How to Use the
EPA's *List N for Emerging Pathogens*
to Find the Safest Disinfectants Effective Against the Covid-19 Virus

Overview of the EPA's List N

EPA's Antimicrobial Division maintains lists of disinfectants selected for use on common pathogens (microbes that cause disease, AKA germs). They do this because disinfectants are formulated and tested to be effective against specific germ(s). These lists help the end user select the right type of product for the germ they are concerned about. EPA's lists include:

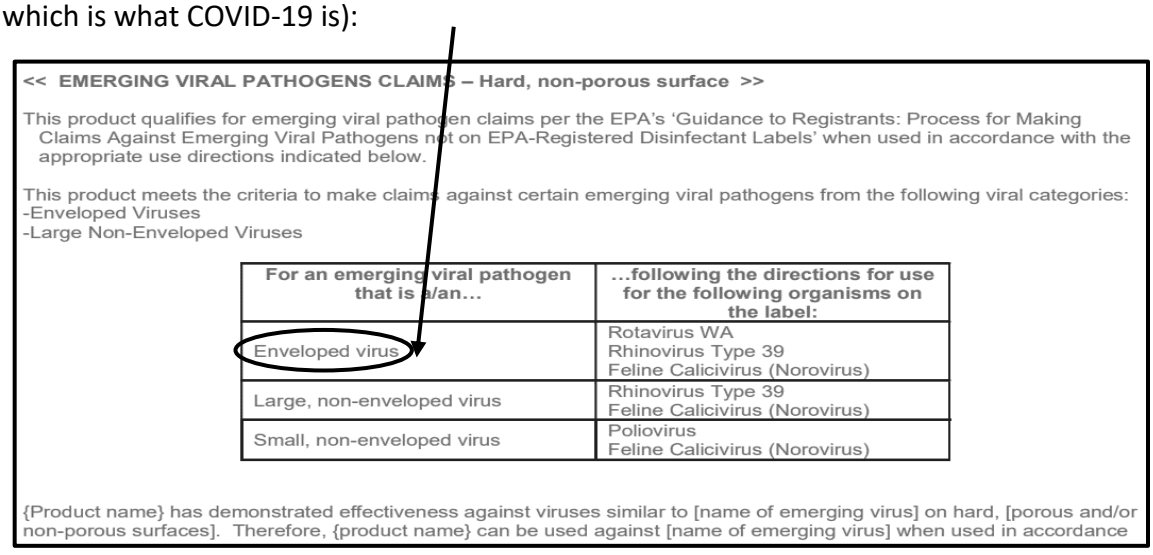
Lists A-M:

These lists are specified for products that have been tested and registered to be effective against the Norovirus, Ebola, *C. difficile* spores, avian flu, etc.

List N:

This list provides products that meet EPA criteria for use against SARS-CoV-2, the virus that causes the disease, COVID-19. Since the COVID-19 outbreak is so new, disinfectant products have not been tested to kill it. Since it can take more than a year to for a company to obtain a viral "kill claim" for a disinfectant approved and registered by EPA, EPA has enacted a "hierarchy-based" policy. This means that if a disinfectant has been registered by EPA to be effective against harder-to-kill viruses, it is likely to kill a virus like COVID-19[1]. Thus, EPA has developed the following two criteria that products are required to meet for the product to be added to the List N:

- It must already be approved for control of "human coronavirus", or
- It must include an "Emerging Viral Pathogen" statement. The statement documents that the disinfectant is going through, or has gone through EPA's protocol for Emerging Viral Pathogen Guidance for Antimicrobial Pesticides. This enables use of an existing product for a more rapid response. Here is an example (note that it is for an "Enveloped Virus" which is what COVID-19 is):



<< EMERGING VIRAL PATHOGENS CLAIMS – Hard, non-porous surface >>

This product qualifies for emerging viral pathogen claims per the EPA's 'Guidance to Registrants: Process for Making Claims Against Emerging Viral Pathogens not on EPA-Registered Disinfectant Labels' when used in accordance with the appropriate use directions indicated below.

