

Water Treatment Chemicals.txt

From: Rod Kimbro
Sent: Saturday, June 21, 2003 7:14 AM
To: Young I Lee
Cc: Rod Kimbro
Subject: Water Treatment Chemicals

Dr. Lee:

Mark Daniels asked me to review the chemicals previously utilized to treat the injection water at the water treatment plant; specifically, aluminum sulfate, polyacromate, zinc sulfate and sodium dichromate.

The usage is/was

10 to 15 tons/day	Aluminum sulfate
50 kg/day	Polyacrylate
quantity not stated	Zinc sulfate
5 tons/week	Sodium dichromate
20 tons/week.	Salt

At a flow of 25,000 gpm the amount of each compound added is as follows:

20 to 40 mg/L, depending on turbidity	Aluminum sulfate
unknown	Polyacrylate
1 to 2 mg/L	Zinc sulfate
5 mg/L.	Sodium dichromate

As you are aware, aluminum sulfate (alum) and polyacrylate are commonly used flocculation/settling chemicals. I see no environmental/health issues related to the continued use of these compounds to clarify the influent to the water treatment plant.

Zinc sulfate and sodium dichromate are commonly used corrosion inhibitors.

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The EPA Secondary Maximum Contaminant Limit (MCL) for zinc is 5 mg/L. The MSDS for zinc sulfate and EPA Secondary MCLs are attached.

Sodium dichromate has been replaced as a commonly utilized corrosion inhibitor in the US due to its toxicity and disposal issues. Sodium dichromate is a strong irritant and a potential carcinogen. The MCL for Total Chromium in drinking water is 0.1 mg/L. The MSDS for sodium dichromate and EPA Primary MCLs are attached. Waste sodium dichromate and materials contaminated with sodium dichromate would be considered hazardous waste in the US.

During our inspection of the chlorine tanks at the water treatment plant, I observed areas of soil that had been discolored yellow east and southeast of the chlorine drums and on the west side of the chlorine tank storage area. The areas are potentially contaminated with sodium dichromate spilled during the looting activities which occurred at the water treatment plant.

Due to the potential toxicity of sodium dichromate I suggest that the areas of soil stained yellow be cordoned off and that samples be collected and tested to determine the concentration of hexavalent chromium and total chromium in these areas. If it is determined that the yellow soils are contaminated with sodium dichromate, I recommend that these soils be excavated and placed in drums; the drums being labeled and stored in a secure area. The excavation should proceed at least one foot in all directions past the yellow staining.

In addition, I suggest that another less toxic material be identified to replace the sodium dichromate as there is a potential for use of the treated injection water for drinking, bathing and cooking by uniformed persons. End use of the treated injection water should be undertaken and testing of end use taps where there is a potential for human contact should also be considered as residual concentrations of chromium may be present in the injection water pipelines.

If you agree, you may want to forward this email to Mark Daniels in Engineering.