FSFCS144

# Removing Human Norovirus from Food Production Environments: U.S. EPA List G and the Pesticide Product and Label System

Sarah Jones Ph.D. Candidate

Adam Baker Postdoctoral Scientist

Angela Fraser Professor

Kristen Gibson Associate Professor

## Introduction

DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System

> Each year approximately 48 million cases of foodborne illness occur in the United States. More than half (58 percent) of illnesses are attributed to human norovirus (HuNoV). Properly cleaning surfaces (Figure 1) is one way to prevent exposure to HuNoV. Antimicrobial products, such as disinfectants, are commonly used to inactivate HuNoV.



Figure 1. The distinction of surface types for cleaning and disinfecting in food production environments.

To help determine which disinfectant to use, the U.S. Environmental Protection Agency (EPA) created two search tools. The first is List G: EPA's Registered Antimicrobial Products Effective Against Norovirus. List G includes disinfectants registered with the EPA that have been specifically tested against HuNoV or a suitable HuNoV equivalent. List G was designed to help end-users select a disinfectant. The second tool is the EPA Pesticide Product and Label System, which includes all sanitizer and disinfectant products, not just disinfectants effective against HuNoV.

## Definitions

## Cleaning

Cleaning removes soil, dirt, dust, and debris from a surface but does not destroy microorganisms.

#### Sanitizing

Sanitizing significantly **reduces** the number of bacteria of public health significance (Figure 2).<sup>1</sup> Sanitizers, which the EPA regulates, generally have a surface contact time of 1 minute. If a surface is not cleaned before applying a sanitizer, soils that are present might reduce the ability of the sanitizer to destroy microorganisms. (**Note**: At present, no sanitizer-only products have an approved viral-reduction claim.)



Figure 2. Sanitizer efficacy for nonfood-contact versus food-contact surfaces.

<sup>1</sup>The regulatory definitions of "sanitizer" and "disinfectant" can be found in <u>40 CFR 158.2203</u>.

## Arkansas Is Our Campus

Visit our web site at: https://www.uaex.uada.edu

## Disinfecting

Disinfecting irreversibly **destroys** bacteria, fungi, and viruses, but not necessarily bacterial spores. Onestep disinfectants combine the cleaning and disinfectant steps into one action. If used on a food-contact surface, a disinfectant typically requires a rinse once the contact time is met. Like sanitizers, disinfectants are regulated by the EPA.

## **Treatment of Food-Contact Surfaces**

- 1. Wash the surface with a suitable cleaning agent. Check the label of your sanitizer. It may be used as a cleaner, too.
- 2. Rinse the surface with water.
- 3. Use an EPA-registered food-contact sanitizer according to label instructions, paying particular attention to the application type (spray/wipe).
- 4. Leave the surface wet for the listed contact time.
- 5. The food-contact surface should be allowed to air dry.

#### **Treatment of Nonfood-Contact Surfaces**

- 1. Wash the surface with a suitable cleaning agent. If using a one-step disinfectant, pre-cleaning is only required if the surface is heavily or visibly soiled.
- 2. Use an EPA-registered disinfectant according to the instructions on the label, paying particular attention to application type (spray, wipe, mop).
- 3. Leave the surface wet for the listed contact time.
- 4. Dry the surface with a cloth/paper towel or let it air dry, per the label instructions.

## List G

List G presents information about chemical disinfectants approved by the EPA to destroy HuNoV on inanimate environmental surfaces. All EPA-registered pesticides are required to display the EPA Registration Number on the product label. List G is a PDF document updated every two years by the EPA. List G lists disinfectants in ascending order by EPA Registration Number (Figure 3).



Figure 3. Descriptions for each part of an EPA Registration Number.

## How to Use List G

The EPA Registration Number can be used to determine if a product is approved, as there may be multiple commercial names associated with a single EPA Registration Number. Locate the registration number on the product label, which is often presented as a series of three sets of numbers. If the first two sets of numbers are on List G, the product is approved for use against HuNoV. Only search for the first two parts of the number in List G.

