

# CARBON DIOXIDE-CARP

## CHEMICAL FACT SHEET

### Formulations

Carbon dioxide (CO<sub>2</sub>) has been used as a terrestrial pesticide since the 1940's. It was registered with the U.S. EPA in 2019 for aquatic use as an invasive carp deterrent and as a lethal under ice control for aquatic nuisance species. It was developed after laboratory studies indicated there may be utility for carbon dioxide-enriched water to serve as a non-physical fish barrier. The only product approved for aquatic use is Carbon Dioxide-Carp; its use is limited to governmental agencies or persons under their direct supervision.

### Aquatic Use and Considerations

Carbon Dioxide-Carp is designed for infusion into navigational locks or approach channels to reduce the risk of invasive carp moving upstream during vessel passage. Exposure to high carbon dioxide levels causes physiological disruption in fish and can lead to death. However, fish have carbon dioxide receptors and will actively avoid areas with high carbon dioxide concentrations. Introducing Carbon Dioxide-Carp into water creates an unfavorable environment for fish and causes them to move away from the target areas. By infusing a lock chamber with Carbon Dioxide-Carp, fish move out of the chamber and the risk of invasive carp spread is reduced.

Carbon Dioxide-Carp is stored in tanks and is pumped as a gas into the water, where it will dissolve. At the point of Carbon Dioxide-Carp injection, the pH of the water may be lowered (i.e., the water will become more acidic). Other water quality characteristics may also be altered slightly.

When used as a barrier, elevated carbon dioxide concentrations will be localized to the treatment site. Carbon Dioxide-Carp will

rapidly dissipate and become diluted immediately downstream of the application site. Aquatic plants use carbon dioxide in normal metabolic processes and will absorb excess carbon dioxide from Carbon Dioxide-Carp treatment. Dissolved oxygen will not be affected by the treatment.

### Post-Treatment Water Use Restrictions

Because there are no residues, there are no post-treatment restrictions on treated water use for swimming, fishing, irrigation, or drinking water.

### Degradation, Persistence and Trace Contaminants

There are no residues. Persistence is minimal because plant uptake, wave action, atmospheric exchange and dilution by the main river channel will return carbon dioxide concentrations to background values.

### Impacts on Fish and Other Aquatic Organisms

Carbon dioxide is toxic to aquatic vertebrates and invertebrates, even at application rates. Fish and most other aquatic animals will avoid water enriched with Carbon Dioxide-Carp. Label instructions must be strictly followed to minimize hazards to non-target organisms.

## Human Health

Chemical applicators are primarily at risk of health effects if there is a leak in the infusion system or bulk storage tank. Carbon Dioxide-Carp can be fatal if inhaled. Air monitoring devices must be used in and around storage areas to ensure applicator safety. Wear personal protective equipment and follow label instructions while handling.

## For Additional Information

U.S. Environmental Protection Agency (EPA)  
Office of Pesticide Programs  
[epa.gov/pesticides](http://epa.gov/pesticides)

Wisconsin Department of Agriculture, Trade,  
and Consumer Protection  
[datcp.wi.gov/Pages/Programs\\_Services/ACMOV  
erview.aspx](http://datcp.wi.gov/Pages/Programs_Services/ACMOVerview.aspx)

Wisconsin Department of Natural Resources  
[dnr.wi.gov/lakes/plants](http://dnr.wi.gov/lakes/plants)

Wisconsin Department of Health Services  
[dhs.wisconsin.gov](http://dhs.wisconsin.gov)

National Pesticide Information Center  
1-800-858-7378  
[npic.orst.edu](http://npic.orst.edu)