This product meets the criteria to make claims against certain emerging viral pathogens from the following viral categories:
-Enveloped Viruses
-Large Non-Enveloped Viruses

For an emerging viral pathogen that is a/an…	…following the directions for use for the following organisms on the label:
Enveloped virus	Rotavirus WA Rhinovirus Type 39 Feline Calicivirus (Norovirus)
Large, non-enveloped virus	Rhinovirus Type 39 Feline Calicivirus (Norovirus)
Small, non-enveloped virus	Poliovirus Feline Calicivirus (Norovirus)

{Product name} has demonstrated effectiveness against viruses similar to [name of emerging virus] on hard, [porous and/or non-porous surfaces]. Therefore, {product name} can be used against [name of emerging virus] when used in accordance

[1] chemicalsafetyfacts.org - https://www.chemicalsafetyfacts.org/antimicrobials/

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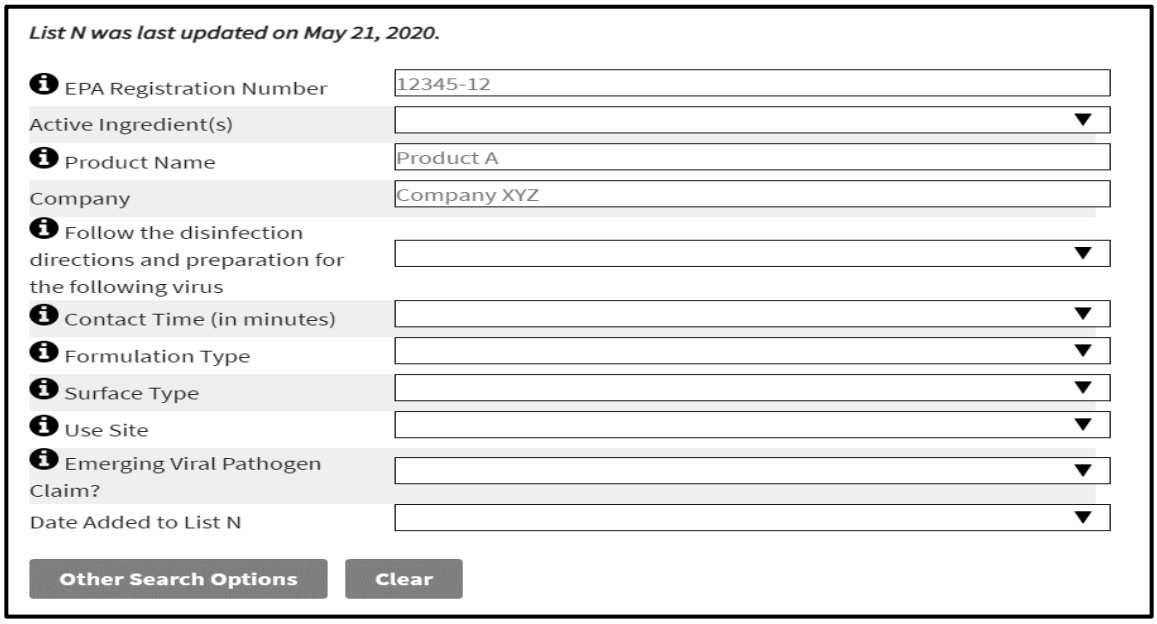
What the List N is not:

- A static or exhaustive list of products, as EPA continues to add products and update the list. EPA started the list in early March of 2020. EPA posts the date that the list is updated.
- An endorsement by EPA just because a product is included on the List N. Inclusion on the list is not a platform for manufacturers to advertise their product's effectiveness against the virus that causes COVID-19 (unless they have met other EPA criteria). This is a list for end users who are seeking to use the products.
- A list of environmentally preferable products. Although part of EPA's decision to register a product is based on whether that product will perform the specific function for which it is being registered without causing unreasonable risk to human health or the environment[2], it does not mean it cannot cause health effects. Please see the fact sheet "*Choosing Safer Disinfectants*" for a subset of the List N that lists environmentally preferable products.
- A list of products used on humans or animals, only on non-porous, hard surfaces. There are products registered for the animal coronavirus, but are not included on the List N.