In Figure 4, the EPA Registration Number for Multi-Purpose Disinfectant Cleaner is 1677-233. This number can be used to search List G to determine if the product works against HuNoV, as highlighted in Figure 5. This product is on List G, so it can be used to destroy HuNoV.



Figure 4. Multi-Purpose Disinfectant Cleaner label with highlighted EPA Reg. No.

## How to Use EPA Pesticide Product and Label System

The second search tool to determine what disinfectant to use is the EPA <u>Pesticide Product and Label</u> <u>System</u>. The EPA Registration Number highlighted in Figures 4 and 5 (EPA Reg. No. 1677-233) can also be entered into the Pesticide Product and Label System (Figure 6). The results of this search include information about the product and supplier, such as active ingredients, the intended use site, and the target organism. In addition, the EPA Pesticide Product and Label System can sort products by EPA Registration Number, similar to List G. As previously indicated, each tab provides additional information about the product (Figure 7).

List G: EPA's Registered Antimicrobial Products Effective Against Norovirus		
EPA REGISTRATION NUMBER	PRIMARY PRODUCT NAME	
777-99	BRACE	
1677-21	MIKRO-QUAT	
1677-216	EXSPOR BASE CONCENTRATE	
1677-226	VIRASEPT	
1677-233	Multi-Purpose Disinfectant Cleaner	

Figure 5. EPA Reg. No. found on List G.



Figure 6. EPA Pesticide Product and Label System search tool.

## Details for MULTI-PURPOSE DISINFECTANT CLEANER Descritation You will need Adobe Reader to view some of the files on this page. See <u>EPA's PDF page</u> to learn more. Provided below is the information for the product you selected. To view the label, click on the date in the Accepted Date Field. The latest label is at the op of the list.

EPA Registration Number: 1677-233 Company Name: ECOLAB, INC. Address: 1 ECOLAB PLACE City, State Zip: ST. PAUL, NN 551021390 First Registered Date: OCTOBER 25, 2010 Current Status (Date): Registered (OCTOBER 25, 2010) Restricted Use: NO Labels Data Forms Chemical Alt Brand Name Inactive Alt Brand Name Transfer History Site Pest

Figure 7. Search output from EPA Reg. No. 1677-233 in the Pesticide Product and Label System showing each tab with additional information.

#### Labels

In the search results, the first tab includes information about the disinfectant label (Figure 8). This information includes the originally submitted label information and any label amendments since the EPA approval of the product.

EPA Reg. No.	Product Name	Accepted Date
1677-233	MULTI-PURPOSE DISINFECTANT CLEANER	March 17, 2020 (PDF)
1677-233	MULTI-PURPOSE DISINFECTANT CLEANER	<u>May 04, 2016 (PDF)</u>
1677-233	MULTI-PURPOSE DISINFECTANT CLEANER	January 28, 2015 (PDF)
1677-233	MULTI-PURPOSE DISINFECTANT CLEANER	September 16, 2013 (PDF)
1677-233	MULTI-PURPOSE DISINFECTANT CLEANER	<u>March 29, 2011 (PDF)</u>
1677-233	MULTI-PURPOSE DISINFECTANT CLEANER	October 25, 2010 (PDF)

Figure 8. EPA registration and label information found in the Pesticide Product and Label System within the Labels tab.

#### Chemical

There is information about the active ingredients included in the disinfectant and the percent level present in the product within the Chemical tab (Figure 9).

Active Ingredient	Percent Active
Alkyl* dimethyl benzyl ammonium chloride *(50%C14, 40%C12, 10%C16)	8.68
1-Decanaminium, N,N-dimethyl-N-octyl-, chloride	6.51
1-Decanaminium, N-decyl-N,N-dimethyl-, chloride	3.906
1-Octanaminium, N,N-dimethyl-N-octyl-, chloride	2.604

Figure 9. Active ingredients found in the Pesticide Product and Label System under the disinfectant EPA Reg. No. 1677-233 within the Chemical tab.

#### Site

Under the Site tab, one can find information regarding approved use sites for the disinfectant (Figure 10). This information is listed alphabetically.

