



Final National Recommended Ambient Water Quality Criteria for Carbaryl - 2012

Summary

EPA has published in the *Federal Register* final national recommended ambient water quality criteria (AWQC) for the protection of aquatic life from the potential effects of carbaryl.

Carbaryl (Sevin®) is a pesticide used to control insects, slugs and snails and to thin fruit in orchards. It can enter water bodies through runoff and potentially pose risks to aquatic life. Carbaryl is the second most frequently found insecticide in water, with detections in approximately half of monitored urban streams.

The criteria document will help states, territories, and authorized tribes add to their water quality standards a concentration level for carbaryl, at or below which aquatic organisms will be protected. EPA's national recommended final acute and chronic AWQC for protecting freshwater organisms from potential effects of carbaryl is 2.1 micrograms per liter. To protect estuarine and marine organisms from potential acute effects of carbaryl, EPA is recommending a final acute AWQC of 1.6 micrograms per liter. At the present time, there are insufficient data to calculate a chronic AWQC for estuarine and marine organisms.

What are aquatic life criteria?

Aquatic life ambient water quality criteria are numeric values that protect aquatic life from the harmful effects of pollutants in surface waters. Under section 304(a) of the Clean Water Act, EPA is required to develop and publish criteria for water quality that reflects the "latest scientific knowledge." These water quality criteria are based solely on data and scientific judgments about the relationship between pollutant concentrations and potential environmental and human health effects.

EPA's national recommended water quality

criteria provide guidance to states, territories and authorized tribes in adopting water quality criteria that meet the requirements of the Clean Water Act. They are not regulations themselves and do not impose legally binding requirements on EPA, states, territories, authorized tribes or the public.

What is carbaryl?

Carbaryl is a member of the N-methyl carbamate class of pesticides, which share a common mechanism of toxicity by affecting the nervous system in animals via acetyl cholinesterase inhibition. Carbaryl also affects plant development and is used to thin fruit in orchards. Carbaryl has many trade names, but is most commonly known as Sevin®. It is registered in the U.S. for controlling insect pests on more than 115 agricultural and other sites, including home and garden uses.

In a 2006 report, the US Geological Survey National Water Quality Assessment Program reported carbaryl as the second most frequently detected insecticide in water. It has been found in approximately 50 percent of monitored urban streams. EPA previously developed national recommended ambient water quality criteria for the other three most frequently detected registered insecticides in U.S. waters (chlorpyrifos, diazinon and malathion). Carbaryl was re-evaluated by EPA and found to be eligible for reregistration in 2007. Carbaryl is currently undergoing registration review, which is scheduled to be completed in 2016.

How were these water quality criteria for carbaryl derived?

EPA derived these aquatic life water quality criteria for carbaryl using EPA's 1985 *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. The

carbaryl criteria document has a new format that follows EPA's *Guidelines for Ecological Risk Assessment* (EPA/630/R-95/002F). Toxicity data for developing the water quality criteria were obtained from peer-reviewed open literature studies and from studies submitted to EPA for the registration and reregistration of carbaryl. To ensure the quality of the information, EPA's Office of Water worked closely with the Office of Pesticide Programs and subjected the toxicity data and other information on the effects of carbaryl to both internal and external peer review.

Specifically, what are the final aquatic life criteria values for carbaryl?

Based on available studies, EPA's national recommended final acute and chronic ambient water quality criteria for protecting freshwater aquatic animals from the potential effects of carbaryl is 2.1 micrograms per liter (Table 1). This means that freshwater aquatic organisms would have an appropriate level of protection if the one-hour average concentration and the four-day average concentration of carbaryl does not exceed 2.1 µg/L more than once every three years on average.

For the protection of estuarine and marine organisms, EPA is recommending an acute ambient water quality criterion of 1.6 micrograms per liter (Table 1). In this case, estuarine/marine aquatic animals would have an appropriate level of protection if the one-hour average concentration does not exceed 1.6 µg/L more than once every three years on average (except where a locally important species may be more sensitive). At the present time, there are insufficient data to calculate a chronic estuarine and marine criterion.

Table 1. Summary of Aquatic Life Criteria for Carbaryl

	Acute	Chronic
Freshwater	2.1 µg/L	2.1 µg/L
Estuarine/marine	1.6 µg/L	N/A

N/A – not available

How to View the Criteria Document

EPA has established an official public docket for this action under Docket ID No. EPA-HQ-OW-2012-0787, accessed at www.regulations.gov. You may also download the document from <http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/index.cfm>.

For More Information

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