

Questions and Answers on Spring Viremia of Carp for Producers

Q. What is spring viremia of carp (SVC)?

A. SVC is a contagious and potentially fatal viral disease of cyprinid fish, including common carp, koi carp, and goldfish. The number of North American fish species susceptible to SVC is not yet known. As its name implies, SVC is usually seen in the spring but it may also be seen in other seasons and in fish species other than carp. High fish mortality is generally seen in water with temperatures that range between 50–63 degrees F (10–17 degrees C). At high water temperatures, infected fish may develop immunity to the disease.

Q. What signs will I see in my fish if they are infected with SVC?

A. The first signs of SVC disease may be a change in behavior. Diseased fish may breathe and move more slowly, form groups in slow-flowing water near the pond bank, or lie on their sides at the pond bottom. The fish may have darkened skin, a swollen belly, bulging eyes, bleeding in the skin, and a protruding vent. However, these are nonspecific signs and may be caused by several other diseases as well.

Q. Could my fish have the virus and appear normal?

A. Yes. Fish that do not die from SVC may recover and appear healthy, but these fish actually may remain infected with the SVC virus and continue to shed and spread the virus to other fish. Other infected fish may develop immunity without ever showing obvious signs, but may still carry the virus. This outcome is more likely if fish are infected when water temperatures are greater than 63 degrees F (17 degrees C).

Q. How is the virus spread?

A. The virus is excreted (shed) in the feces, urine, and mucus of the infected fish and may remain infectious in the water for more than 4 weeks and in mud for 6 weeks or more (depending upon the temperature). The virus may also be spread through contaminated equipment, fish parasites, predatory birds, and on the outside of an infected fish's eggs.

Q. Why is SVC testing done in the fall and the spring?

A. During the fall and spring, water temperatures are within the appropriate range (10–17 degrees C) for maximal virus replication and reduced immune response in the fish. Testing that is conducted at least 2 weeks after water temperatures are within the appropriate range are most likely to give accurate and diagnostic results.

Q. What type of testing is done on the fish?

A. Internal organs, such as the kidney and spleen or brain, are used to detect SVC virus. Fish tissues are homogenized, and then placed in small flasks that contain a layer of healthy fish cells. If the virus is present, the healthy cells begin to die. These changes can be seen with a microscope.

Q. What can I do to protect my fish from becoming infected with SVC?

A. There are several recommendations for preventing SVC from becoming established on commercial farms. Developing a good, thorough, complete biosecurity plan for your fish is the best way to protect them. Some components of this type of plan may include:

- Purchase susceptible species of fish from sources known to be free of the SVC virus.
- New fish should be quarantined in water that is between 50 to 63 degrees F for as long as possible (at least 2 weeks) before introducing them into a pond or tank that contains other susceptible fish.
- Use a water source that is free of virus, such as well water or first-use spring water.
- Limit contact with wildlife and other predators.
- Chemically disinfect eggs by iodophore treatment.
- Disinfect ponds between crops and equipment between ponds or tanks.
- Dispose of all dead fish in a manner that prevents contact with other fish.
- Avoid contact with other fish, especially at shows.
- Avoid shared equipment.

Q. What can be done to cure my fish if the virus is isolated?

A. Once SVC virus is established in pond fish, it may be very difficult to eradicate without destroying all kinds of life on the fish production site. Antiviral drugs are not available or approved to treat SVC or other viral diseases of cultured fish. Vaccine development has been attempted, but further studies are necessary.

Q. How can the virus be destroyed?

A. SVC virus is destroyed by changing the pH of the water to below 3 or greater than 12. It is also susceptible to lipid solvents (such as detergents), and heat above 56 degrees C. It can be inactivated by several disinfectants including chlorine, iodine, sodium hydroxide, and potassium peroxomonosulphate known by its trade name Virkon. Ultraviolet light also inactivates the virus.

Q. What should I do if I think my fish have SVC?

A. SVC is an Office International des Epizooties (OIE) List B, reportable disease. The U.S. Department of Agriculture (USDA) is required to report any outbreaks to the OIE, the international standard-setting body for animal health. If you suspect SVC in your fish, you should contact, as soon as possible, the State veterinarian or the local Animal and Plant Health Inspection Service's (APHIS) Veterinary Services (VS) office in your State. See http://www.aphis.usda.gov/vs/area_offices.htm for a list of your State contacts.

Q. What should I do if my fish are positive for SVC?

A. Do not ship or transport fish from the farm site or pond.

- Contact State official/APHIS.
- Be prepared to take samples of fish from your ponds and facilities to determine where the virus is present.
- Request USDA SVC indemnification assistance if your fish must be destroyed and also assistance for payment of cleaning and disinfection of your farm/ponds if needed.

Q. Is SVC a new disease?

A. No. It has been well-known in Europe for many years. However, it was first definitively identified in commercial fish in the United States in the spring of 2002.

Q. What activities is APHIS undertaking?

A. APHIS-VS is conducting surveillance throughout the United States to determine how widespread the disease might be. It is developing import protocols to ensure that SVC-susceptible species from other countries do not enter the United States without a certificate of veterinary inspection showing they are free of the disease. There is a voluntary export certification program for producers who have their fish tested and declared as being SVC-free.

Q. Where can I get more information on SVC?

A. Current information on aquatic animal diseases is available on the Internet at <http://www.aphis.usda.gov/vs/aqua/aquaphis.html>. If you have additional questions contact:

USDA, APHIS, VS
Emergency Programs Staff
4700 River Road
Riverdale, MD 20737
Phone (301) 734-8073

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