How to Search the List N

- The List N database is searchable in a number of fields as illustrated below and can be exported into a PDF or CSV format.



[2] https://www.chemicalsafetyfacts.org/antimicrobials/

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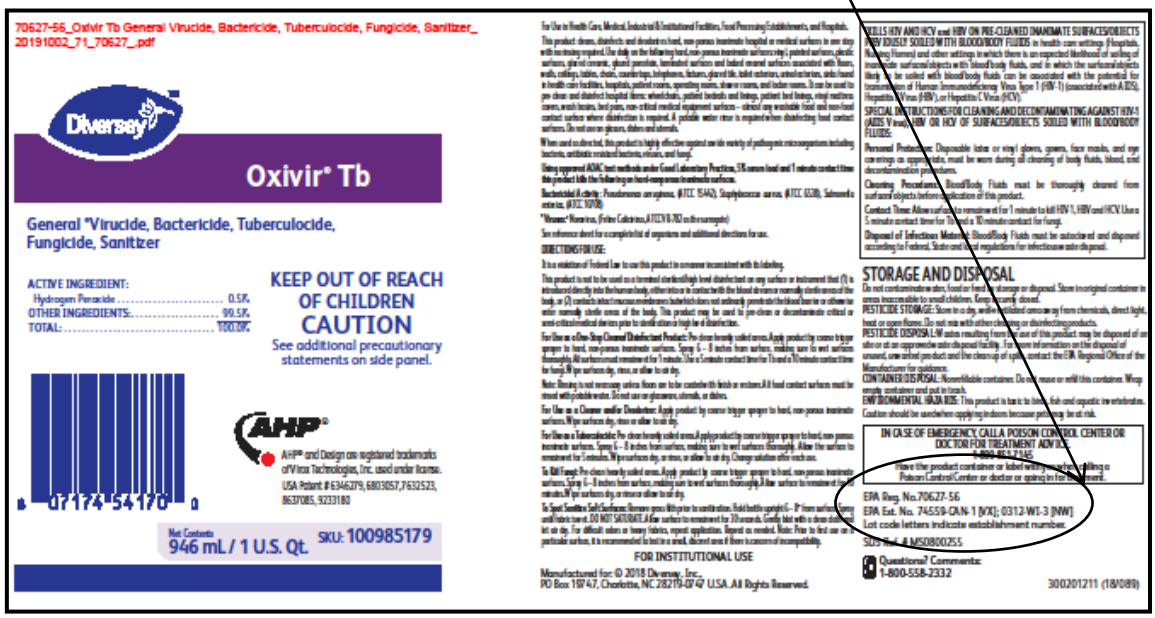
The search function can be very helpful in many ways. For example, it is possible to search products with short contact times, by a certain ingredient, EPA Registration Number, etc.

- Use the EPA Registration Number to search for a specific product - If a product is labeled a "disinfectant", it will always have an EPA Registration Number listed on the label. If you do not have the label, you can contact the distributer or manufacturer or search for the number on the internet.


70627-56_Oxivir Tb General Virucide, Bactericide, Tuberculocide, Fungicide, Sanitizer_20191002_71_70627_.pdf

Diversey

Oxivir® Tb

General *Virucide, Bactericide, Tuberculocide, Fungicide, Sanitizer

ACTIVE INGREDIENT:
Hydrogen Peroxide 0.5%
OTHER INGREDIENTS: 99.5%
TOTAL: 100.0%

KEEP OUT OF REACH OF CHILDREN
CAUTION
See additional precautionary statements on side panel.

