



Pests and Pesticides in Child-serving Facilities: An IPM Newsletter

Operational Guidance for Safely Storing and Using Disinfectants

Karen Vail and Lynn Rose

If your schools are meeting face-to-face this semester, please see the tools listed in the EPA article below, especially those providing Coronavirus Guidance and Resources. I've listened to several COVID-19 and schools webinars/phone calls in the past few months and I wanted to share some of my notes on the operational guidance for safely storing and using disinfectants. I pestered one of the presenters, Lynn Rose, so much to clarify my notes, it was only fitting that I invite her to co-author this piece.

1. Chemicals. Schools are purchasing huge volumes of chemicals to clean, sanitize and disinfectant. Make sure you safely store these to prevent adverse chemical reactions and ensure they are out of reach of children. Understand the hazard category (acids, bases, flammables or oxidizers [Figure 1]) of each chemical already stored and then store newly purchased chemicals with those in the same hazard category. See Figure 2 as an example. Alcohol-based sanitizers present a flammability hazard and should not be placed where they could impede escape from a fire. Place sanitizers where young children cannot access them without adult supervision. Large quantities of flammable products may require storage in a flammables cabinet or a permit from your fire department - check with your local fire marshall.

How to Prevent a Buffalo Wild Wings Incident in Your School!

Store disinfectant by **hazard categories** to prevent hazardous reactions.

Common disinfectant ingredients are in these hazard categories:

1. Acids – lactic acid, citric acid, hydrogen peroxide, Peroxyacetic Acid, some alcohol based products
2. Bases – quaternary compounds, some alcohol based products are slightly above corrosive
3. Flammables – alcohol (quantities may require a flam cabinet)
4. Oxidizers – bleach, hydrogen peroxide, hypochlorous acid



Figure 1. Preventing disinfectant accidents in your school.



Special Points of Interest

“Do your part, stay apart”

Tennessee Category 7 Pesticide Applicators Under GRC Licensees Are Allowed to Apply Disinfectants in Schools During Crisis—this means your pest control technician can help disinfect your schools.

This issue

Operational guidance for safely storing and using disinfectants	1
Healthy Indoor Environments in Schools: Plans, Practices and Principles for Maintaining Healthy Learning	3
Your help needed for nationwide roof rat survey	4
AZ August Community IPM Newsletter - Expect Pest Encounters as Schools Reopen	4
Links/Contacts	5

Figures provided by Lynn Rose, Pollution Prevention and Environmental Health and Safety Consultant.



Figure 2. Sample shelf storage plan based on chemical compatibility.

Follow the label carefully when applying disinfectants. Clean surfaces before applying a disinfectant. Be careful not to mix chemicals that can produce hazardous reactions (Figure 1). **Ensure surfaces are staying moist with the product for the required contact time to kill SARS-CoV-2. Each product and dilution rate may have different contact times.** Use all required PPE on the label! Check the expiration times of diluted disinfectants, some are as short as 1 day. Do not use disinfectants after the expiration time.

2. Applicator Equipment.

A. *Electrostatic sprayers.* Pacemakers should not be within 10 ft of a functioning electrostatic sprayer. Use only water based products in the electrostatic sprayer. **Disinfectants are registered by the EPA and labels must state how a product can be used. If the product does not state electrostatic sprayers on the label, then it is not approved.** EPA is allowing companies to provide data on the effectiveness and hazard potential of their products when applied by an electrostatic applicator, so more information may be available soon for products that do not currently have these claims on the label.

B. *Mister/fogger* applied products can get into electronics if the fan is running and can cause damage. Turn off and cover electronics if mister/fogger equipment is used in a space around electronics. Disinfectants should never be applied to electronic equipment. Office staff may want to shut down electronics before leaving for the day if mister/foggers are going to be used in their space.

C. Rinse equipment per the equipment directions. Check the expiration date of any solution used as diluted disinfectants may not last as long as the concentrate. Only use approved products in the equipment otherwise you may void the warranty. Check the product's safety data sheet (SDS) to determine it's storage requirements.

Questions to Ask Vendors When Selecting Disinfectants

- When will the product be available?
- Is the product on EPA's List N?
- What is the EPA Registration number?
- Is the active ingredient on the EPA DFE list?
- What are the product hazards?
- What is the dilution rate for COVID-19?
- What is the contact time for COVID-19?
- What PPE and ventilation is required?
- What applicator equipment can the product be used with per the label?

