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INACTIVATION OF HEPATITIS A VIRUS (HAV)
BY CHLORINE AND IODINE IN WATER

ANNUAL REPORT

by

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SUMMARY

Studies were done in a batch reaction system to determine the kinetics and extent of inactivation of aggregated preparations of hepatitis A virus (HAV), strain HM175, poliovirus type 1, strain LSc, and echovirus type 1, strain V239, by 1 mg/l free chlorine and one tablet per quart Army iodine in halogen demand-free water buffered at pH 4.5, 7.0 and 9.5 and at temperatures of 5 and 25°C. The results obtained so far indicate that HAV is rapidly inactivated by 1 mg/l free chlorine under these conditions, with times for 99.99% inactivation (T99.99) of <10 minutes at 5°C and <15 minutes at 25°C. Polio 1 and echo 1 also were inactivated rapidly under most of these same conditions. The exception was pH 9.5, where times for 99.99% inactivation of polio 1 and echo 1 were 65 and 147 minutes, respectively, at 5°C.

In experiments done so far, HAV was inactivated rapidly by one tablet per quart iodine in buffered, halogen demand-free water at pH 7.0 and 9.5, with T99.99 values of <1 minute. In contrast, polio 1 and echo 1 were not inactivated rapidly by this concentration of iodine at pH 4.5 and 7.0.

The results obtained so far indicate that the HM175 strain of HAV is inactivated rapidly by free chlorine and Army iodine. However, further studies must be done in order to determine the sensitivity of HAV to these halogens in the presence of appreciable halogen demand and other potential interferences. In addition, studies must be done with other strains of HAV in order to determine if their sensitivity to chlorine and iodine is similar to or different from that of the HM175 strain of HAV.

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