U.S. Environmental Protection Agency 304(a) pollutant criteria and MPCA's response regarding state adoption

New or updated Clean Water Act Section 304(a) criteria recommendations published by the U.S. Environmental Protection Agency (EPA) since May 30, 2000, and MPCA's response regarding state adoption

Part 1. Aquatic life criteria*

EPA pollutant criteria and publication year	Has Minnesota adopted EPA's criteria recommendation?	Explanation
Acrolein 2009	No	Acrolein is a biocide that has a wide variety of applications, among them use for aquatic weed control in irrigation canals and in recirculating process water systems (EPA website accessed 3-6-18). In Minnesota, no pesticide products containing acrolein are registered for sale. For this reason, the Minnesota Department of Agriculture (MDA), which regulates the sale, use, and disposal of pesticides and also conducts a statewide pesticide monitoring program, does not monitor for acrolein in surface or groundwater (source: MDA, personal communication). MPCA does not plan to develop a water quality standard for acrolein.
Aluminum (pending update)	No	EPA has issued a draft update to the criteria for aluminum in freshwater that went out for public comment on July 28, 2017, and again on September 26, 2017; the criteria has not yet been finalized. Minnesota's draft 2018 impaired waters list includes four stream reaches in the Rainy River Basin that are impaired for aluminum; however, the impairments do not require Watershed Restoration and Protection Plans/Total Maximum Daily Loads (WRAP/TMDLs) because they are naturally occurring (e.g. natural background, designated as EPA CALM Category 4D). Given that aluminum has not presented a concern in Minnesota's surface and groundwater, the MPCA does not consider Minnesota's water quality standard for aluminum to be a priority for updating.
Ammonia 2013	Planned	The MPCA will update the existing water quality standard for ammonia concurrently with development of a water quality standard for aquatic life protection from nitrate. See MPCA's water quality standards work plan for 2018 to 2020 (Work Plan) for more information.
Carbaryl 2012	No	Carbaryl is a pesticide that is effective in controlling insects and also has effects on plant growth. It is commonly used to control insects, slugs and snails, and to thin fruit in orchards (EPA website accessed 3-6-18). Pesticide products containing carbaryl are registered for sale in Minnesota. The MDA monitors for the presence of carbaryl in Minnesota surface and groundwater, where it has been detected occasionally between 1991 and 2016 (source: MDA, personal communication). Given that monitoring data does not show carbaryl to be a concern in Minnesota's surface or groundwater, MPCA does not consider developing a water quality standard for carbaryl to be a priority.

EPA pollutant criteria and publication year	Has Minnesota adopted EPA's criteria recommendation?	Explanation
Cadmium 2016	Not at this time	Following the 2013 triennial review, MPCA planned to revise the existing standard for cadmium using EPA's (then) draft criteria. Subsequently, MPCA found it did not have capacity to pursue the revision. MPCA dropped cadmium from the Work Plan for the current triennial, in recognition that the priorities selected for 2018 to 2020 will leave little if any capacity to work on this revision. MPCA anticipates revising the water quality standard for cadmium in the next five to seven years.
Copper 2007	Not at this time	Following the 2013 triennial review, MPCA planned to revise the existing water quality standard for copper. Subsequently, MPCA found it did not have capacity to pursue the revision. MPCA dropped copper from the Work Plan for the current triennial, in recognition that the priorities selected for 2018 to 2020 will leave little if any capacity to work on this revision. MPCA anticipates revising the water quality standard for copper in the next five to seven years.
Diazinon 2005	No	Diazinon is an insecticide used against a variety of insects in non-agricultural and agricultural applications. Prior to December 31, 2004, it was also used in residential settings but this is now unlawful (EPA website accessed 3-6-18). Pesticide products containing diazinon are registered for sale in Minnesota. The MDA monitors for the presence of diazinon in surface and groundwater, where it has been detected occasionally between 1991 and 2016 (source: MDA, personal communication). Given that monitoring data does not show diazinon to be a concern in Minnesota's surface or groundwater, MPCA does not consider developing a water quality standard for diazinon to be a priority.
Nonylphenol 2005	No	Nonylphenol is considered a contaminant of emerging concern (CEC) and has been identified frequently in Minnesota waters as part of state-led and other investigations of CECs in Minnesota's environment. Using EPA's criteria for nonylphenol, MPCA developed a draft technical support document dated October 14, 2010, for nonylphenol and ethoxylates: https://www.pca.state.mn.us/sites/default/files/wq-s6-16.pdf. MPCA did not pursue further development of water quality standards for nonylphenol and ethoxylates because: 1) environmental concentrations of nonylphenol and ethoxylates measured in Minnesota are below the indicated criteria; and 2) there are practical barriers to implementing a water quality standard for nonylphenol and ethoxylates, among them the absence of an EPA-approved laboratory analytical method to analyze samples and locally available laboratories to conduct the analyses. MPCA is not planning to develop water quality standards for nonylphenol and ethoxylates.
Nutrients 2003	Yes – Minnesota adopted state-specific eutrophication standards in 2008 and 2014.	Minnesota developed and adopted eutrophication standards for lakes and reservoirs in 2008, and for rivers in 2014. EPA has approved both standards, which focus on phosphorus as the primary driver of eutrophication. Nitrogen criteria were not proposed as part of Minnesota's nutrient standards because relationships between nitrogen and eutrophication were not identified in the data. Note that MPCA's Work Plan includes development of a water quality standard to protect aquatic life from the toxic effects of nitrate. MPCA has also developed a total nitrogen budget that incorporates evaluation of the downstream effects of nitrogen in Minnesota surface waters on the Mississippi River basin.

