A photograph of a person in silhouette, mopping a polished floor in a school hallway. The person is leaning forward, pushing a mop. The floor reflects the light, and the background shows a row of school lockers with horizontal slats. The overall image has a blue-tinted, high-contrast aesthetic.

HEALTHY CLEANING & ASTHMA-SAFER SCHOOLS

A HOW-TO GUIDE

OCTOBER 2014



“Our main concerns as the custodians for our schools are cleaning in a manner that protects our staff, custodians, and of course every single one of our students in every single site in our school district. Switching our sites to green cleaning products just makes good sense. There is, in my opinion, no reason for a district not to switch to the green cleaning alternatives that are available at this time.”

—GLENN SHERMAN, LIVERMORE JOINT VALLEY
UNIFIED SCHOOL DISTRICT, CALIFORNIA



OCTOBER 2014

Debbie Shrem, Justine Weinberg, Jennifer Flattery

Cleaning for Asthma-Safe Schools Project
Work-Related Asthma Prevention Program
Occupational Health Branch
California Department of Public Health

www.cdph.ca.gov/wrapp/asthma

workrelatedasthma@cdph.ca.gov

Acknowledgements

The California Department of Public Health's Work-Related Asthma Prevention Program (WRAPP) developed Healthy Cleaning & Asthma-Safer Schools: A How-To Guide with help from and in collaboration with:

- Alameda Unified School District
- California Breathing, California Department of Public Health
- California Conservation Corps John Muir Charter School
- Elk Grove Unified School District
- Fairfield-Suisun Unified School District
- Green Schools Initiative, Deborah Moore
- Knightsen Elementary Unified School District
- Lake Tahoe Unified School District
- Livermore Valley Joint Unified School District
- Long Beach Unified School District
- Los Angeles Unified School District
- Manteca Unified School District
- Mariposa Unified School District
- Palo Verde Unified School District
- San Francisco Unified School District
- San Diego Unified School District
- Yolo County Office of Education



Special thanks to Alexandra Rodionova, Environmental Health Sciences and Industrial Hygiene intern at the University of California at Berkeley, and Olga Martinez, Public Health Associate from the Centers for Disease Control and Prevention, for their research on appendices for the Guide. Noteworthy appreciation goes to Tony Almeida at Elk Grove Unified School District. An extra special thanks goes to the school districts who shared their wisdom and lessons learned by testing the Guide and providing us with invaluable feedback: Glenn Sherman and Mike Nagel at Livermore Valley Joint Unified School District, Matthew Sampson at Palo Verde Unified School District, and Margaret McKean and Ken Gerrard at Lake Tahoe Unified School District.

We thank Los Angeles Unified School District personnel Robert Hamm, Phyllis Lott, and Sylvia Avila, who shared details of their green cleaning pilot with us and spent a great deal of time helping us to understand cleaning in schools. We also appreciate Informed Green Solutions' Carol Westinghouse, for her expertise and final review of the document.

PHOTO SOURCES

Cover and page 11: www.istockphoto.com

Pages 19 and 21: Keith Schneringer from Waxie Sanitary Supply

All other photos: California Work-Related Asthma Prevention Program

ALTERNATE FORMAT INFORMATION

To obtain a copy of this document in an alternate format, please contact (510) 620-5757. Allow at least 10 working days to coordinate alternate format services. CA Relay Service: 711

CONTENTS

<u>About Healthy Cleaning and Asthma-Safer Schools: A How-To Guide</u>	4
<u>Definition of Cleaning, Sanitizing, and Disinfection</u>	5
<u>Why Switch to Asthma-Safer Products?</u>	6
<u>Health Hazards of Conventional Products</u>	7
<u>Work-Related Asthma and Cleaning Products</u>	8
<u>Asthma, Environmental Health, and Cleaning Exposures Among Students</u>	10
<u>Environmental Impacts of Cleaning Products</u>	11
<u>Cleaning Products, Schools, and Indoor Air Pollution</u>	11
<u>Cleaning for Asthma-Safer Schools</u>	12
<u>STEP 1: CREATE YOUR ASTHMA-SAFER CLEANING TEAM</u>	13
<u>STEP 2: TRAIN CLEANING CREW ON ASTHMA-SAFER CLEANING</u>	14
<u>The Good News About Green Cleaning</u>	15
<u>Third-Party Certification Programs</u>	16
<u>When to Clean, Sanitize, and Disinfect</u>	17
<u>Avoid Greenwashing—Use Only Third-Party Certified Products</u>	18
<u>What Is Green Equipment?</u>	19
<u>STEP 3: INVENTORY PRODUCTS TO REDUCE COSTS</u>	22
<u>STEP 4: SELECT PRODUCTS TO TEST</u>	24
<u>Select Only Third-Party Certified Cleaners to Test</u>	25
<u>Test Only Asthma-Safer Disinfectants</u>	27
<u>Test Cleaning Products with Dilution Control Systems</u>	28
<u>Consider Testing Microfiber Mops and Cloths</u>	28
<u>Avoid Products with Fragrances</u>	29
<u>Avoid Disinfecting Wipes, Air Fresheners, and Spray Bottles</u>	29
<u>STEP 5: ARRANGE VENDOR PRESENTATIONS, SELECT VENDORS</u>	31
<u>Find and Invite Knowledgeable Green Cleaning Vendors</u>	31
<u>Select Products After Hosting Vendor Presentations</u>	32

<u>STEP 6: TEST AND EVALUATE PRODUCTS</u>	33
<u><i>Test Cleaning Products and Disinfectants</i></u>	33
<u><i>Evaluate Tested Products</i></u>	34
<u><i>Meet to Discuss and Choose Cleaning Products</i></u>	35
<u><i>Expand Asthma-Safer Cleaning to the Entire District</i></u>	36
<u>STEP 7: COMMUNICATE YOUR SUCCESS AND SET POLICIES</u>	37
<u><i>Set District-Wide Policies</i></u>	37
<u>Conclusion</u>	38
<u>References</u>	39

APPENDICES

Appendix A: Cleaning Product Ingredients That Can Cause Asthma (Asthmagens)	43
Appendix B: Additional Health Concerns from Product Ingredients That Can Cause Asthma ..	47
Appendix C: Asthma-Safer Cleaning Resources	51
Appendix D: Cleaning Product Inventory Form	.53
Appendix E: Worksheet—Selecting Which Products to Test	55
Appendix F: Green Seal’s Third-Party Certifications for Cleaning Products	56
Appendix G: UL ECOLOGO’s Third-Party Certifications for Cleaning Products	57
Appendix H: Sample Vendor Letter	58
Appendix I: Vendor Evaluation Form	59
Appendix J: Asthma-Safer Cleaning Product Evaluation Form (English and Spanish)	60
Appendix K: School Newsletter	64
Appendix L: Press Release for Local Newspaper	65
Appendix M: Green, Healthy, and Asthma-Safer Schools Cleaning Model Policy	67
Appendix N: Resolution on Asthma-Safer and Greener Cleaning	70
Appendix O: Information Sheet—Why Can’t I Bring in Disinfectants or Other Products from Home?	71
Appendix P: Certificate for Custodians	72

CONTENTS

FIGURES

Figure 1: Work-Related Asthma (WRA) Is an Important Problem for Custodians	7
Figure 2: Work-Related Asthma and Cleaning Products	9

TABLES

Table 1: Recommended Labeling Programs	26
Table 2: Disinfectants—Asthma-Safer Ingredients and Ingredients That May Cause Asthma	28

WORK-RELATED ASTHMA PREVENTION PROGRAM (WRAPP) CASE REPORTS

Safer Products Might Have Prevented Illness and Saved Custodian’s Job	6
Avoid Using Bleach	7
Provide School Staff With Safe Cleaning Options 8	
Do Not Use Strong Chemicals While School is in Session	8
Cleaning Carpet With Water Protects Teacher With Asthma	21
Disinfectant Misuse Led to Serious Health Consequences	27

HEALTH SPOTLIGHTS

Bleach Use Can Be Harmful	7
Handwashing Is Important	17
Quats Can Cause Asthma and Harm the Environment	24
Air Fresheners = Not Asthma-Safer	29
Avoid Disinfectant Wipes	30

About Healthy Cleaning and Asthma-Safer Schools: A How-To Guide

Some conventional cleaning products can cause asthma or make it worse, create other health problems, and pollute the air in California's schools. Everyone in schools—custodians, staff, and students—may be exposed when harmful cleaning, sanitizing, and disinfecting products are used.

The Cleaning for Asthma-Safe Schools (CLASS) project developed *Healthy Cleaning and Asthma-Safer Schools: A How-To Guide*. The Guide is primarily for California school districts' facilities, maintenance, and operations managers or supervisors. This guide helps school districts transition to asthma-safer products and practices. Any time the Guide uses the term "asthma-safer," it refers to products and methods that help prevent asthma or asthma symptoms. These products and methods are also safer to use, healthier, and greener.

The How-To Guide also discusses the important difference between cleaning, sanitizing, and disinfecting, and suggests when to do each. Newer cleaning products and technologies are now available so that school districts can save money and have a clean and healthy school with fewer risks to health and the environment.