0 71174 54170 0

AHP® and Design are registered trademarks of Virox Technologies, Inc. used under license. USA Patent # 6346279, 6803057, 7632523, 8637085, 9233180

Net Contents 946 mL / 1 U.S. Qt. SKU: 100985179

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STORAGE AND DISPOSAL

EPA Reg. No. 70627-56
EPA Est. No. 74559-CAN-1 [VX]; 0312-WI-3 [NW]
Lot code letters indicate establishment number.

Questions? Comments: 1-800-558-2332

300201211 (18/089)

Once you have the EPA registration number, it can also be inserted in the search box "Search by EPA registration number" on EPA's website https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2 without opening all the fields in the database.

This registration number is the most reliable way to determine if a product is on the List N because distributors are allowed to sell products with identical formulations and efficacy and market them under alternative brand names in addition to their "primary product".

- Interpreting the EPA Registration Number to identify products – an example:

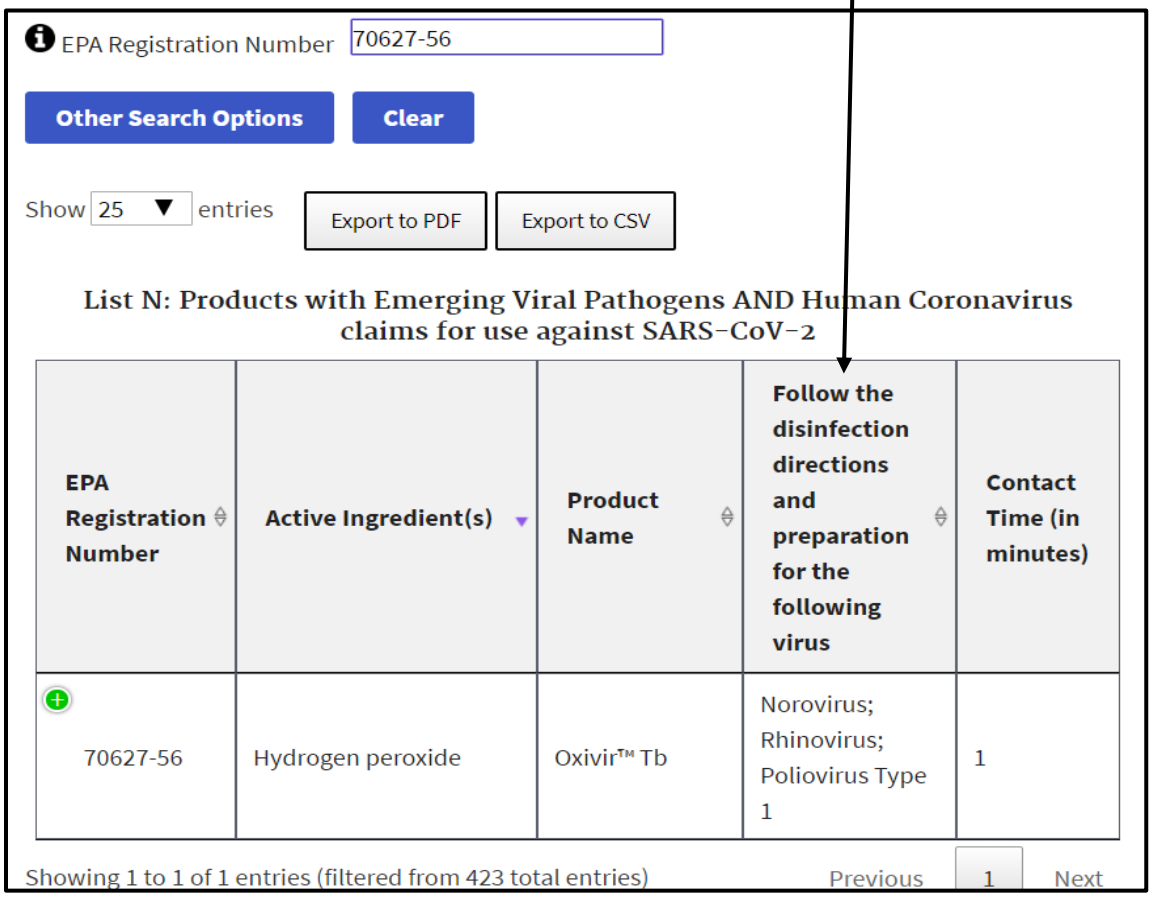
  EPA Registration Number (12345-12) – consists of two sets of numbers separated by a hyphen. The first set of numbers refers to the registrant's company identification number, and the second set of numbers represents the primary product number.

