



WEAK CHLORINE SOLUTIONS CAN KILL NOROVIRUSES

Chlorine solutions much weaker than previously believed can still be used to kill more than 99 percent of noroviruses, the chief cause of outbreaks of gastrointestinal illness around the world, a new University of North Carolina at Chapel Hill study concludes.

According to Science Daily, researchers discovered for the first time that dilute solutions of **hypochlorous acid**, or free chlorine, as low as 200--or even 20--milligrams per liter will completely inactivate noroviruses on surfaces such as stainless steel and ceramic tile. Dr. Mark D. Sobsey, professor of environmental sciences and engineering at the UNC School of Public Health, and postdoctoral fellow Dr. Geunwoo Park conducted the research. They also found that the dilute chemical worked quickly -- in five minutes or less. "This is good news since noroviruses are the leading cause of viral gastroenteritis," said Sobsey, director of the school's Environmental Health Microbiology Laboratories. "They have caused countless outbreaks of gastroenteritis in health-care facilities, schools, food establishments, hotels and resorts and on cruise ships."

Decontamination of affected facilities can prove difficult since the viruses persist on environmental surfaces and are resistant to some widely used sanitizers, he said. And they are highly infectious even at low doses.

*In their studies, the scientists dried a group II norovirus--the predominant form circulating in the USA--and a widely used indicator virus, bacteriophage MS2 infecting E. coli, on stainless steel and ceramic surfaces, Sobsey said. After treating those surfaces **with 200 milligrams per liter solution of hypochlorous acid** for one minute, they tested them to learn how much virus remained. **The viruses dropped 99.99 percent.***

In practical terms, that means that household bleach can be diluted by a factor of 1,000 and still work, Sobsey said. In all likelihood, it would even disinfect noroviruses on hard surfaces if diluted by a factor of 10,000. At full strength, the bleach contains 50,000 to 60,000 milligrams per liter of chlorine.

Regularly disinfecting bathrooms, kitchens and other areas prone to harbor viruses and bacteria is important because outbreaks of gastrointestinal illness, which include nausea, vomiting and diarrhea, can kill people, especially if they are old or dehydrated, Sobsey said. While most otherwise healthy patients recover after a few days of discomfort even without treatment, noroviruses can continue to sicken others until facilities have been thoroughly sanitized with products proven to be effective.