The Guide explains how to switch to asthma-safer cleaning in simple, manageable steps. It

“Children spend a lot of time at school. We need to keep their environment as safe as possible.”

—AURORA LICUDINE, RN, CHAIRPERSON OF
SCHOOL NURSES, MODESTO CITY SCHOOLS,
CALIFORNIA

first describes why safer cleaning practices are preferable and then outlines how to accomplish each step:

1. Create your Asthma-Safer Cleaning Team
2. Train cleaning crew on asthma-safer products, methods, equipment, and the need for them
3. Inventory products to reduce costs
4. Select products to test
5. Arrange vendor presentations and select vendors
6. Test, evaluate, and choose asthma-safer products
7. Communicate your success and set policies

The Guide includes ready-to-use forms and tools to help districts progress through each step, and publicize successes. For example, there's a sample cleaning inventory to help keep track of cleaning products and a press release to promote your asthma-safer cleaning efforts. The Guide highlights cleaning success stories and lessons learned from school districts throughout the country. It also offers resources to help you and your team learn more about green cleaning, asthma, and disinfection.

The CLASS project <https://www.cdph.ca.gov/programs/ccdphp/deodc/ohb/wrapp/pages/class.aspx> is housed in the Occupational Health Branch's Work-Related Asthma Prevention Program (WRAPP) <https://www.cdph.ca.gov/wrapp/asthma>. It is part of the California Department of Public Health (CDPH). CLASS helps California schools adopt safer cleaning practices to protect worker and student health. WRAPP tracks the frequency of and risk factors for asthma related to work across California. Collecting this information helps identify work-related asthma trends, such as the types of exposures (like cleaning products, epoxy resins, wood dust, etc.) that might cause or worsen a person's asthma while at work.

Definition of Cleaning, Sanitizing, and Disinfection

Understanding the difference between cleaning, sanitizing, and disinfecting is a basic goal in cleaning for asthma-safer schools. Creating a plan for when to do each helps ensure that products are used correctly and safely.

Cleaning

Cleaning **removes** dirt and germs (like viruses, and bacteria)¹ from surfaces and reduces exposures to asthma triggers like mold and dust. Cleaning is an important and necessary step to take before disinfecting.

Asthma-Safer Cleaning

Cleaning with products and equipment that do not cause asthma and that minimize exposures to asthma triggers. These cleaning products and methods are also safer to use, healthier, and greener.

Green Cleaning

Cleaning with products that are safer for health and the environment.² Asthma is not always considered when giving products a green label, so these cleaners may have chemicals that can cause or contribute to asthma.^{3,4} See [Table 1](#) for a list of third-party certified cleaning products that are asthma-safer.

Cleaning Products

Chemicals that include all-purpose cleaners, bathroom cleaners, neutral cleaners, carpet cleaners, conventional cleaners, graffiti removers, etc.

Sanitizers

Products that **lower the number of germs** by 99.9%⁵ when cleaning hard surfaces (not used for food service).⁶ For food service, a sanitizer should reduce the number of germs on a surface by 99.999% within 30 seconds.⁷ Sanitizers do not necessarily eliminate all germs. Sanitizers are considered antimicrobial pesticides and are registered by the US Environmental Protection Agency. Sanitizers are required in certain contexts, such as food service environments..

Disinfectants

Chemicals that **destroy 99.999%⁸ of germs** like bacteria and many viruses. This process does not necessarily clean dirty surfaces.⁹ Disinfectants are considered antimicrobial pesticides and are registered by the US Environmental Protection Agency.

While sanitizers and disinfectants are important to protect health in some instances, many contain ingredients that may be harmful, and therefore, should only be used when necessary and as directed. Studies show that cleaning with water and microfiber can remove 99% of germs. The Centers for Disease Control and Prevention recommends routine cleaning to stop the spread of germs. For more information, see [Step 4: Select Products to Test](#), under [When to Clean, Sanitize, and Disinfect](#).

Why Switch to Asthma-Safer Products?

A paradox exists for how most of our schools are cleaned. While we're trying to get rid of dirt and germs to keep students and staff healthy, we may unintentionally expose them to harmful chemicals in cleaning products, sanitizers, and disinfectants. Some conventional products like floor strippers and bathroom cleaners, or ingredients like ammonia and bleach, can pose avoidable risks for our health, our environment, and our equipment. They may damage facilities, which can be costly to repair or replace. They can contribute to indoor and outdoor air pollution and harm aquatic life.

People deserve to work and learn in the safest and healthiest school environment possible. Safer cleaning products and practices can help make that happen.

Countless schools have adopted healthier and more environmentally friendly cleaning practices. Multiple states in the US, including Connecticut, Hawaii, Illinois, Iowa, Maine, Maryland, Missouri, Nevada, New York, and Vermont passed legislation guiding and/or mandating districts to purchase certified green cleaners. As of 2014, no legislation exists in California for asthma-safer or greener

cleaning in schools. Some California districts, including San Diego, Santa Monica-Malibu, Fairfield-Suisun, and Elk Grove, have switched to green products on their own.

Using some chemicals indoors can worsen indoor air quality. Districts can improve their school's indoor air quality by finding safer cleaning products and methods. This can help reduce exposures that may cause asthma or make it worse. Cleaning with safer products and practices may help lower custodians' high rates of work-related asthma, and it will also benefit students.

Districts switching to green cleaning have found products and methods that are more cost-effective and safer for health and the environment. Simple changes in daily routines, like using microfiber mops and cloths and disinfecting only when necessary, have made a noticeable difference in school districts across the country. Many school districts that transitioned to safer and healthier products and technologies found the following:

- **Districts saved funds** on cleaning products by ordering in bulk for the entire district, purchasing concentrated products with dilution control systems, eliminating excess products, and securing long-term bids.
- **With money they saved, districts purchased new equipment** like microfiber cloths and mops, walk-off mats, floor care machines, and HEPA vacuum cleaners.
- **Districts created healthier environments** by disinfecting less, as well as by having the school community regularly wash their hands. They also used innovative technologies that cleaned with fewer chemicals, reduced cross-contamination, and effectively got rid of dirt, dust, and germs.¹⁰
- **Districts enjoyed green cleaning successes** like reduced absenteeism among staff and students due to improved air quality, fewer health problems among custodial workers from using safer products, and fewer workers' compensation claims.

WRAPP CASE

Safer Products Might Have Prevented Illness and Saved Custodian's Job

A 43-year-old custodian was having breathing problems at work. He used chemicals to clean the bathroom and strip floor wax. When he was away from the chemicals for a few months, his breathing problems improved. The problems came back when he returned to work. It took a long time for doctors to figure out what was wrong with him. A doctor finally told him he had asthma. About a year later, he left his job because of his breathing problems.

HEALTH HAZARDS OF CONVENTIONAL PRODUCTS

Many California school districts have been unable to switch or are unaware that there are safer alternatives for some cleaning products. A quick look at the scope of the problem:

- One in five Californians spends their day in school, including more than six million children.¹³
- California's custodians have high rates of work-related asthma. They also have the highest exposures to cleaning products since they are the ones cleaning everyday. Studies show that people who clean are a high-risk group for breathing problems and asthma.
- About one in six school-aged children in California has asthma,¹⁴ and while in school they can be exposed to cleaning products that can cause asthma or make their asthma worse.¹⁵

FIGURE 1: WORK-RELATED ASTHMA (WRA) IS AN IMPORTANT PROBLEM FOR CUSTODIANS

The rate of WRA in California among janitors and cleaners is 4 WRA cases for every 100,000 workers. The rate of WRA in California for all occupations combined is 2 WRA cases for every 100,000 workers.



SOURCE: California WRAPP Surveillance Data, 1993–2012

HEALTH SPOTLIGHT

BLEACH USE CAN BE HARMFUL

Like many disinfectants, bleach is often used unnecessarily as a daily cleaner. Bleach is an asthmagen (which means it may cause asthma) and can make existing asthma worse. It also is corrosive and can damage eyes and skin. Bleach can be fatal if swallowed, gives off a potent vapor, and if mixed with ammonia or acids, can create gases that cause lung damage and death.^{11,12}

Ingredients in common cleaning products, sanitizers, and disinfectants have been associated with a variety of health problems. Some chemical ingredients in these products have been linked with headaches, irritation of the skin, eye, nose, and throat. Studies have also found associations with cancer, reproductive harm, and endocrine disruption.^{16,17}

WRAPP CASE

Avoid Using Bleach

A 62-year-old female food services supervisor worked for 12 years at an elementary school and did not have asthma. One day a worker in the kitchen used too much bleach while cleaning the school's salad bar. The supervisor in the area started to have trouble breathing and was hospitalized for five days. She was diagnosed with Reactive Airways Dysfunction Syndrome, a form of asthma that can sometimes develop from a high dose of certain chemicals. The supervisor still has asthma symptoms, but the school no longer uses bleach to prevent others from developing breathing problems.

WHY SWITCH TO ASTHMA-SAFER PRODUCTS?