  EPA Registration Number (12345-12) - 2567 – if there is also a third set of numbers, it represents the Distributor/Re-labeler identification number who repackaged the

product for distribution. It represents a distributor product with an identical formulation and efficacy to the primary product.

Thus, the third set of numbers is irrelevant for determining if a product on the list is a match with a product you are evaluating. Just look at the first two sets of numbers and if they are the same as the one on the List N, then it is an equivalent product and can be used for the control of the virus causing COVID-19.

- Once you determine a disinfectant is on the List N, or find one that you would like to obtain, you will see the use protocols by looking in the fourth column of the list for the viruses EPA has identified as surrogates for SARS-CoV-2.


EPA Registration Number 70627-56

Other Search Options | Clear

Show 25 entries | Export to PDF | Export to CSV

List N: Products with Emerging Viral Pathogens AND Human Coronavirus claims for use against SARS-CoV-2

EPA Registration Number	Active Ingredient(s)	Product Name	Follow the disinfection directions and preparation for the following virus	Contact Time (in minutes)
70627-56	Hydrogen peroxide	Oxivir™ Tb	Norovirus; Rhinovirus; Poliovirus Type 1	1

Showing 1 to 1 of 1 entries (filtered from 423 total entries) Previous 1 Next

- Once you have identified the virus(es) on the List N that the selected disinfectant is registered to kill, check the product label for directions for dilution, use protocols and dwell time for the virus(es) listed.

  If the type of virus(es) referred to on List N is not listed on the label or the contact time is different, contact the manufacturer to determine requirements for use.

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If a product is not on List N, what are the reasons?

- *It is not a disinfectant (it may be a sanitizer or cleaner only), it may not have:*

  Virus-killing claims – sanitizers are only registered to kill bacteria.

  An EPA Registration Number – all disinfectants are required by law to have one as disinfectants are antimicrobial pesticides and manufacturers must verify that the kill claims are valid.

- *It is a qualifying disinfectant, but hasn't been added yet to the List N:*

  Kill Claims - Look for "human coronavirus" on the label.

