



Use of Hydrogen Peroxide for Coronavirus Disinfection

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MTAS received an inquiry about the use of hydrogen peroxide as a disinfecting agent for the coronavirus as an option to bleach because of bleach's corrosive potential and irritating odor. MTAS researched this question and provides the following information. MTAS does not recommend or endorse any product, and the products mentioned here are for illustration only. MTAS recommends that municipalities do their own research and select products and procedures that meet local needs.

The most common form of hydrogen peroxide available is a 3% concentration in a dark plastic bottle at a pharmacy or other store. Currently, 3% hydrogen peroxide may be difficult to find due to high demand.

There is another form of hydrogen peroxide called accelerated hydrogen peroxide (AHP). This is a synergistic mixture of hydrogen peroxide, surfactants, and inert ingredients which results in a stabilized disinfectant that is more effective than plain hydrogen peroxide. The benefits of AHP over 3% hydrogen peroxide include better cleaning efficiency and a shorter dwell, or contact, time for the product to remain on the surface. The product must remain on the surface of the item being cleaned and decontaminated long enough for the hydrogen peroxide to kill whatever pathogens are present.

The coronavirus is an enveloped virus, which is a type of virus that is susceptible to hydrogen peroxide. With proper application and dwell time, both 3% hydrogen peroxide and accelerated hydrogen peroxide will kill the coronavirus to a rate of at least 99.9%.

Cleaning versus Disinfecting

Removing the coronavirus requires both cleaning and disinfecting. Cleaning is the removal of dirt, germs, impurities, etc. Disinfecting is killing germs and viruses on surfaces. Cleaning is especially important before disinfection if the surface has blood or body fluids on it. Clean the surface first with soap and water and allow the surface to dry before disinfection.

3% Hydrogen Peroxide

When using 3% hydrogen peroxide, apply the product undiluted on the surface of the item to be cleaned and decontaminated. If the item is very soiled, it should be cleaned first before applying the hydrogen peroxide, as organic materials may reduce the effectiveness of hydrogen peroxide as a virucide. A minimum dwell time of 10 minutes is needed to kill the coronavirus. Care should be taken with fabrics or other items that might be discolored as a 3% concentration might cause discoloration. If discoloration is a concern, test a small

portion of the item first before applying the 3% concentration to the entire object. It is acceptable to let the surface air dry.

Accelerated Hydrogen Peroxide

The CDC recommends an 0.05% concentration of AHP to kill the coronavirus. Accelerated hydrogen peroxide is a commercial product that can be purchased from many suppliers. Here are two examples.

Accel General Virucide. This product is a surface cleaner and disinfectant. It is available as a 7.5% accelerated hydrogen peroxide concentrate that must be diluted with water to a concentration of 0.05% for use. At a concentration of 0.05% a minimum dwell time of 5 minutes is needed to kill the coronavirus.

Baquacil® Pool Oxidizer. This product is a liquid oxidizer that contains 27% specially-stabilized hydrogen peroxide and is used to clarify swimming pool water. This product can be mixed with water at the rate of 1.5 ounces of product to one quart of water to create a concentration of 0.05% AHP. Care must be taken when handling this product before dilution because a 27% concentration of hydrogen peroxide can cause eye and mucous membrane irritation, eye damage, and skin irritation (UN 2014, ERG Guide 140). Use gloves, eye, and splash protection when handling the concentrated product. At a concentration of 0.05% a minimum dwell time of 5 minutes is needed to kill the coronavirus. When applied at a diluted rate of 0.05% the product is not likely to cause discoloration but test a small portion of the item first if discoloration is a concern.

How to Apply

Hydrogen peroxide may be applied from a squirt bottle for smaller areas or from a hand sprayer for larger areas. A small plastic garden-type hand sprayer typically holds a gallon or less of product and is light enough to carry around the station to disinfect surfaces, or to carry around the apparatus to disinfect the cab, compartments, SCBA packs and cylinders, tools, and equipment. The solution can be applied to turnouts. Apply enough solution to coat the surface. It is acceptable to let the surface air dry.

Special Consideration for Electronic Devices

Do not spray hydrogen peroxide (or other cleaning fluids) directly on electronic devices such as radios, radio microphones, MDTs, meters, computers, or cell phones. Cover radios, MDTs, and other permanently mounted electronic equipment before spraying down the cab. Wipe these devices down separately with a cleaning cloth containing the hydrogen peroxide solution.

An example of a commercial accelerated hydrogen peroxide wipe is PREempt™ One-Step Disinfectant Wipes. This product contains 0.5% accelerated hydrogen peroxide and can be used to wipe down surfaces that should not be sprayed. A dwell time of at least 1 minute is needed to kill the coronavirus: The surface should be wiped down and allowed to air dry.