Work-Related Asthma and Cleaning Products

Forty percent of adults with asthma in California (nearly one million) reported in a survey that their asthma has been caused or made worse by work. The actual numbers are potentially higher, since work-related asthma is often not recognized or diagnosed.¹⁸

Asthma is considered work-related when it is caused or made worse by exposure to substances at work. Work-related asthma can happen in any work setting from a wide variety of chemicals and conditions. Custodians and other staff exposed to cleaning products, sanitizers, and disinfectants can get work-related asthma.

Workers who do not have asthma can begin a new job, work with or near certain chemicals, and then develop asthma. Some people who already have asthma can get worse when working around certain chemicals. Some workers can use chemicals for years without having a problem and suddenly develop asthma upon continued exposure to those chemicals.¹⁹

WRAPP CASE

Provide School Staff With Safe Cleaning Options

One day at work, a woman with asthma spilled her coffee. To clean up the mess, she could only find disinfectant wipes with quaternary ammonium compounds (an ingredient that can cause asthma). Her asthma flared up and she had to go to the emergency room.



Using a cloth or a paper towel would have been adequate to clean the spill, and would have avoided the asthma episode and the trip to the emergency room.



WRAPP CASE

Do Not Use Strong Chemicals When School is in Session

A teacher had to go to the emergency room for asthma after strong chemical solvents from gum remover were used in her classroom. To try to prevent triggering her asthma, custodians only use the product during school breaks or if the teacher will be away from the classroom for three or more days.

FIGURE 2: WORK-RELATED ASTHMA AND CLEANING PRODUCTS²⁰

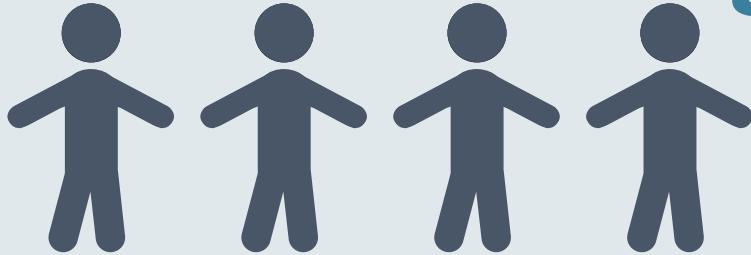
11% of the California Work-Related Asthma Prevention Program's cases linked their asthma to cleaning products. Of these cases:

20%



1 in 5
worked as
a cleaner.

80%



4 of 5 of workers did not clean but were around
during cleaning or after cleaning just happened.

50%

Half had new asthma that started after they began work.
On-the-job exposures likely caused their asthma.



**USING SAFER
CLEANING
PRODUCTS
PROTECTS
CUSTODIANS,
SCHOOL STAFF,
AND STUDENTS.**

“The greatest recognition that the district could receive was a phone call from a parent thanking us for having a green cleaning program. Her daughter has asthma and she had noticed a remarkable reduction of asthma attacks and illness during the school year. This is what the program is all about, and gave the district tremendous validation.”²¹

—DOUG SUITS, DIRECTOR OF OPERATIONS, CATOOSA COUNTY SCHOOLS, GEORGIA

Asthma, Environmental Health, and Cleaning Exposures Among Students

Asthma affects students, families, and school budgets. About 1.7 million California children have been diagnosed with asthma,²² and missed almost 1.5 million school days because of it in 2007.²³ Research shows a link between asthma and student absences.²⁴ Schools lose money each day a student is absent,²⁵ and asthma-related absences cost California schools about \$31 million in lost revenue each year.²⁶

Because children are growing and developing, they are particularly vulnerable to exposure to environmental hazards,²⁷ including ingredients in cleaning products, sanitizers, and disinfectants.

San Francisco Unified School District’s facilities department implemented a green cleaning program and then tracked attendance data from schools with high rates of asthma. San Francisco Unified saw lower rates of absenteeism. Willie Green, their school facilities director explained, “I’m not sure if it is related to cleaning products, but if kids are having less asthma, it could be that we’re doing something right.”



Children’s exposure to some chemicals may cause irreversible and delayed effects that may not be noticed until later in life.²⁸ Here are a few examples of children’s vulnerabilities:

- Children’s respiratory systems are not fully developed,²⁹ and rates of childhood asthma continue to increase.³⁰
- In proportion to their size, children take in more air than adults,³¹ and if the air quality is poor due to conventional cleaners, children can breathe in a proportionally higher dose of harmful chemicals.³²
- Children’s immune and reproductive systems are not fully developed,³³ and some traditional cleaning products may contain ingredients that can disrupt hormone and reproductive systems (known as endocrine disruptors).³⁴
- Children’s bones and other organs are growing and conventional cleaning products may contain or create substances like formaldehyde that can cause cancer.^{35, 36}

ENVIRONMENTAL IMPACTS OF CLEANING PRODUCTS

Many ingredients in cleaning products can harm our environment. They persist in the environment and can be toxic to aquatic life.³⁷ Some cleaning products may also emit volatile organic compounds (VOCs), which contribute to smog, ozone, and poor indoor air quality.³⁸

Cleaning Products, Schools, and Indoor Air Pollution

The Environmental Working Group (EWG) is an advocacy organization that identifies environmental health threats and finds solutions for them. They conducted a study in schools that showed conventional cleaning chemicals can be an important source of indoor air pollution. Investigators found that some of the cleaning products they tested had links to asthma, cancer, and other serious health concerns.⁴⁰

EWG also cleaned a model classroom and found that green cleaning supplies released less than one-sixth of the air pollution produced by conventional cleaning. Overall, certified green cleaning supplies produce much lower pollution levels and use fewer harmful chemicals than conventional products.⁴¹

“Overall, certified green cleaning supplies produce much lower pollution levels and use fewer harmful chemicals than conventional products.”

—ENVIRONMENTAL WORKING GROUP

“Why would you not switch to green when it benefits everyone’s health? It’s a no-brainer.”

—GLENN SHERMAN,
LIVERMORE JOINT VALLEY
UNIFIED SCHOOL DISTRICT

Lockport Township High School in Lockport, Illinois, noticed a 3% increase in attendance after the first year of an air quality program that included green cleaning.³⁹



Cleaning for Asthma-Safer Schools

Adopting a Cleaning for Asthma-Safer Schools program accomplishes the following:

- Minimizes exposure to harmful cleaning chemicals and takes advantage of newer cleaning technologies. These practices help ensure the safest possible environment for staff and students.
- Improves indoor air quality, reduces the use of volatile organic compounds, and helps our environment.
- Saves money, or costs the same as conventional cleaning products.

The CLASS project has developed the guidance in this document primarily from these sources:

1. Interviews with 15 districts that have successfully implemented green cleaning over the past several years.
2. Two pilot programs in 2009–2010 and 2011–2012, in which the WRAPP's CLASS project collaborated with several school districts to help them adopt safer cleaning practices. In 2009–2010 CLASS also partnered with the Green Schools Initiative.

After participating in the CLASS project, custodians had:

- **Greater willingness to try out safer cleaning products.**

One facilities director explained, “A challenge was getting the crew to test out new products when they were used to their other products. To overcome that, one head custodian told them the options were in their hands, that they can help decide what products they’ll use next. People were skeptical, ‘this is water with food coloring,’ and after they tried some out, some of them liked the products.”



- **Awareness of cleaning chemical hazards, and heightened concern about their health, the health of their coworkers with asthma, and of the students.**
One custodian stated, “Let’s pick a different product. This one has asthmagens.”
- **A better understanding of the impacts of harmful cleaning products on the environment.**
- **Increased confidence to serve as “cleaning for health” leaders.**

There are seven main steps to help you transition to safer cleaning. The following section provides the steps, relevant information, and tools to help your school district clean for asthma-safer schools.

STEP 1: CREATE YOUR ASTHMA-SAFER CLEANING TEAM



“I figured that the custodial staff [at one school] would be very receptive... The head custodian was very excited to be a part of our trial, and the thought of cleaning the school with green products appealed to him...”

—GLENN SHERMAN, LIVERMORE JOINT VALLEY UNIFIED SCHOOL DISTRICT

The specific tasks below suggest ways to create your Asthma-Safer Cleaning Team.

1. Identify diverse, committed staff who are leaders in your district to be a part of your Asthma-Safer Cleaning Team.

Questions to ask yourself as you form your team:

- Who will support the project, and help inspire others to want asthma-safer cleaning to succeed in my district?
- What might be some challenges to get this project going? Who might be able to help navigate those challenges?
- Who might initially be skeptical about asthma-safer cleaning so I can incorporate their input from the beginning of the project?
- Who will give thoughtful feedback about the products we test?
- Who can help promote the project to the school community (teachers and parents) to get their support?

2. Select school sites and/or head custodians.

- Talk with school principals and other administrators about beginning an asthma-safer cleaning project, and ask for permission if their staff is involved.
- Consider selecting custodians or asking for volunteer sites and/or volunteer custodians.
- The size of your team will vary depending on the size of your district. Sample team: purchasing department representative, 2–3 custodians, 2–3 pilot schools, the head of facilities, or maintenance and operations. A larger district might want to include a teacher and a staff member from your health and safety team, like a safety officer or school nurse.

STEP 2: TRAIN CLEANING CREW ON ASTHMA-SAFER CLEANING

“The trainings made our custodial staff much more aware of how cleaning products can affect their own health and the health of our students. We had several custodians with asthma and they are breathing easier now. They are really excited about being ‘green’ leaders in our school.”

