

CENTRAL BASIN MUNICIPAL WATER DISTRICT

**MARCH 7, 2005 - Water Resources**

Cole, Vasquez

**MARCH 21, 2005 - Board Meeting**

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INFORMATION CALENDAR

WATER QUALITY FOLLOWING NATURAL DISASTERSSUMMARY:

Following the tsunami that hit Southeast Asia on December 26, 2004, the world has watched in shock as the number of those killed by the wave has reached close to 300,000. Equally as significant is the fact that no nation affected by the tsunami has suffered from epidemic disease outbreaks caused by polluted water supplies. No unusual outbreaks of communicable diseases or gastrointestinal/respiratory infections have been reported in Thailand or Sri Lanka. Maldives has experienced a few hundred cases of diseases, more than half attributed to acute respiratory infections. Indonesia has seen a handful of cases of bloody diarrhea, dengue fever, typhoid, and hepatitis A/E. India also reports no outbreak of communicable diseases, but a few sporadic cases of acute respiratory infection and acute diarrhea disease. Massive vaccinations, insecticide treatment, temporary toilet facilities, and temporary shelters have helped improve hygiene and sanitary conditions. Measures to restore potable water to affected communities has included bottled water, pumping/decontamination of water wells, installation of reverse osmosis plants, installation of water quality monitoring equipment, water purifying tablets, and mobile water treatment units.

As a water purveyor, it is important to understand just how vulnerable potable water supplies can be to contamination following any natural disaster, not just those of astronomical proportions like tsunamis.

The biggest threat to drinking water supplies comes from micro-organisms, although chemical contamination can also be of concern. Diarrhea, typhoid, hepatitis, dysentery, and cholera are familiar diseases that can result from bacteria, virus or parasite contamination.

During a tsunami, or any massive flood that swamps large land areas, drinking water wells become submerged. Not only does this make the wells susceptible to contamination by micro-organisms and chemical contamination, but it also inundates supplies with salt water. Surface water supplies can also be contaminated with bodies, debris, and salt water.

Infrastructure and treatment facilities may be damaged or completely destroyed as well.

With coastal flooding, the saltwater intrusion into water supplies will render the water unpleasant to many, alleviating concerns that they will drink the contaminated water. However, disease-causing micro-organisms have no taste or odor to warn unsuspecting people that the water may be contaminated.

Ingesting salt water in small doses will not kill anyone; however, even small amounts of water contaminated with micro-organisms could lead to any number of diseases, and possibly death.

Additionally, any chemical contaminants spilled into the water from damaged pipes/trucks, etc. adds another dimension of health impacts.

In emergencies like this, water purveyors must make tough choices regarding short and long term risks and benefits for health. This may result in serving water with mild chemical contamination to customers, knowing that the short-term exposure is of little concern compared to the long-term need for pathogen-free water. Adequate disinfection of water sources can safely remove micro-organisms, but will not necessarily remove chemical concerns.

Even in a drought, water quality can also be of concern. Water shortages can increase diseases such as trachoma and scabies, while overuse of limited water supplies can lead to contamination and outbreaks of diarrhea and cholera. The increased pressure on remaining water supplies leads to the multiple use of water supplies that were only intended for singular use.

Massive disease outbreak from contaminated water following a natural disaster can be limited with adequate preparation by water companies. Some recommended items include having an emergency plan, back-up emergency water sources, pumps, water-purifying tablets, antibiotics, insecticide sprays, and portable disinfection/water treatment units.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on March 7, 2005 and agendaized to the March 21, 2005 Board meeting as information for discussion.

RECOMMENDED MOTION:

This item is for information only.

EXHIBITS:

None.