HELP PROTECT MANITOBA'S WATERS

STOP

AQUATIC INVASIVE SPECIES

Steps to treat and dispose of moss or algal balls, including revised Government of Canada methods to treat container, contents, equipment and water

Updated March 30, 2021

Zebra Mussels have been found with moss and algal ball products sold for aquariums, water gardens and as decorative houseplants sold in Manitoba.

In Manitoba, the Zebra Mussel is designated as an aquatic invasive species (AIS) and is prohibited.

Zebra Mussels at several life stages have been found in or on moss balls purchased from distributors who have sold product in Manitoba. This includes small adults (see photo, below) as well, microscopic larvae called veligers have been found in the water where the moss balls were housed.

It is nearly impossible by a visual inspection to detect whether your moss balls are contaminated. Thus, **DO NOT** dispose of the moss ball or any contents (e.g. substrate, plants, water, etc.):

- by flushing down the toilet
- by putting down a drain (e.g. household, storm sewer)
- in a compost
- into a water body

Under direction of the Government of Canada's Department of Fisheries and Oceans, a Science Advisory Committee was formed to provide advice on methods to eradicate all life-stages of Zebra Mussels from these moss balls.

To prevent the risk of spreading Zebra Mussels, Manitobans who obtained moss balls at a retailer or online **after January 1, 2021** are asked to follow the steps below which includes Government of Canada treatments for the container, contents, equipment and water.

Step 1: Treat the moss ball

- Place the moss ball into a plastic bag, seal and freeze (preferably in a deep freeze) for at least 24 hours

OR

- Place moss ball in boiling water for at least 1 minute, then dispose of the treated water down the household drain.

Step 2: Dispose of moss ball

- place the treated moss ball and any of its packaging in a sealed plastic bag and dispose in your household garbage.

Step 3: Treat container (e.g. aquarium, tank), contents, equipment and water

The treatments outlined below must be followed exactly as described to be effective in decontaminating container and systems.

Note: The treatment options below replaces all guidance previously provided.

Post-treatment water should be disposed of through your wastewater system.

Method 1: Heat treatment for container without plants or animals

This method provides a treatment option for containers without plants or animals (either not present or removed), as it may harm/damage or kill other plants or animals.

1. Raise the temperature of the water by using an aquarium heater or pouring in boiling water. It is important to maintain the temperature throughout the treatment to achieve 100% mortality of Zebra Mussels. Please refer to the table below.

2. Ensure all container accessories and equipment (e.g. nets) used to remove fish or other organisms/plants from the contaminated aquarium are properly decontaminated immediately after use by using the heat treatment method.

Method 1: Heat treatment for tanks *without* plants or animals

Minimum temp.	Minimum time
40˚C	30 min
45˚C	15 min
50˚C	5 min

HELP PROTECT MANITOBA'S WATERS

STOP

AQUATIC INVASIVE SPECIES

Method 2: Potassium Chloride (KCl) for tanks with plants or animals

This method can be used when plants and animals cannot be removed, or if Method 1 is not possible.

This treatment requires using potassium chloride (KCl), a sodium-free table salt substitute commonly sold at grocery and nutritional stores. The highest available purity of KCl available should be used. "Half-Salt" products cannot be used.

1. Remove a small volume of water (approximately 1 litre) from the container that housed the moss ball and place this water into a separate container.
2. Determine the volume of water in your container and the corresponding amount of KCl required to achieve the required treatment concentration using the table below.
3. Add the required amount of KCl to the separate container of water and mix thoroughly.
4. Pour the mixture back into your original container that housed the moss ball and leave it in for at least two weeks at a minimum temperature of 17°C.
5. Water changes should be avoided during the 14-day treatment period. If this is not possible, treat the discharge water with Method 1 prior to disposal.
6. Evaporated water can be replenished provided the replacement water does not exceed the volume of water that evaporated.
7. To ensure consistent treatment conditions, all make-up water must be prepared using water from an uncontaminated source, warmed to a minimum of 17°C and pre-treated using KCl.

Additional notes: While this method is considered safe for most finfish and plants, it may not be safe for invertebrates.

Method 2: Potassium Chloride (KCl) for tanks with plants or animals

Volume of Water in Aquarium		Amount of KCl Required* (100% Solubility)	
US gal	Litres	Teaspoons (US)	Grams
1	3.8	1/4	1
10	38	2	8
20	76	3 ¾	15
55	208	10	40
75	284	13 ½	54
90	341	16 ½	65
125	473	22 ½	90

*Dosages outlined in this table are based on a known, lethal concentration of 100ppm KCl to invasive mussels, over an exposure period of 14 days and within the expected temperature range of home and retail aquariums (above 17 º C). Measurements in this table have been rounded up for ease of measurement.

HELP PROTECT MANITOBA'S WATERS

STOP

AQUATIC INVASIVE SPECIES

Manitobans who obtained moss balls at a retailer or online **prior to January 1, 2021** are asked to:

- monitor the container that houses the moss ball and
- report if you find anything that may resemble Zebra Mussels to AIS@mb.ca or call 1-877-867-2470 (toll free).

NOTE FOR RETAILERS: if you have moss balls and have not been contacted by either federal or provincial staff, please call 1-204-793-1154.

It is illegal to introduce any aquatic organism into any region or Canadian waterbody where it is not indigenous unless authorized by federal or provincial law.

Never release aquarium pets, water garden plants, live food (example: fish, crabs, molluscs) or live bait into rivers, streams, lakes, ponds or storm sewers. Releasing an organism into a body of water has the potential to start an invasion, but you can stop it. Stop the spread of invasive species – Don't let it loose!

Need more information

Contact:

- AIS@gov.mb.ca
- 1-877-867-2470

Small, adult Zebra Mussels found on moss or decorative algal balls in Alberta. Credit: Alberta government.