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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Karen E. Deff
EXECUTIVE SECRETARY

May 1, 1995

To: Board of Directors (Special Committee on Water Quality and Environmental Compliance - Information)
(Engineering and Operations - Information)

From: General Manager

Subject: Las Vegas, Nevada - Waterborne Cryptosporidiosis Outbreak

RECOMMENDATION:

For information only.

John R. Wodraska
General Manager

Submitted by:

Ray L. Wolfe
for Mark D. Beuhler
Director of Water Quality

Concur:

John R. Wodraska

John R. Wodraska
General Manager

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Attachments

DETAILED REPORT:

In the spring of 1994, there was a significant increase in the number of cases of cryptosporidiosis in Clark County, Nevada, where Las Vegas is located. This outbreak resulted in 78 cases of illness, of which 16 individuals eventually died. A report covering an extensive investigation of this outbreak was recently issued by the U.S. Centers for Disease Control and Prevention (CDC). Among the conclusions that CDC reached (Attachment No. 1) was that municipal drinking water was the most likely source of Cryptosporidium during this outbreak and suggested that "drinking water that is many times better than that required by the current national standards may not necessarily be free of Cryptosporidium." This waterborne outbreak was highlighted in a recent issue of the American Water Works Association newsletter, WaterWeek (Attachment No. 2).

An outbreak of cryptosporidiosis was believed to have occurred because of the sudden increase in illness as compared with 1993 (Figure 1). As shown in the attached Figure from the CDC report, most of the persons displaying symptoms of cryptosporidiosis were those with impaired immune systems, primarily those with HIV infections (Table 1). It is well recognized that severely immunocompromised populations are susceptible to serious effects caused by cryptosporidiosis as well as other infectious agents. Of the 16 deaths observed during the outbreak all were associated with HIV positive individuals. Many of these deaths were thought to be, at least in part, attributable to Cryptosporidium. Importantly however, eleven children and four adults, who were not positive for HIV, also contracted cryptosporidiosis during the outbreak.

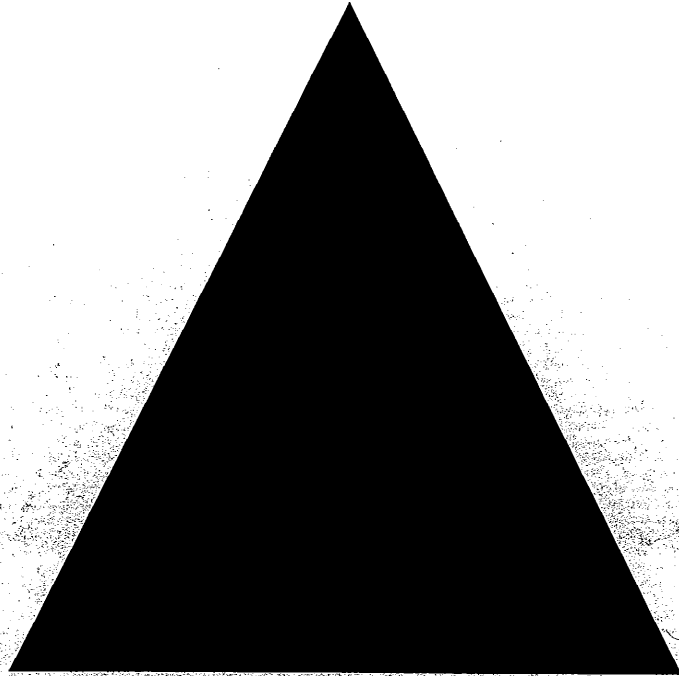
The Las Vegas cryptosporidiosis incident is the first outbreak reported in a major community water system where there were neither significant known source contamination problems nor treatment plant deficiencies. Water used at the Las Vegas treatment plant is received from Lake Mead which has influent turbidities of approximately 0.1 NTU. The intake is located immediately north of a boat marina and 130 feet below the surface of the lake. No confirmed Cryptosporidium oocysts were detected in monthly samples of the influent or in treatment plant effluent samples collected biweekly. The CDC report concluded that, based on the epidemiological data, Cryptosporidium oocysts must have been present in the lake and penetrated the treatment plant. Although no specific sources of Cryptosporidium contamination were identified, potential sites of contamination discussed in the CDC's report included a swimming area and boating marina located near the intake and a secondary-treated wastewater discharge site located six miles upstream from the intake.

This outbreak is important to Metropolitan because: (i) the source of supply for Las Vegas, Nevada, is Colorado River water from Lake Mead; (ii) the Las Vegas water treatment plant is a modern, well-operated facility; and (iii) Cryptosporidium was not found in the raw or treated water. Metropolitan does have the advantage of additional detention time for Colorado River water through our aqueduct system and storage in Lake Mathews or Lake Skinner which may assist in minimizing concentrations of Cryptosporidium entering our treatment plants.

Although Metropolitan is not vulnerable to a massive outbreak of cryptosporidiosis such as what occurred in Milwaukee in 1993, there always exists a probability, although remote, that any water provider is vulnerable to a "Las Vegas-type outbreak." The recent events in the City of San Francisco, where treatment process failure resulted in high levels of Cryptosporidium in finished water, further highlighted the water industries concern over Cryptosporidium (see Attachment No. 3). Metropolitan has developed a three-point action plan to assess our vulnerability and to minimize exposure of consumers to a "Las Vegas-type outbreak." The action plan will be presented to your Board for approval at the June meeting.

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