—VICTORIA BRUNN, MANTECA UNIFIED SCHOOL DISTRICT, PARTNERED WITH CLASS

To effectively transition to asthma-safer cleaning, make sure your team understands asthma-safer cleaning, the importance of third-party certification of cleaning products, and greenwashing.

Go to <https://www.cdph.ca.gov/programs/ccdphp/deodc/ohb/wrapp/pages/class.aspx>, to download a PowerPoint presentation to:

- 1. Train your team** about the impact that some conventional cleaning chemicals can have on the environment and on the health of custodians, staff, and children, especially as they relate to asthma. Teach them about asthma-safer cleaning, green equipment, and third-party certification of cleaning products. Explain the importance of disinfecting only when necessary.
- 2. Explain what green cleaning is**, including that green cleaning does not usually cost more and that green products work as effectively as conventional products.
- 3. Review steps you plan to take with your Asthma-Safer Cleaning Team**, such as completing a product inventory (step 3), arranging vendor presentations (step 5), and pilot-testing and evaluating products (step 6).



In this next section, we outline some of the important topics to present to your Asthma-Safer Cleaning Team and to your staff.

The Good News About Green Cleaning

School districts have noted numerous benefits from green cleaning. Not only is it safer for the environment, but districts have found ways to reduce costs and to promote healthier workplaces.

Reduce Costs

The University of Georgia removed over 500 cleaning chemicals, and reduced costs from \$1.5 million in 2007 to \$197,000 in 2010. The University now only uses three cleaning products, and in some cases, they simply clean with water.⁴²

In 2009, Columbia Public Schools in Missouri switched to green products and procedures. They significantly reduced the amount of cleaning chemicals, made simple cleaning procedural changes, and modified floor finish application methods. With cost savings of almost 30%, they purchased new technologies like microfiber cloths, dust mops, wet mop systems, and floor finish applicators. These changes also helped reduce the amount of cleaning chemicals needed to maintain their buildings.⁴³

San Diego Unified School District reduced their budget by 20% by using one line of chemicals and eliminating unnecessary cleaning products. Installing a dilution control system helped avoid product waste. They also reduced costs by using a two-year bid to purchase cleaning products. This provided the SDUSD with a variety of cleaning products at very low prices.⁴⁴

“If you simplify the line of products you use, and consolidate them, you will reduce costs.”

—TOMMY LITTLE, GEORGIA TECH

Promote Healthier Workplaces

The University of Georgia compared the absences of their custodians before and after implementing green cleaning. From January through December 2007, custodians had lost almost 4,500 work hours. By August 2009, they lost 386 work hours. When injuries did happen, they were less serious in nature.⁴⁵

San Diego Unified School District noticed less illness and allergy among the maintenance staff after they switched to green cleaning. They attributed it to safer cleaning chemicals.⁴⁶

After Pennsylvania’s Blackhawk School District began a green cleaning program, they tracked school absenteeism. Six months into the program, they documented less absenteeism and fewer asthma attacks.⁴⁷

Third-Party Certification Programs

Green Seal and UL ECOLOGO are well-recognized and respected third-party certification programs. These programs certify cleaning products that have met high standards to protect human health and the environment. For example, UL ECOLOGO's Hardsurface Cleaners Standard, UL 2759, does not allow ingredients that are known to cause asthma, cancer, and reproductive problems. In addition to strict toxicity standards, these products must meet performance criteria. In order to be labeled under this standard, the product must perform as well as or better than a conventional, nationally-recognized product. See [Table 1](#) on page 26 for an overview of recommended labeling programs that are asthma-safer.

Disinfectants and sanitizers are regulated as pesticides by the US Environmental Protection Agency (USEPA). The USEPA so far has not allowed outside entities to certify pesticides. For this reason, disinfectants and sanitizers, which have an EPA Registration number, have not been certified by Green Seal or UL ECOLOGO. USEPA's Design for the Environment Antimicrobial Pesticide Pilot Project labels environmentally preferred disinfectants. For more information, refer to [Table 1](#) and to "Test Only Asthma-Safer Disinfectants" under [Step 4: Select Products to Test](#).



Many third-party products have dilution control packaging.



Restrooms are cleaned throughout the day, so it is important to use asthma-safer products.

When to Clean, Sanitize, and Disinfect

Disinfecting is an important part of cleaning for an asthma-safer schools program.

Because regular cleaning can remove up to 99% of bacteria (if done with a microfiber cloth),⁴⁸ it is generally not necessary to routinely disinfect school floors, walls, lockers, or desks, unless there is blood, body fluid, vomit, feces, or if required by law. Studies have shown that routinely disinfecting floors offers no greater health protection over routine floor cleaning.⁴⁹

The Centers for Disease Control and Prevention recommend routine cleaning rather than disinfection for high touch surfaces.⁵⁰ Disinfectants and sanitizers are pesticides and many contain ingredients that may have harmful health effects. High touch surfaces are touched by a variety of hands, and include door knobs, light switches, handrails, shared equipment, etc. Districts might consider cleaning these areas during the day with a microfiber cloth and a third-party certified all-purpose cleaner. When there is an outbreak of an infectious disease, and the surface is touched by a variety of hands, increasing the frequency of cleaning will help to minimize the outbreak.⁵¹

Child care areas, kitchens, and nurse's health rooms have sanitizing and disinfecting requirements on specific surfaces. The California Retail Food Code requires school cafeteria workers to sanitize food preparation areas. The Code does not require schools to sanitize cafeteria tables.⁵⁵ When it is necessary to sanitize or disinfect, cleaning the surface first and following manufacturers' directions for dwell times helps ensure that you remove or destroy germs. Train staff if it is appropriate to wear personal protective equipment such as gloves and safety goggles as indicated in the product's Safety Data Sheet.

HEALTH SPOTLIGHT

HANDWASHING IS IMPORTANT

An asthma-safer cleaning program limits the use of disinfectants and instead encourages staff, teachers, and students to wash hands often with soap and water. Handwashing is especially important in schools, where people share desks, books, pencils, and food.⁵² If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol.⁵³ Hand sanitizers that have less than 60% alcohol or those made without alcohol are less effective in killing germs. Non-alcohol active ingredients such as quaternary ammonium compounds, thymol, and triclosan can be harmful and are not recommended.⁵⁴

Follow label directions and where allowed, spray directly into the cleaning cloth or rag when applying the cleaning product or disinfectant. An Infection Control Plan for your district is the best way to ensure that disinfectants are being used properly and only where needed.⁵⁶

For more information about when, how often, and where to disinfect, refer to the *Cleaning for Healthier Schools—Infection Control Handbook, 2010*. The handbook was written by the National Cleaning for Healthier Schools and Infection Control Workgroup. It can be found at <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/CDPH%20Document%20Library/CleanSchoolsHandbook.pdf>

For a handout for parents and teachers on **cleaning and disinfecting**, see [Appendix O](#).

Avoid Greenwashing: Use Only Third-Party Certified Products

Cleaning product companies may label their products as “green,” “natural,” or “environmentally-friendly.” Sometimes these claims are not entirely accurate. Greenwashing refers to products that have false or misleading environmental claims, either in advertising or written directly on the label. As a result, people are led to believe a product or practice is safer or environmentally friendly, but in reality it is not.

In 2010, TerraChoice found that 95% of consumer products claiming to be green included at least one false or misleading claim.⁵⁷ Because it can be tricky to identify false claims, custodians, teachers, parents—and even vendors—may not know the difference either.

Three ways to ensure that products used in your district are safer:

1. Use third-party certified products. These products have labels showing they meet an outside organization’s health and environmental criteria. Companies are also reviewed and audited, ensuring that products are safer for people and for the environment.

Some companies create their own green line, stating that their products adhere to their own green criteria that is as strict as that of third-party standards. Upon closer examination, many of these products would never have passed the requirements to become certified by Green Seal or UL ECOLOGO. Companies have responded that third-party certification is cost-prohibitive, but applying for certification is usually a very small part of a company’s budget.

Not every company that applies succeeds in getting its products certified. The companies who do receive certification meet all the stringent guidelines needed for certification.



- 2. Create a district-wide policy** where only the district’s facilities or maintenance and operations department approves the use of asthma-safer products (after training on asthma-safer cleaning products and equipment). The district supplies the products to all staff, including teachers. They also enforce the rule that no one, including parents, is allowed to bring in their own products. This includes products like disinfecting wipes and air fresheners. These products may cause asthma or may cause symptoms among people with asthma.
- 3. Double-check what you hear** with trusted, reputable sources, such as making sure a product is actually third-party certified. Green Seal and UL ECOLOGO list all the products they certify on their websites. See [Appendix C](#) for a list of asthma-safer cleaning resources. Districts committed to cleaning for asthma-safer schools should remove unsafe products and conduct outreach to staff and parents to stop bringing non-approved products into schools. Instead, districts can supply individual bottles of approved cleaners for classroom use or provide lists of approved products for parent donation.

What Is Green Equipment?

