

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Lands and Forests

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Frequently Asked Questions about Fluridone

What is fluridone and how does it differ from endothall?

Fluridone is a slow-acting systemic herbicide used to control nuisance or invasive submerged aquatic vegetation, including Hydrilla and Eurasian watermilfoil. This herbicide can be applied as either a pellet or a liquid. Fluridone works by moving through the plant's foliage into the root system and/or by being absorbed by the roots through the sediment on the river bottom. The effectiveness is directly related to the plant's uptake rate and rate of translocation, or the movement of compounds from foliage and roots to the other tissues of the plant.

Fluridone is a *systemic* herbicide, while endothall is a *contact* herbicide. The key difference is that contact herbicides damage only the parts of the plant that come in direct contact with the chemical, while systemic herbicides are absorbed by the plant's foliage and root system and then moved throughout the rest of the plant's tissues.

How will fluridone be applied?

Fluridone will be applied to the Croton River treatment area in the liquid form (trade name Sonar Genesis) via sub-surface injection below the New Croton Dam. DEC aims to maintain an herbicide concentration between 2.0 and 4.0 parts per billion (ppb) for 90-120 days. Flow levels in the river fluctuate naturally depending on rainfall, evaporation, and withdrawals. DEC will cooperate with New York City Department of Environmental Protection (NYCDEP) to maintain optimal flows from the New Croton Reservoir to support this project.

Is fluridone toxic to animals or humans?

Federal and state herbicide regulations and stringent application guidelines are designed to minimize exposure to non-target species. No lasting negative impacts to waterfowl or wildlife have been observed as a result of fluridone applied at or below the New York State acceptable residual concentration of 50 ppb (NYSDEC, 1994). Fluridone is not considered a carcinogen and has not been associated with genetic mutation or reproductive or developmental issues in test animals (WSDOH, 2000). Studies have shown that fluridone does not bioconcentrate, or exceed the concentration of fluridone in the water, in fish species.

There are several ways in which humans may come in contact with fluridone during or after the treatment period, including drinking water (should fluridone make its way into the well field), swimming, and consuming fish from the river. No adverse human health impacts are anticipated due to exposure to fluridone under the expected conditions of use. Fluridone should not be used for irrigating greenhouse or nursery plants unless an analysis confirms that concentrations are below 1ppb. Water use will not be restricted for swimming or domestic purposes, including bathing, washing dishes and clothing, etc.

Will the application of fluridone harm native aquatic plants?

The sensitivity of non-target plants depends on the dosage of fluridone and the duration of treatment. At the low dosage that will be used for treatment, fluridone will be effective at selectively removing Hydrilla and other invasive plants found in the Croton River, including Eurasian watermilfoil and curly-leaf pondweed.



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Although some non-target species may be affected, including native pondweeds and water celery, they are expected to at least partially rebound by the subsequent growing season. It should be noted that the negative impacts to native aquatic vegetation from Hydrilla infestation likely outweigh the temporary impacts of the herbicide treatment.

How long does fluridone persist in the environment after treatment?

Several factors influence the half-life (time required for a quantity to be reduced to half of its initial concentration) of fluridone in surface water, including water temperature, turbidity (cloudiness), aquatic plant biomass, etc. The process by which fluridone breaks down in the natural environment is called photolysis, or the separation of molecules due to exposure to sunlight. Therefore, the length of time required for fluridone concentrations to drop below the level of detection also depends on the amount of sunlight reaching the river.

Numerous studies have investigated the half-life of fluridone in surface water, and the results have varied from 2 – 3.5 days in a Canadian pond study (Muir and Grift, 1982) to 50 – 75 days in Snyders Lake in New York (Kishbaugh, 2011).

Is water safe to drink or swim in after fluridone treatment?

Water usage restrictions after fluridone application are limited to irrigation uses. A health consultation conducted by the North Carolina Division of Public Health (NCDPH) investigated potential impacts to human health from exposure to fluridone in three scenarios, including drinking water with a detectable fluridone concentration, swimming and incidental ingestion of river water, and consuming fish from the treatment area of the river. It was concluded that even at the maximum allowable application rate of 150 ppb (the concentration in the Croton will not exceed 2.0 – 4.0 ppb), the treatment was unlikely to pose a risk to public health (NCDPH, 2015).

What will be done if fluridone is detected in a drinking water well?

Drinking water well tests will be conducted daily during the first week of the treatment period, and on a weekly basis for the duration of the treatment. All results will be posted on the DEC project website within 24 hours of sample collection. If fluridone is detected below 1.0 part per billion (ppb), the sample results will be posted as “normal” and the treatment will continue. If the result exceeds 1.0 ppb but are less than 5 ppb, sampling protocol will change and analysis will occur on a daily basis. If detections exceed 4 ppb, treatment plans will be modified or terminated. This protocol has been developed under the guidance of NYSDOH.

The New York State threshold for acceptable organic compound concentration (including herbicides) in drinking water is 50 ppb. The maximum allowable application rate as approved by the Environmental Protection Agency (EPA) is 150 ppb.

References

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NYSDC. 1994. Final generic environmental impact statement: use of the registered aquatic herbicide fluridone (Sonar) and the use of the registered aquatic herbicide glyphosate (Rodeo and Accord) in the state of New York. Albany, NY.

WSDOH. 2000. Fluridone fact sheet. Washington State Department of Health. Olympia, WA.