

WATERBORNE PATHOGENS
OF THE U.S. VIRGIN ISLANDS

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ABSTRACT

A series of water quality analyses were carried out during 1985 on drinking water sources in the U.S. Virgin Islands. The object of the study was to determine which human pathogens might be present, the implications of their presence, and the value of current Environmental Protection Agency indicators for predicting the presence of pathogens.

Water samples were taken from seven cisterns, four wells, and five places along the public water line (16 total). A four liter sample was taken at each site and returned immediately to the lab for processing. Each sample was checked for total and fecal coliform using both multiple tube and membrane filter methods approved by the American Public Health Association and U.S. Environmental Protection Agency. They were cultured, where applicable, on standard enrichment broth and on selective media. Individual colonies were removed and cultured on eight differentiating media as well as on the API strips (Analytab Products, Plainview, N.Y.: 20 tests). Controls were run simultaneously using: Blanks, (no inoculum) and pure cultures of eight species from the American Type Culture Collection (ATCC).

The results of these 1800 separate tests were collated and compared for consistency, occurrence of pathogens, and reliability of prediction from the coliform tests. Thirty-

two species of bacteria, twenty of them pathogens, were found. This analysis showed that:

1. All of the 16 sources had human pathogenic bacteria present. Fifteen of the 16 sources also had fecal streptococcus present while 9 of the contaminated sources would pass current coliform EPA water quality standards.
2. Use of a "pre-enrichment" technique is vital to get a true estimate of the less vigorous pathogens and injured coliforms.
3. Current EPA indicators used for contaminated drinking or groundwater are, at least in the V.I., useless for predicting the presence or absence of pathogens.

Further comparison of these results with earlier work on ground and cistern water indicates that the problem may be more severe and ubiquitous than previously thought.

Recommendations are made for future management, detection studies, and control.