Green equipment is frequently asthma-friendly because it effectively removes allergens like dust and mold and uses fewer chemicals that may cause or worsen asthma. Green equipment also requires less water, and is designed to increase productivity and reduce injuries. These technologies can help save schools money in the future on health care⁵⁸ costs, and possibly on asthma-related absences. Here are a few examples of green equipment and its benefits:

Abrasive floor pads

strip floor wax. Using a wet process does not create dust, and eliminates the use of chemicals and VOC exposures.⁵⁹ Custodians do not use floor strippers to strip wax layer by layer, so there is a savings on chemical costs.



Carpet extractors

remove soil and residues from carpets and reduce mold growth. It is important to use carpet dryers or fans after extracting or shampooing carpets. The added moisture from carpets left to air-dry might leave musty odors that could trigger asthma. The Carpet and Rug Institute has a certification program for carpet extractors.



Floor burnishers

shine floors. Use only burnishers with active high efficiency particulate air (HEPA) filtration dust control systems to capture dust so it is not inhaled.⁶⁰



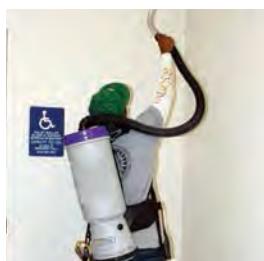
Steam cleaning equipment

uses tap water to clean, remove mold, and kill germs. Custodial staff needs proper training to avoid burns.



Vacuum cleaners with

high-efficiency particulate air (HEPA) filters effectively capture dirt, dust, and germs. They can help remove allergens from carpets and extend the life of the floor. Some custodians prefer backpack style vacuum cleaners for their ergonomic benefits. Maintain them properly and frequently change the filter. The Carpet and Rug Institute has a Green Label program for the highest performing vacuums.⁶¹



Walk-off mats

remove allergens and dirt from shoes to help keep floors and building air cleaner. As a result, custodians clean less frequently, which leads to less chemical use. Place mats outside and inside, and change or clean mats frequently.⁶²



For more information on green equipment, visit the *Healthy Schools Campaign's Quick + Easy Guide to Green Cleaning in Schools* at: <http://www.greencleanschools.org>



Using color-coded microfiber cloths helps avoid cross-contamination.



Microfiber mop heads clean more effectively than cotton string mops.

Microfiber

Microfiber mops and cloths are important tools for asthma-safer cleaning.

- 1. Microfiber requires less effort.** Tests have shown that cleaning with a microfiber mop reduced the number of bacteria by 99%, whereas conventional cleaning reduced bacteria by about 33%.⁶³ University of California Davis Medical Center found that custodians used 95% less water and chemicals when using a microfiber mop compared to a cotton string mop. The fibers carry an electric charge that attracts dust, and the tiny fibers penetrate cracks that traditional cloths and paper towels cannot.
- 2. Using microfiber mops and cloths also helps prevent injuries and illnesses.** They minimize chemical exposure since less cleaning product is needed. They also reduce back strain since they weigh less when wet, and they help avoid cross-contamination when a color-coded system is used.⁶⁴ Example: red cloths for bathrooms, green cloths for classrooms, and blue cloths for cafeterias. Some school districts write a code on the cloths with indelible ink so that color-blind staff members can tell them apart.
- 3. Microfiber is absorbent.** Made up of very dense fibers, microfiber can hold seven or eight times its weight in water.⁶⁵ Conventional cloths and cotton loop mops do not have this capacity.
- 4. Microfiber is durable.** The University of California Davis Medical Center found that microfiber mop heads lasted for 1,000 washings, compared to 200 washings for conventional wet loop mops.⁶⁶
- 5. Microfiber is simple to clean.** Once dirty or after a couple of uses, wash microfiber with a mild detergent. Microfiber is quick to dry and can be line dried or machine-dried at a low setting. To maintain microfibers' effectiveness, wash it separately, and not with other types of materials, such as cotton-loop mops or cloths.

Asthma and Carpets

Carpets can hold asthma-related allergens like dirt, pollen, mold spores, pesticides, and other toxins. These allergens are frequently brought indoors from people's shoes.⁶⁷ Studies have shown higher rates of wheezing in people who have carpeted bedrooms,⁶⁸ and avoiding the use of carpets can help reduce asthma severity.⁶⁹

Make sure to regularly and thoroughly clean the carpet in your schools using a HEPA vacuum and asthma-safer cleaning methods. Consider removing carpets when remodeling.⁷⁰

New carpets sometimes contain chemicals, like styrene and polyurethane, which can cause asthma or make it worse.⁷¹ Districts buying carpet should check with the manufacturers to avoid these chemicals. The Carpet and Rug Institute's Green Label Plus program has certified hundreds of carpets with polyurethane,⁷² chemicals that can be unsafe for asthma. Although this program does not prohibit

WRAPP CASE

Cleaning Carpet With Water Protects Teacher With Asthma

A 54-year-old special education teacher's classroom carpet was cleaned over spring break. During the morning on her first day back, she developed labored breathing. She had to leave halfway through the day, and was out for a week. Because she was still having asthma symptoms two years later, the staff at school only cleaned the carpet in her room with water.

asthma-causing chemicals, the Green Label Plus program approves carpet and adhesive products that meet criteria for low chemical emissions. The Green Label Plus program may still be a healthier choice than products without this label.



If you have carpet, use vacuums with high efficiency filters.

STEP 2: TRAIN CLEANING CREW ON ASTHMA-SAFER CLEANING

STEP 3: INVENTORY PRODUCTS TO REDUCE COSTS

“By switching to greener cleaners, my custodians could see that we could save the district money and that could save their jobs.”

—KRISTI OJIGHO, ALAMEDA UNIFIED SCHOOL DISTRICT

To help you identify which cleaning products your district uses, complete the sample “Cleaning Product Inventory Form” in [Appendix D](#).

Taking an inventory can help you:

- Identify duplicate products
- Identify products that can be replaced with safer alternatives
- Prevent over-ordering of a product
- Lower costs
- Identify expired products no longer used, to properly dispose of them

Here is part of a sample inventory. The recommended actions you can take to complete **Step 3** follow.

SAMPLE INVENTORY FORM

Product Type	Product Name and Manufacturer	Price per unit (\$) and unit size	Amount (# of units)	Where is this product used?	Dilution rate (ready-to-use=RTU)	Uses dilution equipment? Y/N	Certified by Green Seal, UL ECOLOGO, other?	Storage location
All-purpose Cleaner	Forest Green Cleaner by Greenest and Earthiest	\$51.25 1.5 liter	18 liters	Desks, walls, counters	1:64	Yes	No	2nd floor storage room, all classrooms
Bathroom Cleaner	Bathroom Cleaner #4567 by Dicky and Sons	\$8.97 quart	17 quarts	Bathroom counter, toilet bowl	RTU	No	No	1st floor custodial cabinet
Glass Cleaner	Simpler Glass Cleaner by Clearview	\$7.26 quart	22 quarts	Windows	RTU	No	No	1st, 2nd floor custodial cabinets



1. Write down ALL the products you currently order and have in stock for the entire district. Also include old stock you no longer order and products brought in by non-cleaning staff, such as teachers and parents. You may need to look in cabinets and under sinks in individual classrooms for products like disinfecting wipes and air fresheners.
2. Identify how many manufacturers and vendors you work with, since using only 1–2 vendors can lower costs.
3. Document the cost of each product to compare cost savings in the future.
4. List where you use the product to determine if you order too much of the same type of product.
5. Check to see which products use dilution equipment, since diluting products onsite is another cost savings measure.

6. Identify which products you use that are Green Seal or UL ECOLOGO certified. If you do not have a bathroom cleaner that is certified by Green Seal or UL ECOLOGO, for example, consider finding a green-certified bathroom cleaner.

Districts that switch to safer cleaning find that green products frequently cost the same or less than conventional products. Rather than purchasing expensive ready-to-use products, green cleaners are highly concentrated. Installing equipment to automatically dilute these cleaners with water onsite is considerably more cost-effective and safer for workers doing the mixing and cleaning. Some dilution control systems dilute one multi-purpose product at different strengths. This reduces the number of cleaning products needed for purchase, which also saves money. Finally, districts can negotiate comparable prices for green cleaners from their vendors or through cooperative purchasing agreements.

STEP 3: INVENTORY PRODUCTS TO REDUCE COSTS

STEP 4: SELECT PRODUCTS TO TEST

“The criteria that had to be met for a product to be tried in our trials were that they had to be third-party certified as green, carrying either the ‘Green Seal’ certification or the ‘ECOLOGO’ certification.”

—GLENN SHERMAN, LIVERMORE JOINT VALLEY UNIFIED SCHOOL DISTRICT

Conduct the following steps and see [Appendix E](#) for the worksheet to help you and your team select which products to test.

1. Determine which products are of greatest concern. Do you want to find a safer alternative for your more toxic products, for those used in the highest volume, or for your products that are not UL ECOLOGO or Green Seal certified?
2. Think about how many and which types of product you would like to test. Many districts simultaneously test 3–5 products, often a combination of all-purpose cleaners, bathroom cleaners, neutral floor cleaners, graffiti removers, and disinfectants.
3. Prioritize cleaning products that are labeled third-party certified to test, and asthma-safer disinfectants (hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, or isopropyl alcohol).
4. Consider testing dilution control systems, microfiber mops and cloths, and fragrance-free products.