Product Name	Grams per tablet	Number tablets to make a gallon	Grams per gallon (g per tab x # tabs)	PPM for COVID 19	Dwell time
Effersan	4.0 grams	4	16 grams per gallon	1,150 PPM	5 minutes
ViroTab	6.55 grams	2	13.1 grams per gallon	1,076 ppm	10 minutes
		8	52.4 grams per gallon	4,306 ppm	1 minute
Clearon EZ Bleach	5.0 grams	2.5	12.5 grams per gallon	958 ppm (383.2 ppm per tab)	10 minute
		Or use 3 tabs so don't have to split one	15 grams per gallon	Only requires 958 ppm, but with 3 tabs it will be 1,149.6 ppm	10 minute

An example of how the same exact formulation can have different product names, come in different sizes and concentrations, require different dilution rates, and have different contact times.

Figure 3. Questions to ask vendors before purchasing a disinfectant.

3. Furniture. Much furniture has been removed from classrooms to keep students socially distanced. Ensure furniture and large volumes of chemical are not blocking access to fire extinguishers and other emergency response systems, electrical panels, and exits.

Many products are back ordered and purchasing offices are scrambling to find disinfectants. Listed above in Figure 3 are questions you should ask vendors before deciding to purchase a disinfectant. Maybe you should add the expiration time for the diluted product and storage space required too. Once you have these answers you can compare cost per application (include cost of PPE required) and hazards of using each product.

Healthy Indoor Environments in Schools: Plans, Practices and Principles for Maintaining Healthy Learning Environments

EPA Indoor Environments Division sent this bulletin 08/27/2020 11:31 AM EDT

Thank you for your interest in the webinar series, *Healthy Indoor Environments in Schools: Plans, Practices and Principles for Maintaining Healthy Learning Environments*. We hope you gained valuable information about tailoring comprehensive indoor air quality (IAQ) management plans and best practices to help implement EPA and CDC considerations to reduce the spread of viruses and bacteria in schools. The webinar recordings will be available [online](#) soon. Meanwhile, the resources below can help you learn more about IAQ practices for optimizing ventilation, healthy cleaning, and preventive maintenance to support your work in ensuring healthy indoor environments in schools.

IAQ Tools for Schools

[IAQ Tools for Schools: Preventive Maintenance Guidance](#): Use this guide to help you address specific IAQ issues

and successfully implement each stage of an IAQ preventive maintenance plan. Use the guide in conjunction with the [IAQ Preventive Maintenance Checklist and Model Plan \(Appendix A and B\)](#) to access best practices and critical information to prioritize your goals and develop a tailored plan unique to your school's specifications.

IAQ Tools for Schools Action Kit: The Action Kit is a compilation of the information necessary to implement an effective IAQ management plan at little or no cost using straightforward activities and in-house staff. The Action Kit includes information on best practices, industry guidelines, sample policies and a sample IAQ management plan.

Framework for Effective School IAQ Management: The Framework breaks down the process of IAQ management into manageable, actionable steps and organizational approaches. The IAQ Tools for Schools Action Kit tells you what to do, and the Framework shows you how to do it. The Framework also offers technical solutions to major IAQ issues.

School IAQ Assessment Mobile App: The Mobile App is a "one-stop shop" for accessing EPA's comprehensive school IAQ management guidance and detailed walkthrough assessment checklists that address critical building-related environmental health issues.

Energy Savings Plus Health: Indoor Air Quality Guidelines for School Building Upgrades: The guide and accompanying Interactive Air Quality Planner equip school districts with the tools to integrate IAQ protections into school energy efficiency retrofits and upgrades without compromising occupant health.

IAQ Professional Training Webinars: The web-based trainings in the IAQ Master Class Professional Training Webinar Series and IAQ Knowledge-to-Action Professional Training Webinar Series provide school district staff with the knowledge needed to start, improve, or sustain an IAQ management program within their school or school district. Gain recognition for your knowledge achievement and commitment to action through certificates of completion and continuing education units for each training.

Additional Coronavirus Guidance and Resources

Indoor Air and COVID-19: EPA has a [new website about indoor air quality and coronavirus](#) and [a list of FAQs](#), including information about ventilation and HVAC systems.

Develop, implement, and maintain your plan: The joint CDC and EPA [Guidance for Cleaning and Disinfecting Public Spaces, Workplaces, Businesses, Schools, and Homes](#) outlines three important steps for cleaning schools. [Download the infographic for quick reference.](#)

Find an EPA-approved disinfectant: Refer to [List N](#) or [the interactive List N tool](#) for the most up-to-date disinfectant list from EPA. EPA has also compiled a list of [frequently asked questions \(FAQs\) about disinfectants and coronavirus](#), including questions on List N and the difference between cleaning and disinfecting.

CDC Guidance for Schools: Refer to the [CDC guidance on how to clean and disinfect your facility](#). Visit [CDC's COVID-19 Schools website](#) to find guidance, FAQs, and videos on how to respond to coronavirus in school settings.

