

Operational Guidelines for Aquatic Invasive Species Prevention and Equipment Cleaning

Why? Firefighter and public safety is still the first priority, but aquatic invasive plants and animals pose a risk to both the environment and to firefighting equipment (some species can clog valves, pumps, etc. if equipment is not completely drained or treated). Prevention and sanitation can prevent the spread of these organisms to other environments and help to assure that firefighting equipment remains operational.

Prevention, where possible

- Avoid dumping water directly from one stream or lake into another.
- Avoid obtaining water from multiple sources during a single operational period unless drafting/dipping equipment is sanitized between sources.
- Use screens and avoid sucking organic and bottom material when drafting from streams or ponds.
- Minimize driving equipment through waterbodies.

Sanitation

- Any equipment that comes into contact with raw water should be sanitized. Drying alone may be effective in some situations depending upon equipment, temperature, and relative humidity. Consult the Resource Advisor (READ).
- In coordination with the READ, establish sanitation areas where there is no potential for runoff into stormdrains, waterways, or sensitive habitats.
- Remove all visible plant parts, soil and other materials from external surfaces of gear and equipment. If possible, powerwash all accessible surfaces with clean, hot water ($\geq 140^{\circ}\text{F}$ ideally).
- Set up a portable disinfection tank using a 5% cleaning solution of quaternary ammonium compound, a common cleaning agents used in homes, swimming pools, and hospitals, and safe for gear and equipment when used at the recommended concentration. Two brands are readily available from GSA or local suppliers: *Quat128*[®] (by Waxie) or *Sparquat 256*[®] (by Spartan). Costs and effectiveness are comparable; both are labeled for use as fungicides/virucides. Follow individual agency integrated pest management requirements, including pesticide use proposals.

Recipe for 5% cleaning solution using either *Quat128*[®] **or** *Sparquat 256*[®]

Volume of tap water	Volume of <i>Quat128</i> [®]	Volume of <i>Sparquat 256</i> [®]
100 mL water	4.63 mL	3.00 mL
1 gallon water	6.35 liquid oz.	4.12 liquid oz.
1 gallon water	12.7 tbsp	8.2 tbsp
1 gallon water	0.79 cups	0.51 cups
100 gallons water	4.96 gallons	3.22 gallons
1000 gallons water	49.6 gallons	32.2 gallons

- For engines and tenders, empty the tank then circulate the 5% cleaning solution for 10 minutes. Float portable pumps in the disinfection tank and pump cleaning solution through for 10 minutes. Pump cleaning solution through hose then rinse with water. Discharge cleaning solution back into the disinfection tank for re-use.
- Where feasible dip gear or equipment (e.g. helicopter buckets) into the cleaning solution. Alternatively, put the 5% cleaning solution in backpack spray pumps to clean portable tanks, helicopter buckets, and other equipment. The solution must be in contact with the surface being sanitized for at least 10 minutes and then rinsed with water.
- Under the direction of the READ, test cleaning solution daily according to the directions below. The cleaning solution can be used repeatedly for up to a week unless heavily muddied or diluted. If the concentration is too weak, dispose of the used solution properly and make a new solution.

Safety

- Use protective, unlined rubber gloves and splash goggles or face shield when handling the cleaning solution and take extra precautions when handling undiluted chemicals. Have eye wash and clean water available on-site to treat accidental exposure.
- Consult the product label and Material Safety Data Sheet for additional information.

Testing Solution

- To determine if the solution is below the 5% strength use “Quat Chek 1000” Test Papers (purchase these from the supplier of the cleaning compound). The used cleaning solution needs to be diluted to about 600 ppm of ammonium compounds before it can be tested with these papers.
 - Take **one** cup of used *Sparquat 256*[®] cleaning solution, pour into a bucket. Add **5** cups of water. Mix. OR
 - Take **one** cup of used *Quat128*[®] cleaning solution, pour into a bucket. Add **4** cups of water. Mix.
- Test the diluted solution with “Quat Chek” Test Paper. Match up the color of the paper with the ppm’s on the color chart. For optimal disinfection, the diluted solution should have a concentration between 600 and 800 ppm. If it is too dilute, dispose of properly and make a new cleaning solution.