Knowing exactly which products you plan to test will help you determine which vendors to invite to show you their line of green products. It will also help you create your bid requirements for potential vendors (see [Step 5](#) for more information about vendors).

HEALTH SPOTLIGHT

QUATS CAN CAUSE ASTHMA AND HARM THE ENVIRONMENT

Quaternary ammonium compounds, also known as “quats,” are often found in disinfectants, wipes, and all-purpose cleaners. Quats can cause asthma and are irritating to the nose and throat.^{73,74} Some people mistakenly think disinfectants with quats are a good green alternative, but evidence shows that quats can potentially harm people and the environment.^{75,76} Benzalkonium chlorides are the most widely used types of quats.

Select Only Third-Party Certified Cleaners to Test

Green Seal and UL ECOLOGO are third-party certification programs that certify only products that meet stringent health, environmental, and performance standards. Green Seal's GS-37 Standard for Institutional and Industrial Cleaners and UL ECOLOGO's UL 2759 Hardsurface Cleaners criteria prohibit ingredients known to cause asthma from being used in cleaning products.^{77,78}

Products labeled and certified under these standards can often be purchased through the same vendors that supply conventional cleaning products. See [Appendices F](#) and [G](#) for a complete list of third-party product certifications to use. See [Table 1](#) for an overview of recommended labeling programs that are asthma-safer.



TABLE 1: RECOMMENDED LABELING PROGRAMS

LEVEL 1: Prohibits the most asthma-causing chemicals (safest and healthiest options)*

Recommended third-party certified cleaning products

UL ECOLOGO UL 2759: Hardsurface Cleaners

(General purpose/bathroom cleaners, dish detergents, degreasers, and other cleaning products for household, institutional, and industrial use)

UL ECOLOGO UL 2795: Carpet and Upholstery Cleaners

(carpet cleaners, carpet spot and stain removers, and upholstery care products)

Green Seal GS-37: Cleaning Products for Industrial and Institutional use

(General purpose, restroom, glass, and carpet cleaning products)

Green Seal GS-53: Specialty Cleaning Products for Industrial and Institutional use

(Dish soaps, graffiti removers, car cleansers, deck/outdoor cleaners, odor removers, polishes, and waxes)



LEVEL 2: Prohibits some asthma-causing chemicals**

Design for the Environment (DfE)

DfE's criteria prohibit chemicals that may cause cancer or have developmental, reproductive, or neurotoxicity issues and limit some asthma-causing agents. For a list of products, visit: <http://www.epa.gov/dfe/products>

Design for the Environment Antimicrobial Pesticide Pilot Project

Labels environmentally preferred disinfectants. DfE's criteria prohibit chemicals that may cause cancer, endocrine disruption, and are unlikely to cause developmental, reproductive, mutagenic, or neurotoxicity issues. Prohibits sodium hypochlorite (bleach) and quaternary ammonium compounds. This is the only labeling program available for disinfectants.

LEVEL 3: Do not prohibit asthma-causing chemicals. May still be a healthier choice than uncertified products.

Carpet and Rug Institute products help limit or get rid of asthma triggers

Green Label Plus

Tests VOC emission levels for carpet and adhesive products for a variety of chemicals. Does NOT prohibit ingredients that cause asthma. This is the only labeling program for carpets and adhesives.

Seal of Approval for Residential Use Vacuums

Measures soil removal, dust containment, and surface appearance change. This is the only labeling program for vacuums.

These third-party certified products may contain ingredients that cause asthma. However, they do not contain ingredients that are known to cause cancer or reproductive harm, and they contain fewer VOCs and cause less pollution.

Green Seal GS-8: Cleaning Products for Household Use

Green Seal GS-34: Cleaning and Degreasing Agents

Green Seal GS-40: Floor-Care Products for Industrial and Institutional Use

UL ECOLOGO UL 2767: Paint and Varnish Removers

UL ECOLOGO UL 2792: Biologically-Based Cleaning and Degreasing Compounds

UL ECOLOGO UL 2777: Hard Floor Care Products

UL ECOLOGO UL 2780: Urinal Blocks



*UL ECOLOGO prohibits asthmagens that cause allergic-type asthma. Green Seal allows the use of enzymes, which can cause allergic-type asthma. WRAPP recommends only Green Seal certified products that do not contain enzymes.

**Prohibits some asthmagens that can cause allergic-type asthma

Test Only Asthma-Safer Disinfectants

WRAPP's database contains many examples of school staff who experienced asthma symptoms related to the use of disinfectants.

As mentioned earlier, disinfectants, which are regulated as pesticides by the USEPA, cannot be third-party certified by outside entities such as Green Seal or UL ECOLOGO. USEPA has a pilot program that approves safer disinfectants, called "Design for the Environment Antimicrobial Pesticide Pilot Project." Products approved under this program can have the Design for the Environment (DfE) logo on their labels.

DfE's criteria prohibit chemicals that may cause cancer or have developmental, reproductive, or neurotoxicity issues. For a list of approved products and to learn more about the program, visit: <http://www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html>

You can also find safer disinfectants by reviewing the label's list of ingredients. Refer to [Table 2](#) for a list of which chemicals are asthma-safer and

WRAPP CASE

Disinfectant Misuse Led to Serious Health Consequences

A 48-year-old woman with asthma worked as an office clerk at a youth training center. A co-worker sprayed a disinfectant that was falsely labeled as "green" to clean a counter in the reception area near the office clerk's desk. The office clerk began having severe asthma symptoms and had to be taken by ambulance to a hospital for life-saving care. The staff has since learned that a disinfectant was not even needed. The office has now adopted alternative cleaning products that are safer for the clerk's asthma.



which ones may cause asthma. Asthma-safer disinfectants use hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, and isopropyl alcohol as active ingredients. These ingredients are not known to cause asthma. Be aware that "inert" ingredients—the ingredients that do not directly kill the germs—are often not listed on the label or the Safety Data Sheet (SDS).

Ingredients that may cause asthma—also known as asthmagens—include quaternary ammonium compounds (quats), bleach (sodium hypochlorite), glutaraldehyde, peracetic acid (also known as peroxyacetic acid), and thymol (a suspected asthmagen). Thymol is also a terpene that can react with ozone to form formaldehyde, which is a known carcinogen and asthmagen. Thymol did not pass the Design for the Environment Antimicrobial Pesticide Pilot Project criteria to be considered a safe disinfectant. For a complete list of asthmagens found in cleaning products and disinfectants and other health effects, refer to [Appendices A and B](#).

TABLE 2: DISINFECTANTS-ASTHMA-SAFER INGREDIENTS AND INGREDIENTS THAT MAY CAUSE ASTHMA

Asthma-Safer Ingredients	Ingredients That May Cause Asthma*
Hydrogen Peroxide	Bleach
Lactic Acid	Glutaraldehyde
Citric Acid	Peracetic Acid (Peroxyacetic Acid)
Ethyl Alcohol	Quaternary Ammonium Compounds (also found on the label or Safety Data Sheet (SDS) under many other names such as Alkyl Dimethyl Benzyl Ammonium Chloride, Benzalkonium Chloride, Lauryl Dimethyl Benzyl Ammonium Chloride, Didecyl Dimethyl Ammonium Chloride, and other similar sounding names)
Isopropyl Alcohol	Sodium Hypochlorite (Chlorine Bleach)
	Thymol (Suspected Asthmagen)**

*See [Appendix A](#) for complete list of asthmagens

**Thymol is a skin sensitizer (it can cause skin allergies). Skin sensitizers are often respiratory sensitizers, meaning they are often asthmagens. Thymol comes from the thyme plant, and thyme is an asthmagen. Because of these associations, thymol is viewed as a suspected asthmagen. Thymol is also a terpene that can react with ozone to form formaldehyde, which is a carcinogen and asthmagen. In addition, thymol did not pass the Design for the Environment Antimicrobial Pesticide Pilot Project criteria to be considered a safe disinfectant.

Test Cleaning Products With Dilution Control Systems

Several green cleaning products come with dilution control systems. Often you can purchase one product and dilute it at different strengths to do light cleaning, normal cleaning, and heavy cleaning. Dilution control systems are cost-effective since they automatically measure out the amount of chemical needed. This helps avoid the “glug-glug” method—where staff estimates how much cleaner to add, rather than actually measuring the correct amount. It also minimizes product overuse and chemical waste. Purchasing one product as opposed to three or four also saves money.

Consider Testing Microfiber Mops and Cloths

Microfiber mops and cloths are important tools for cleaning that you could consider trying out, especially by starting a color-coded system to avoid cross-contamination. See the Microfiber section in [Step 2](#), “What is Green Equipment,” for more information about microfiber.

Avoid Products With Fragrances

Many people associate a clean room with a particular smell, like bleach. A clean room that is asthma-safer has no smell. Research by the Institute of Medicine equated fragrance to second hand smoke in triggering asthma.^{79, 80} Fragrances in cleaning products are actually a combination of many chemicals, some of which contain ingredients that have been associated with dizziness, cancer, endocrine disruption, and asthma. When possible, try to avoid scented cleaning products and to use fragrance-free products.⁸¹

Avoid Disinfecting Wipes, Air Fresheners, and Spray Bottles

WRAPP has reviewed cases of school staff experiencing asthma-related problems from disinfecting wipes, air fresheners, and spray bottles. Teachers and parents frequently bring in their own cleaning products, in an effort to eliminate germs. However, they may not be asthma-safe. School districts can reduce children and staffs' potential exposure to ingredients that cause asthma and other health problems by creating policies that do not allow such products.