EPA pollutant criteria and publication year	Has Minnesota adopted EPA's criteria recommendation?	Explanation
Selenium 2016	No	Few facilities in Minnesota are required to monitor for selenium and only one facility in Minnesota has a limit for selenium. However, MPCA has been engaged since 2014 in developing a site-specific standard for selenium using EPA's latest science and information to address the concerns of one industrial facility that requested it. MPCA feels developing a site-specific standard for selenium to address the facility's request is prudent and an efficient use of resources, in light of the significant effort needed to develop and promulgate a statewide water quality standard.
Tributyl Tin (TBT) 2004	No	TBT is an organotin compound used primarily as a biocide in antifouling paints. It is extremely toxic to aquatic life and is an endocrine-disrupting chemical that causes severe reproductive effects in aquatic organisms. TBT is extremely stable and resistant to natural degradation in water. Because of its chemical properties and widespread use as an antifouling agent, concerns have been raised over the risks it poses to both freshwater and saltwater organisms (EPA, accessed 3/12/18). In Minnesota, TBT has been a pollutant of interest primarily in sediments of the St. Louis River estuary and Duluth Harbor, which is an active port and has significant traffic that includes Great Lakes and ocean-going vessels. The Duluth Harbor/St. Louis River estuary area is a Great Lakes Area of Concern and cleanup of contaminated sites (including sediment) are in progress. Tin-based pesticides were registered for use in Minnesota in 2013, although the active ingredient was tributyltin oxide. No tributyltin oxide products are registered for use in Minnesota in 2018 (source: MDA, personal communication). Given the cleanup already underway in the St. Louis River estuary and Duluth Harbor and the lack of documented use of products containing this pollutant in Minnesota, MPCA is not planning to develop a water quality standard for tributyl tin.

*Note that in cases where MPCA is not planning to develop or revise water quality standards using EPA criteria, Minnesota's water quality standards rules allow MPCA to develop site-specific criteria that are based on EPA criteria. See Minnesota rules [(Minn. R. 7050.0217 to 7050.0218 (statewide) and 7052.0110 (Lake Superior Basin)] for more information.

Part 2. Human health criteria

In 2015, the EPA published final updated criteria 304(a) Ambient Water Quality Criteria (criteria) for the protection of human health for 94 chemical pollutants. The new criteria reflect updated exposure factors (body weight, drinking water consumption rates, and fish consumption rates), bioaccumulation factors, and **for a few chemicals**, toxicity factors (reference dose and cancer slope factor).

Despite these improvements, MPCA is not planning to use EPA's updated criteria to amend its water quality standards to protect human health. Two compelling reasons are that: 1) EPA's updated criteria were derived using older methods compared to Minnesota's 2015 updated human health methods; and 2) many of the toxicological factors in EPA's updated criteria were adopted directly from the old criteria (as much as 30 years old) without review and consideration of current science (see, first paragraph). Consequently, MPCA will use its 2015 methods and review current toxicological literature in developing new and updated water quality standards to protect human health.

An exception is that MPCA is currently working on updating Minnesota's water quality standard for *E. Coli* pathogens using EPA's 2012 recreational water quality criteria.