- *It is a disinfectant, but doesn't list "human coronavirus":*

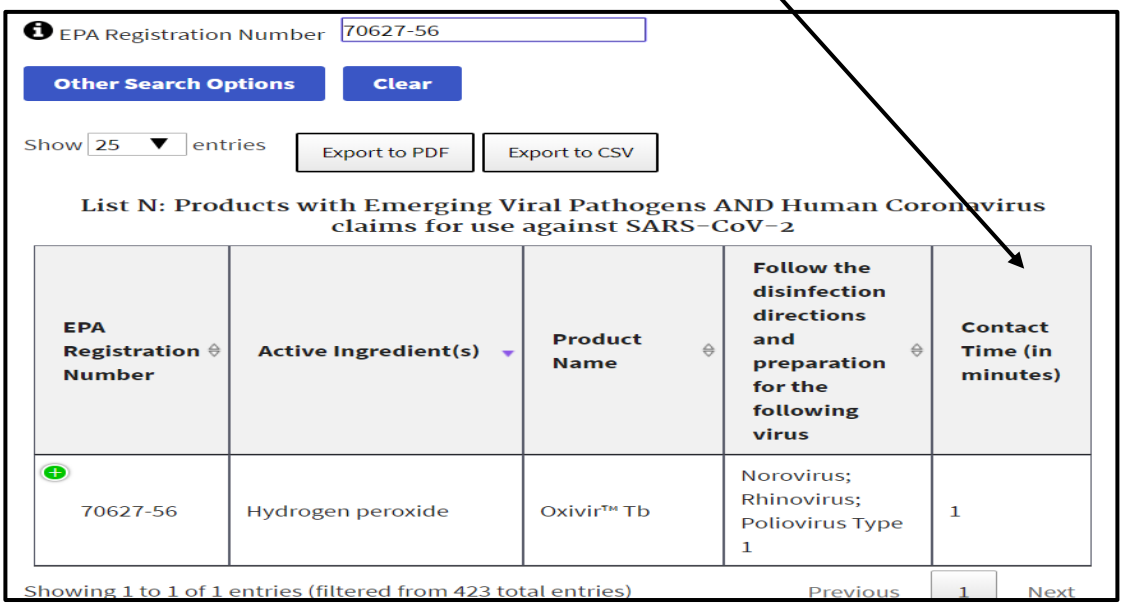
  Kill Claims - You may not have enough information to know if it controls the virus causing COVID-19. Thus, you should not use it.

Other Considerations When Selecting or Using Disinfectants

Contact Times on List N

Product Specific - Note that each product will have its own unique contact time that is required for the disinfectant to stay wet on the surface. There is no blanket statement for how long a surface must stay wet in order to kill the microbes. The amount of time will depend on the microbe and the products used to kill them. Depending on the product and the target microbe, contact time can range from 15 seconds to 10 minutes.

Since the virus causing COVID-19 is not listed on current disinfectant labels, EPA List N directs you to information on the label that provides contact time information on similar microbes.


EPA Registration Number 70627-56

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Different products may have a range of different contact time frames, even if the products are registered for killing the same virus. For example, one product that is hydrogen peroxide based that kills a virus may take up to 10 minutes, while another product using citric acid as a base may only take 5 minutes to kill the same virus.

Microbe Specific - One product may have different contact times for different viruses as some viruses are harder to kill. The contact times may be listed by virus families.

Claims of Residual Activity

Products Registered to Kill Viruses - are not allowed to claim residual effects. This means that any product left on the surface after the contact time will not continue to kill microbes.

Products Registered to Kill Bacteria - may make claims for residual effect. This can be confusing when a product advertises to be both a sanitizer and disinfectant.

Devices

Equipment Used to Dispense Disinfectants - **note that not just any disinfectant can be applied via foggers, misters, or electrostatic sprayers.** The electrostatic sprayers impart an electric charge to promote adhesion to the typically charged surface to better coat the product. These application methods must be listed on the label.

Ultra Violet Light and Air Purifiers - cannot make the virus that causes COVID-19 kill claims. They are not approved for safety or efficacy.

Devices Used to Generate Disinfectant Solutions - Only one device generating a disinfectant produces a disinfectant product that is listed on the List N. It is the Force of Nature Activator Capsule that generates hypochlorous acid. Although there are other on-site devices that generate hypochlorous acid, no other solution generated from these machines is registered as a disinfectant by EPA at this time.

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Sources:

- EPA – registers antimicrobial pesticides and maintains the N-List:
  1. https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants
  2. https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2
- NPIC, Speaker Amy Cross - amy.cross@oregon.edu, Webinar, Using Disinfectants Active Against COVID-19

  NPIC provides information on options (not opinions or directives) and pesticide health and safety, use, precautions and toxicology. They also help people navigate information available from the CDC and EPA.
- Chemical Safety Facts - www.chemicalsafetyfacts
- Waxy Editorial Staff, Waxy Sanitary Supply, EPA Emerging Viral Pathogens & Hard Surface Disinfectants, What Disinfectant Cleaners Can Be Used Against COVID-19 & Other Viruses, April 16, 2020

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