Districts can supply teachers with approved, asthma-safer products. Teachers, parents, and students should only bring in cleaning products that are approved by the school district. If quick classroom touch-up cleaning is needed, a microfiber cloth or unscented baby wipes will suffice and they will not expose staff or students to asthmagens. If disinfectants are needed, notify the custodians who are trained to use them. Children should never be allowed to use wipes with bleach, quaternary ammonium compounds, or glutaraldehyde.

HEALTH SPOTLIGHT

AIR FRESHENERS = NOT ASTHMA-SAFER

Band-aid Approach for Bad Smells

Like common cleaning products, air fresheners can contain ingredients that can cause and trigger asthma, as well as other health effects.^{82, 83, 84} Air fresheners come in a variety of forms, including plug-ins, sprays, liquids, or gels. They are meant to cover up a bad smell, rather than get rid of it. It is healthier to find and fix the source of the smell, rather than use an air freshener to cover it up. For example, repairing water leaks to stop the smell of mold and mildew is much more effective than adding a variety of chemicals in the air to cover it up.

“Disinfectant wipes—they’re the number one problem we have, they’re everywhere. Teachers put together a wish list [with these products for parents to bring in]... we can give a list of acceptable products to help with cleaning.”

—GLENN SHERMAN, LIVERMORE JOINT VALLEY UNIFIED SCHOOL DISTRICT

HEALTH SPOTLIGHT

AVOID DISINFECTANT WIPES

Disinfectant wipes are used regularly, but they usually contain asthmagens. The most common chemicals in wipes are called “quats” (short for quaternary ammonium compounds), which have names like “alkyl dimethyl benzyl ammonium chloride” and “benzalkonium chloride.” They can also contain bleach and glutaraldehyde. These are all asthmagens. In addition, many disinfectant wipes can contain irritating fragrances. Often disinfectant wipes are used when a regular baby wipe would do, like for cleaning up after an art project. Children should not be allowed to use disinfectant wipes, and disinfectant wipes should not be used to clean hands.



STEP 5: ARRANGE VENDOR PRESENTATIONS, SELECT VENDORS

“All suppliers were generous in donating their product lines’ dispenser systems and enough products to last for at least two weeks. Representatives came out at the beginning of each product trial to speak with our custodial staff...”

—GLENN SHERMAN, LIVERMORE JOINT VALLEY UNIFIED SCHOOL DISTRICT

In Step 5, you will identify potential vendors to work with, and invite them to present their line of products. You will also select a line of products and vendors to use for your pilot tests.

Find and Invite Knowledgeable Green Cleaning Vendors

To determine which vendors to invite, contact vendors you know and inquire about the green cleaning products they offer. You can also ask other districts for green vendor recommendations. Additional considerations in choosing vendors:

1. Select vendors with a proven track record in supplying third-party certified green cleaners and asthma-safer disinfectants. Otherwise, you may hear incorrect information from your vendors. A few examples:
 - Vendors told a California school district that disinfectants cannot be hydrogen peroxide based (this is false—in fact, hydrogen peroxide is recommended).
 - Vendors recommended a district use a UL ECOLOGO certified graffiti remover, but in reality the certification expired five years earlier.
 - Vendors said their products were just like Green Seal, but upon closer scrutiny, they would never have passed Green Seal’s requirements.

- Vendors gave a district disinfectants to test that contained asthmagens, so the district redid all their tests, which cost them more time.
- 2. Invite vendors that offer discounts to schools. Some options include: **a)** Western States Contracting Alliance, **b)** vendors on California State Contracts, which have already been competitively bid, or **c)** vendors on other local or regional competitively-bid contracts, such as your county or city.

“We brought in the best vendors, had them compete with each other and said, ‘if you can beat what we have now, we’ll consider you.’ We set up pilot programs. Our program will be twice as good next year. It’s four times better than it was four years ago.”

—PATRICK PIZZO, EAST MEADOW SCHOOL DISTRICT

Select Products After Hosting Vendor Presentations

Assign a member of your Asthma-Safer Cleaning Team to set up vendor presentations (See [Appendix H: Sample Vendor Letter](#)).

1. Refer to the list of products you selected to test in [Step 4](#) to help you create your bid requirements.
2. Ideally, invite three or four vendors to present their line of products, with the goal of selecting 2–3 vendors whose third-party certified green products you will test.
3. Pick a three-hour time period when you and your Asthma-Safer Cleaning Team can listen to three or four back-to-back vendor presentations. Allow vendors 30 minutes each to present their line of green cleaning products, with a 15-minute break to evaluate each vendor with your team.
4. Adapt the vendor letter (see [Appendix H](#)) to include your list of priority items. Some vendors might want to present products that are not third-party certified or that contain ingredients that can cause asthma, such as quaternary ammonium compounds. Remind them not to include these products in their presentations or as part of your pilot test.
5. Ask your vendor to present the following information:
 - Green Seal or UL ECOLOGO certified cleaning products (all-purpose cleaners, bathroom cleaners, neutral floor cleaners, etc.)
 - UL ECOLOGO certified graffiti removers
 - Asthma-safer disinfectants (products whose active ingredient includes hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, or isopropyl alcohol that can replace bleach and quaternary ammonium compounds—

“We rely heavily on our vendors, some we’ve had for many years. Even when they tell us something, we double check to make sure they’re not pulling the wool over our eyes.”

—FRANCIS KENNEDY, FAIRFIELD-SUISUN UNIFIED SCHOOL DISTRICT

see [Table 2](#) for more details), including disinfectants authorized by Design for the Environment.

- Automatic dilution equipment for Green Seal or UL ECOLOGO certified cleaners
- Microfiber mops and cloths

6. When you host your vendor presentations, provide a vendor evaluation form (see [Appendix I](#)) to each member of your Asthma-Safer Cleaning Team. Discuss the following with your team:
 - Did vendors show you third-party certified products by UL ECOLOGO or Green Seal? Did the vendor introduce appropriate asthma-safer disinfectants?
 - Did vendors present products that were not Green Seal or UL ECOLOGO certified, or disinfectants that contained asthmagens, like quaternary ammonium compounds? If so, this may not be the right vendor for your school district.
7. Determine with your team which vendors will participate in your asthma-safer cleaning pilot project and which products to test.

STEP 6: TEST AND EVALUATE PRODUCTS

Test Cleaning Products and Disinfectants

Involving many custodians in testing the products and listening to their opinions is important. Here are sample steps to take:

1. Double check that you:
 - Select cleaners that are Green Seal or UL ECOLOGO certified.
 - Select a graffiti remover (if applicable) that is UL ECOLOGO certified.
 - Select a disinfectant with the active ingredients hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, isopropyl alcohol, or disinfectants authorized by Design for the Environment.
 - Avoid disinfectants that contain quaternary ammonium compounds, bleach, or other active ingredients that can cause asthma (see [Appendix A](#) for a complete list).
2. Pick an amount of time to pilot each product. Many districts test all the products from one vendor at the same time for 1–3 weeks.
3. Supply pilot schools only with pilot products. Most vendors will provide free sample chemicals for your test period.
4. Remove products that are not part of the test from the pilot school sites, including products brought in by teachers, non-cleaning staff, and parents.
5. On the first day of the pilot test, Vendor A trains all custodians at pilot sites on the various cleaning products you have chosen to test. Ask the vendor to describe how to use the product(s) and how it may work differently than a conventional product.
6. Make sure Safety Data Sheets are available for custodians, and provide Hazard Communication (HazCom) training on the products that are selected for testing. Train custodians on what personal protective equipment to wear, if any.
7. Custodians test the products from Vendor A every day or as needed during the 1–3 week period.
8. Repeat steps 5, 6, and 7 with products from Vendors B and C.

“Don’t be afraid to give it a chance, it doesn’t cost you anything. Be creative. Pick a pilot school, try it, see how it goes...and then evaluate it. Constantly support the school custodians—be there, see how that process is going to work, communicate with staff, collect feedback from teachers and staff.”

—TONY ALMEIDA, ELK GROVE UNIFIED SCHOOL DISTRICT

Evaluate Tested Products

1. Update the Asthma-Safer Cleaning Products Evaluation Form, available in English and in Spanish ([Appendix J](#)). Include questions on the form about only the cleaning products and equipment that you tested in your pilot phase, and delete questions about products you did not test. Be sure to put the name of the product at the top of each page.
2. During the last week of the testing period, review with custodians the Asthma-Safer Cleaning Products Evaluation Form ([Appendix J](#)), but do not hand it out.
3. On the last day of testing Vendor A's products, hand out pens and the Asthma-Safer Cleaning Products Evaluation Form to each of the custodians from the testing sites at the beginning of their shift. If possible, hand out a SEPARATE form for each type of product to EACH custodian. You could consider copying each form onto a different color of paper to easily tell them apart. Example: each custodian could get three forms—one form for the neutral cleaner (copied on blue paper), one form for the disinfectant (copied on green paper), and one form for the graffiti remover (copied on white paper). This might help ensure that you get valuable input from each custodian for each product. At the end of the pilot test you will have individual feedback on the different products, which will make it easier to identify the best products for your district.
4. Collect forms before the custodians begin to clean during their shift. Be sure to collect all the evaluation forms from each of the custodians for each of the products. Some custodians may need help completing the forms, especially if they are not fluent in English. If possible, offer assistance.
5. Repeat steps 1–4 with Vendor B and Vendor C.