#### Pest

In alphabetical order, one can search through microorganisms that are destroyed by this product. This information can typically be found on the affixed product label.

Site(s)
FOOD PROCESSING PLANTS (INDOOR INEDIBLE)
FOOD STORAGE AREAS
GARBAGE CANS
HARD NONPOROUS SURFACE
HATCHERY PREMISES
HOSPITAL NONCRITICAL ITEMS (ITEMS CONTACT ONLY UNBROKEN SKIN)
HOSPITAL PREMISES
HOTELS/MOTELS/TOURIST COURTS
HUMAN NURSERY PREMISES
IMMERSION ULTRASONIC TANK WATER
INSTITUTIONAL PREMISES
LABORATORIES (ANIMAL RESEARCH)
LABORATORY PREMISES
LAUNDRY (HOSPITAL, COMMERCIAL, HOUSEHOLD)
LIVESTOCK PREMISES (ENCLOSED PREMISE TREATMENT)

Figure 10. Use sites for the EPA Reg. No. 1677-233 disinfectant within the Site tab.

## Data Forms, Alt Brand Name, Inactive Alt Brand Name, Transfer History

Additional product information can be found under these tabs. However, not all products will have this information if it is not applicable. For instance, the Transfer History may not be applicable because this is for the transfer of product registration or data rights from one person or company to another.

The EPA List G and the Pesticide Product and Label System are excellent resources to find suitable disinfectants to remove HuNoV from food processing environments and reduce the risk of transmission of HuNoV.

## Resources

- Scallan, E., Griffin, P. M., Angulo, F. J., Tauxe, R. V., & Hoekstra, R. M. 2011. Foodborne Illness Acquired in the United States—Unspecified Agents. Emerging Infectious Diseases, 17(1), 16-22. <u>https://doi.org/10.3201/eid1701.p21101</u>.
- Scallan, E., Hoekstra, R., Angulo, F., Tauxe, R., Widdowson, M. A., Roy, S., . . . Griffin, P. 2011. Foodborne illness acquired in the United States—major pathogens. Emerging Infectious Diseases, 17(1), 7-15. <u>https://doi.org/10.3201/eid1701.P11101</u>
- U.S. Centers for Disease Control and Prevention [CDC]. 2021. Cleaning and Disinfecting Your Facility. Available from <u>https://www.cdc.gov/coronavirus/2019-ncov/</u> <u>community/disinfecting-building-facility.html</u>

- U.S. Environmental Protection Agency [EPA]. 2021. List G: EPA's Registered Antimicrobial Products Effective Against Norovirus. Available from: <u>https://www.epa.</u> <u>gov/pesticide-registration/list-g-epas-registered-anti-</u> <u>microbial-products-effective-against-norovirus</u>
- U.S. Environmental Protection Agency [EPA]. 2021. Pesticide Product and Label System. Available from: <u>https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1</u>
- U.S. Environmental Protection Agency [EPA]. 2021. Pesticide Registration Manual: Chapter 16 - Transfer of Product Registrations and Data Rights. Available from: <u>https://www.epa.gov/pesticide-registration/pesticide-registration-manual-chapter-16-transfer-product-registrations-and</u>

Pursuant to 7 CFR § 15.3, the University of Arkansas System Division of Agriculture offers all its Extension and Research programs and services (including employment) without regard to race, color, sex, national origin, religion, age, disability, marital or veteran status, genetic information, sexual preference, pregnancy or any other legally protected status, and is an equal opportunity institution.

SARAH L. JONES is a Ph.D. candidate - food safety with the Department of Food Science, University of Arkansas System Division of Agriculture in Fayetteville. DR. ADAM BAKER is a postdoctoral scientist - food safety with the Department of Food Science, University of Arkansas System Division of Agriculture in Fayetteville. DR. ANGELA FRASER is a professor with the Department of Food, Nutrition, and Packaging Sciences, Clemson University. DR. KRISTEN E. GIBSON is an associate professor - food safety with the Department of Food Science, University of Arkansas System Division of Agriculture in Fayetteville.