OSHA COVID-19 Resources: [Find information for workers and employers about the evolving pandemic.](#)

ASHRAE: [Reopening Schools and Universities COVID-19 Guidance](#)

Your Help Needed for Nationwide Roof Rat Survey

Karen Vail

You may recall that we published an article on roof rats in our November 2019 newsletter. Evidently, I wasn't the only one noticing the range expansion of the roof rat.

According to their website, *The Southern California Urban Rodent Research Initiative (SCURRI)* is a project researching urban rodent ecology and disease, their management, and the impact the management of rodents has on the environment. The current roof rat range map is out of date. In conjunction with the University of Arizona and Utah State University, University of California Agriculture and Natural Resources (UC ANR) is aiming to update this out of date map in order to be able to provide pest management professionals with the educational materials and training that they need to effectively manage urban roof rat populations.

This survey found at <https://www.ucscurri.com/ratsurvey> was created to help better understand the current distribution of the roof rat (*Rattus rattus*) in the United States. If you are seeing roof rats in your area please take the time to complete the survey. You will be asked for the location the rat was found, your profession, the commensal and noncommensal rodent species you manage, and if you feel you have sufficient information to manage rodents. You'll also need to submit a photo of the entire animal, tail, ears and face. Please include a coin or object of known size as a reference to scale.

Thanks to Janet Hurley, Texas Extension Program Specialist III - School IPM, Texas A&M AgriLife Extension Service for bringing this survey to our attention.

AZ August Community IPM Newsletter - Expect Pest Encounters as Schools Reopen

The Arizona Community IPM Newsletter was distributed earlier this month and included articles on "Expect Pest Encounters as School Buildings Reopen", "Pandemic Pest Resurgence - Preparations Before Opening", "Never Mix Disinfectants", and "Resource sites for Schools." Please see the newsletter at https://acis.cals.arizona.edu/docs/default-source/community-ipm-documents/newsletters/august2020azschoolandhomeipmnewsletter_f.pdf?sfvrsn=a245f119_0

Here's a modified excerpt.

Never Mix Disinfectants

Handle disinfectants with care. Many commonly used chemicals can cause severe eye damage, skin injury and breathing problems. Here are a few tips to remember:

- Always start by reading product labels and following the directions exactly.
- Always use the personal protective equipment (PPE) listed on the label. Many injuries occur that could be avoided if PPE had been used.
- Always store disinfectants out of the reach of children.
- NEVER mix disinfectant products. Potentially deadly exposures could occur.
- Never dilute disinfectants with hot water. Vapors can damage the lungs.
- Diluted bleach must be replaced every 24 hours.
- Avoid using bleach products that are not registered as disinfectants as they lack the necessary use instructions for achieving adequate disinfection and additional precautionary measures for protecting people and the environment.

This newsletter produced by :

Karen Vail, Ph.D., Professor,
 Extension Urban Entomologist
 Entomology and Plant Pathology
 370 Plant Biotechnology Bldg.
 2505 E J Chapman Drive
 Knoxville, TN 37996-4560
 ph: (865) 974-7138
 fax: (865) 974-8868
 email: kvail@utk.edu
 web: <http://schoolipm.utk.edu>
<http://epp.tennessee.edu/people/directory/dr-karen-vail/>



Jennifer Chandler,
 Research Specialist III
 Entomology and Plant Pathology
 370 Plant Biotechnology Bldg.
 2505 E J Chapman Drive
 Knoxville, TN 37996-4560
 ph: (865) 974-7138
 fax: (865) 974-8868
 Email: jchand11@utk.edu

Comments or questions
 on this newsletter?

Contact kvail@utk.edu

Follow us on
 Facebook at
<http://tinyurl.com/UrbanIPMTN>



Partial support for this newsletter provided by the USDA
 NIFA CPPM EIP grant (# 2017-70006-27287) awarded to the
 University of Tennessee.

The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

For more information about IPM in Tennessee schools and other facilities, or to view past issues of *Pests and Pesticides in Child-serving Facilities*, please visit <http://schoolipm.utk.edu>

NATIONAL IPM INFORMATION

eXtension's Pest Management In and Around Structures: Urban Integrated Pest Management http://www.extension.org/urban_integrated_pest_management

National School IPM
schoolipm.ifas.ufl.edu/

IPM in Schools Texas
<http://schoolipm.tamu.edu/>

IPM Institute of North America
www.ipminstitute.org/

School IPM PMSP—all schools IPM by 2020 <https://ipminstitute.org/projects/school-ipm-2020/>

National Pest Management Association IPM
www.whatisipm.org/

EPA schools
<http://www2.epa.gov/managing-pests-schools>

For further information about the IPM program at your school or in your county, contact your county Extension Agent or the school IPM Coordinator. For county agent contact information, please visit <https://extension.tennessee.edu/Pages/Office-Locations.aspx>

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.