

# Pioneering tests on odors from plastic water pipe

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“Fruity plastic” may seem like a connoisseur’s description of the bouquet of a bottle of Chardonnay or Merlot gone bad. However, that was among several uncomplimentary terms that a panel of water “sensory experts” used to describe the odor of drinking water from the plastic piping that is finding its way into an increasing number of homes these days.

The sampling was part of pioneering research on how plumbing materials affect the odor and taste of drinking water, which was reported here today at the 234<sup>th</sup> national meeting of the American Chemical Society (ACS).

Andrea Dietrich, Ph.D., who reported to the ACS, the world’s largest scientific society, pointed out that a rash of costly pinhole leaks in recent years in commonly used copper water pipes has led to renewed interest in lower priced plastic pipes. Dietrich and colleagues at Virginia Tech are among those scientists leading the way in evaluating how plastic might affect water quality and odor.

“Although water is a complex mixture of organic and inorganic chemicals, most people expect their drinking water to have little or no flavor,” Dietrich noted. With those expectations, any taste or odor in a glass of water can be “highly noticeable.”

Dietrich’s team is using two methods to evaluate odors associated with several types of plastic piping. First, sensory panelists smell and describe the odor of the water after it has sat in the pipes for several days. Then,

the water undergoes chemical analyses for metals and organics and basic water quality parameters, such as pH.

Using specially prepared, neutral-smelling water as their control, panelists described the test water samples in terms that included “waxy plastic citrus,” “fruity plastic” and “burning plastic.” Fortunately, the odors are not long lasting, Dietrich said. “We find that after about two months, most of the odors and water quality effects have gone to background.” How quickly the odors disappear depends on the amount of water usage, she added. When a household uses more water, the odors fade faster.

Dietrich told the ACS that her group evaluated several types of plastic piping: cPVC (chlorinated polyvinyl chloride), HDPE (high-density polyethylene), and PEX-aA and PEX-b, which are crosslinked polyethylenes. Each is approved and certified for use in drinking water applications by NSF International, an independent certification, standards and testing organization, and ANSI, the American National Standards Institute.

“We found that cPVC has a low odor potential and it doesn’t seem to release many organic chemicals,” Dietrich said. “HPDE actually had the highest odor production, although it didn’t release very many organic materials. The PEX-b pipe had a moderate amount of odors and also a moderate amount of organic chemicals that were released into the air. PEX-a had fewer odors and organics release than the PEX-b pipe.”

Asked about her personal preference in plastic piping, Dietrich replied: “I would recommend people talk to their neighbors and find out what type of plumbing materials they have and if they are having problems. We do suspect that certain materials are going to be more compatible in certain areas,” due to the differences in water quality from one part of the country to another.

For now, Dietrich's group is focused mainly on the odors imparted by plastic pipes and the analysis of any organic compounds that may leach into the water from the pipes. Asked if there may be any health effects from the leached compounds, Dietrich said that is still under investigation and she doesn't have any answers at this point.

Source: American Chemical Society

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