



Pennsylvania Animal Diagnostic Laboratory System
PADLS - NBC
New Bolton Center
382 W. Street Rd.
Kennett Square PA 19348
Phone: (610) 444-5800 Fax: (610) 925-6822

Report Date: 10/26/2012

Amended Report

Date Submitted: 10/24/2012

Case Coordinator: Lisa Murphy

Accession No: N1224816

NCSU- CVM
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Associated Parties

Veterinarian - out of state: Dr. Greg Lewbart; NCSU- CVM
Owner: Ms. Christina Apperson

History

General

Client koi pond die off. In March 2012 client installed an AquaScape copper ion exchanger (IonGen) in an effort to rid pond of algae and control parasites on the fish. Three fish became lethargic and cachectic. One died as of 10/14/2012. Three days prior the ion exchanger was disconnected. Koi seem to be acting more alert (healthier). Want to confirm/rule out copper toxicity in pond water.

Lab Findings

Toxicology

General Results

Test: Nutritional Mineral Screen
Sample: Water

Calcium	ppm	18.3
Copper	ppm	0.123
Iron	ppm	<0.05
Magnesium	ppm	5.61
Phosphorus	ppm	<0.05
Potassium	ppm	2.74
Selenium	ppm	<0.05
Sodium	ppm	975
Zinc	ppm	<0.05

(cb 10/25/12)

Interpretation



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Interpretation

Drinking water standards for livestock (mg/L):

	<u>National Research Council</u>	<u>Canadian</u>
<u>Enforceable Standards</u>		
Copper	0.5	1.0 - cattle 0.5 - sheep 5.0 - swine
Selenium		0.05
<u>Secondary Standards</u>		
Zinc	25.0	25.0

Range or mean of mineral concentrations found in fresh and salt water (mg/L):

	<u>Fresh Water</u>	<u>Salt Water</u>
Copper	0.001-0.02	0.015
Selenium	0.001-0.003	0-0.001

Copper levels associated with toxicity in freshwater fish (ppm):

Soft water >0.03-0.7
Hard water >0.6-6.4

Client Report History

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