Comparison of Chlorine and Chloramine in the Release of Mercury from Dental Amalgam

In drinking water treatments, a form of chlorine is used for disinfection so that bacteria do not contaminate pipes. Most drinking water treatment plants use chlorine (HOCl/OCl-), but some have switched to monochloramine (NH_2Cl). Although chlorine is a stronger germicide, monochloramine is more stable in water, and thus more effective, especially in large drinking water distribution systems.

Another well-known trait of chlorine and monochloramine is their ability to mobilize mercury. ISTC partnered with researchers from the Naval Institute for Dental and Biomedical Research to see how chlorine and chloramine would affect the mobilization of mercury from dental amalgams in wastewater.

The researchers discovered that when they experimented with chloramine concentrations at 2.5 times the U.S. EPA's recommended maximum disinfection level, chloramine mobilized mercury 25 times less than chlorine at the same concentration. The researchers felt that chloramine is not likely to mobilize mercury. The caveat is that chloramine can mobilize lead, which can increase blood lead levels in people who drink water from older systems containing lead pipes.

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