Disposal

- Use caution when disposing the used cleaning solution and follow all federal, state, and local regulations.
- Do not dump cleaning solution into any stream or lake, or on areas where it can migrate into any stormdrain, waterbody, or sensitive habitat. Small quantities may be disposed of down sanitary drains into a municipal sewer system. Larger quantities may need to be transported to a municipal wastewater treatment facility. Consult the facility operator/manager prior to disposal.
- Used cleaning solution may or may not be suitable for disposal in on-site septic systems. Consult the local agency’s utilities supervisor or facilities manager prior to disposal.
- It may be possible to dispose of used cleaning solution over open land or on roadways where there is no potential for runoff into stormdrains, waterways, or sensitive habitats. Consult the READ for appropriate locations before using this method and check with the appropriate state or county authority as state or local permits may be required¹.

Storage

Sparquat 256[®] and *Quat128*[®] can be stored up to two years in an unopened container without losing its effectiveness. Both should be stored in a cool, dry place, out of direct sunlight. Temperatures can range from 32° to 110° F.

Purchase

Both products are available from GSA (<https://www.gsadvantage.gov>) and are commonly available through local janitorial and swimming pool chemical suppliers.

- *Quat 128*[®] by Waxie’s Enterprises Inc.; GSA (NSN No. 170304) = \$36/case (4 gal); EPA registration #1839-166-14994. Additional info can be found at <http://www.waxie.com>
- *Sparquat 256*[®] by Spartan Chemical Company; GSA (NSN No. 1025-04) = \$54/case (4 gal); EPA registration #5741-9. Additional info can be found at <http://www.spartanchemical.com>
- Remember to buy “Quat Chek 1000” test papers when you purchase the chemicals.

¹ For discharges in Arizona, notify Arizona Department of Environmental Quality as soon as possible following the disposal, using the template letter, attached.

Agency/Fire #

Date, Year

Ms. Carrolette Winstead
Arizona Department of Environmental Quality
1110 West Washington Street, Mailcode 5415B-3
Phoenix, Arizona 85007

Dear Ms. Winstead:

We are requesting that Arizona Department of Environmental Quality's Water Quality Division grant a Temporary Emergency Waiver for the purpose of discharging water used in decontaminating fire-fighting equipment to prevent cross-contamination of water bodies within the State of Arizona. Decontamination is accomplished using a 5% solution of quaternary ammonium compound (Quat128[®] or Sparquat 256[®]) and water in engines, pumps, or other equipment that has been wetted by any raw (non-domestic or treated) water during fire operations. The solution is re-used until testing indicates it is muddied or diluted. Used cleaning solution is disposed of over open land where there is no potential for runoff into stormdrains, waterways, or sensitive habitats.

(Fill in information in italics, below)

- The discharge occurred during management of the *(Name)* Fire during the period *(date or dates of discharge)*, located in an area *(describe general area using roadways, communities, or landmarks)*. The approximate location of the discharge is *(UTM coordinates or legal description)*.
- The discharge consisted of approximately *(volume)* gallons of water from *(water body or other source)* containing approximately 5% *(identify either Quat128[®] or Sparquat 256[®])*.
- The discharge did not occur in or near a water of the U.S., or in an area where runoff could occur into stormdrains or waterways. *(This is essential. If runoff into a water body is unavoidable, do not dispose of solution in the area and truck to a municipal treatment plant.)*
- The Material Safety Data Sheet for the compound discharged is enclosed.

If you have any questions, please contact *(Name)* at *(Phone)*. Thank you for your assistance.

Sincerely,

(Agency Administrator)
(Title)

Enclosure (MSDS)

cc: Assistant Field Supervisor, Fish and Wildlife Service, Flagstaff, AZ (email:
brenda_smith@fws.gov)
(Your agency FMO)
(Others?)