses;
- Organic chemical contaminants, including synthetic and volatile organic chemicals such as pharmaceuticals and personal care products, byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

The Northern Kentucky Water District (NKWD) provides advanced treatment processes of granular activated carbon and ultraviolet disinfection as part of a multi-barrier approach that also includes coagulation, sedimentation, filtration, and chlorine disinfection. This approach is effective in treating broad categories of compounds.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. A trace amount is measured in parts per billion or parts per trillion. A part per billion equals 1 gallon of water in 1,514 Olympic sized swimming pools or 1 second in 32 years. A part per trillion equals 1 gallon of water in 1,514,570 Olympic sized swimming pools or 1 second in 32,000 years. The ability to test compounds at these minute levels is relatively new. Detection levels for analytical



methods used are typically 100 to 1,000 times lower than State and Federal standards and guidelines for drinking water.

There is an established process in place within the appropriate federal agencies to provide further guidance to water utilities on testing and treating for emerging contaminants. The EPA list of emerging contaminants is referred to as the Contaminant Candidate List (CCL). Every 5 years the EPA is required to identify its top priorities from the CCL and issue a "shortlist" of up to 30 unregulated contaminants for which designated public water systems must monitor. The shortlist of contaminants selected from the CCL for further monitoring is conducted as part of the Unregulated Contaminant Monitoring Rule (UCMR). Based on the monitoring data collected from drinking water systems throughout the country, EPA decides if the contaminant will be added to the list of contaminants for possible new drinking water standards. Simply being included on the CCL does not impose any regulatory requirements on public water systems beyond the sampling and analysis.

The first CCL developed by EPA in 1998 contained 10 microbial candidates and 50 chemical candidates. EPA later determined that 9 of the 60 on the list did not need regulatory action and thus were removed from the list. EPA selected 1 microbial candidate and 24 chemical candidates to be monitored by drinking water systems as part of the first UCMR. The second CCL developed by EPA in 2005 included the same 9 microbial candidates and 42 chemical candidates from the first list. EPA then determined that 11 of the 51 contaminants on the second list did not need regulatory action and were dropped from further consideration. Of the 40 remaining contaminants, EPA selected 25 chemical candidates to be monitored by drinking water systems as part of the second UCMR. The NKWD completed monitoring requirements for both rounds of the UCMR, the first in 2002 and the second in 2009. There were no detections above the laboratory's minimum reporting limit for any of the 50 contaminants on these lists in NKWD's water. The EPA has not proceeded with regulating any of the contaminants on the first two CCL/UCMR lists.

EPA broadened the process for identifying emerging contaminants when it developed the third list. EPA selected 116 candidates for the third CCL in 2009 after considering approximately 7,500 potential candidates. From this list, the EPA determined that four did not need sampling and were removed from the list. The third and most recent UCMR contained a total of 30 contaminants, 28 of which we were required to monitor in 2014 and 2015. The results are included in the 2015 Consumer Confidence Report located on our website.

Two emerging contaminants on the third CCL/UCMR list that you may have read or heard about are perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). They are man-made chemicals used to make household and commercial products such as fire-fighting foams, coating additives for non-stick cookware (Teflon™), paper and cardboard food packaging (microwave popcorn bags), stain-resistant carpets and fabrics, and cleaning products. Studies show that human exposure to PFOA and PFOS is widespread and that most people have low levels in their blood. PFOA does not break down



readily in the human body and can be present in blood for years after exposure. While it was agreed by manufacturers that the production of these two chemicals would be phased out in the United States by December 2015, some areas near manufacturing plants using these compounds have reported elevated levels of PFOA in their local water supply well above the published health advisory level. While the EPA does not have an enforceable drinking water standard for PFOS and PFOA in drinking water, a provisional health advisory was established in 2009. The 2009 guideline was 200 nanograms per liter for PFOS and 400 nanograms per liter for PFOA for short-term exposure. A lifetime health advisory was issued by EPA in May 2016 that established a combined PFOS and PFOA level of 70 nanograms per liter (parts per trillion). The health advisories reflect reasonable, health-based concentrations above which action should be taken to reduce exposure to unregulated contaminants in drinking water. The NKWD completed monitoring for PFOS and PFOA in the finished water in 2014 and 2015 as part of the third UCMR list. PFOA and PFOS were not detected above the laboratory's minimum reporting limit of 20 parts per trillion.

For more information please call (859) 578-9898.

Additional information on emerging contaminants may be found at the EPA's website <http://www.epa.gov> or by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791, and the American Water Works Association's sponsored website <http://www.drinktap.org/water-info/whats-in-my-water>.