“[We found] a single chemical product that is mixed at different dilutions to do almost all the everyday cleaning at our school sites. I have to admit, I was skeptical about a product that could be used for just about everything being effective. Boy was I wrong. The custodians really liked the product, in all aspects of cleaning.”

—GLENN SHERMAN, LIVERMORE JOINT VALLEY UNIFIED SCHOOL DISTRICT



“They seemed to be proud that their evaluations and opinions were being listened to and counted on to possibly help determine the cleaning products of the entire district. They were also pleased to see that using green cleaning products required no sacrifices in regards to their effectiveness in cleaning the schools.”

—GLENN SHERMAN, JOINT VALLEY UNIFIED SCHOOL DISTRICT

Meet to Discuss and Choose Cleaning Products

After you complete pilot tests from Vendors A, B, and C, bring all the custodians together (or at least the head custodians), and your Asthma-Safer Cleaning Team to discuss and evaluate the products. If the head of facilities or the purchasing department are not on your team, make sure they come to the evaluation meeting. This process will help you pick the best products for your district while simultaneously having buy-in from decision makers in your district.



1. Have someone from the team review the written Asthma-Safer Cleaning Products Evaluation Forms and tally the results in advance of your meeting.
2. Present and talk about the results.
3. Ask custodians to share their opinions about whether they liked the products. Find out

about each product’s cleaning performance, inquire about health effects like coughing, wheezing, and headaches, and discuss the price of each. You might notice general agreement on which products custodians like best. If not, have each custodian talk through their top choices.

Remind custodians that you really want to hear their opinions. The products and equipment need to perform well enough for the entire district to use them. Many other products are available to try out if the ones tested did not meet your district’s requirements.

4. If everyone agrees on which products they like, then choosing which ones to recommend for the district will be easy. If not, next steps could include having your team members vote for their favorite products and vendors. Or you may choose to test a particular line of products for longer. You may also need to confirm and compare pricing before moving forward. Set a timeline for accomplishing these final steps. Once everyone agrees on a line of products, determine next steps to expand asthma-safer cleaning to the entire district.

Expand Asthma-Safer Cleaning to the Entire District

To effectively transition your entire district to an asthma-safer cleaning program, train all custodians on new cleaning procedures, including facility management and other relevant school staff. Go to <https://www.cdpb.ca.gov/programs/ccdpb/deodc/ohb/wrapp/pages/class.aspx> to download a PowerPoint presentation for training on the following:

- Describe why the district switched to asthma-safer cleaning, including the environmental and health concerns of conventional products.
- Explain what green cleaning means.
- Discuss the importance of third-party certified cleaners by Green Seal, UL ECOLOGO, and the Design for the Environment Antimicrobial Pesticide Pilot Project.
- Explain when to clean with neutral cleaners versus when to sanitize and disinfect.

“Green cleaning is a process—it’s not just the tools and the equipment, but the training. How you use the equipment is also important.”

—TONY ALMEIDA, ELK GROVE UNIFIED SCHOOL DISTRICT

Invite selected vendors to train staff on:

- Cleaning techniques for new products.
- How to use and maintain new equipment.
- Wearing correct safety gear.

Present this information in a simple, easy-to-understand format. Adequately training all custodians may help reduce product waste, prevent injuries to employees, and make sure that you are cleaning in an asthma-safer manner.⁸⁵



STEP 7: COMMUNICATE YOUR SUCCESS AND SET POLICIES

Once you have begun asthma-safer cleaning in your district, communicate your successes. School administrators, staff, students, and their families will be interested to know that you are working to create a safer and healthier environment for all. This is a great opportunity to communicate that the facilities or maintenance and operations department is making changes to help protect staff and students with asthma. See the sample school newsletter article and sample press release that you can quickly adapt in [Appendices K, L](#).

Set District-Wide Policies

Many school boards want to hear about cost saving measures and changes in cleaning protocols. For this reason, you may be asked to present your asthma-safer cleaning successes at a school board meeting. For example, a representative from your Asthma-Safer Cleaning Team could give a brief presentation that describes the reasons for asthma-safer cleaning. You might want to explain that custodians as a group have high rates of work-related asthma and your team would like to protect the children in your school district with asthma. You could also state that it will not cost more to switch. During your presentation, you could also take the opportunity to thank and recognize the Asthma-Safer Cleaning Team and the custodians involved in the pilot (see certificates to hand out in [Appendix P](#)). This could be a chance to encourage the school board to consider a district-wide policy on asthma-safer cleaning ([Appendix M](#)) and to pass a district-wide resolution ([Appendix N](#)). If the school board is interested in considering a district-wide policy on asthma-safer cleaning, it could include the following points:

- Use disinfectants less. Rely on thorough cleaning.
- Only allow the purchase of third-party certified cleaning products and asthma-safer disinfectants.

“I had a few custodians that were always sick—if a flu or cold was coming around, they’d get it, too. Now they’re rarely sick. They’re cleaning in the same building they were before, it’s just the new procedures we’re using, and some of the equipment we got, it really really makes a difference in your indoor air quality. With that, it helps with your absenteeism. The children are not getting as sick.”

—ANDI LEE, BLACKHAWK INTERMEDIATE SCHOOL, BEAVER FALLS, PENNSYLVANIA

- Conduct outreach to staff and parents to stop bringing un-approved products into schools and provide a list of approved products.
- Remove products brought in by teachers and parents that can cause asthma or make it worse. This includes air fresheners, harmful wipes, and un-approved spray bottles.
- Supply individual bottles of approved cleaners for use in classrooms.
- Promote a scent-free school, asking staff and students not to wear or use scented products while on the school premises. These products can trigger asthma, chemical sensitivities, and migraine headaches.

Conclusion

Thank you for using WRAPP's Healthy Cleaning and Asthma-Safer Schools: A How-To Guide. We hope this helps you transition to a healthier school environment. Be sure to look at the numerous resources outlined in the appendices, including:

- [Appendix A: Cleaning Product Ingredients That Can Cause Asthma \(Asthmagens\)](#)
- [Appendix B: Additional Health Concerns from Product Ingredients That Can Cause Asthma](#)
- [Appendix C: Asthma-Safer Cleaning Resources](#)
- [Appendix D: Cleaning Product Inventory Form](#)
- [Appendix E: Worksheet—Selecting Which Products to Test](#)
- [Appendix F: Green Seal's Third-Party Certifications for Cleaning Products](#)
- [Appendix G: UL ECOLOGO's Third-Party Certifications for Cleaning Products](#)
- [Appendix H: Sample Vendor Letter](#)
- [Appendix I: Vendor Evaluation Form](#)
- [Appendix J: Asthma-Safer Cleaning Product Evaluation Form \(English and Spanish\)](#)
- [Appendix K: School Newsletter](#)
- [Appendix L: Press Release for Local Newspaper](#)
- [Appendix M: Green, Healthy, and Asthma-Safer Schools Cleaning Model Policy](#)
- [Appendix N: Resolution on Asthma-Safer and Greener Cleaning](#)
- [Appendix O: Information Sheet—Why Can't I Bring in Disinfectants or Other Products from Home?](#)
- [Appendix P: Certificate for Custodians](#)

These resources can also be found online and downloaded by going to:

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/Pages/CLASS-Guide.aspx>



References

1 Centers for Disease Control and Prevention. (2010). How To Clean and Disinfect Schools To Help Slow the Spread of Flu. Retrieved from <http://www.cdc.gov/flu/school/cleaning.htm>

2 ISSA. (2014). Introduction to Green Cleaning. Retrieved from http://www.issa.com/?id=what_is_green_cleaning_

3 UL Environment. (2011). UL 2759 Standard for Sustainability for Hard Surface Cleaners. First Edition, September 29, 2011. p. 11.

4 Green Seal. (2011). GS-37 Green Seal Standard for Cleaning Products for Industrial and Institutional Use. Sixth Edition, September 1, 2011. pp. 7–13. Retrieved from <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=23>

5 Connecticut Department of Public Health (2009). Cleaning Schools Effectively the Safe and Healthy Way, Guidance for Superintendents and Facility Managers. Retrieved from http://www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/disinfectant_fs_revised.pdf

6 Environmental Protection Agency. (2014). What are Antimicrobial Pesticides? Retrieved from http://www.epa.gov/oppad001/ad_info.htm

7 Rose L, and Westinghouse C. (2010). Cleaning for Healthier Schools – Infection Control Handbook, 2010 p. 21. Retrieved from <http://www.cdph.ca.gov/programs/ohsep/Documents/CleanSchoolsHandbook.pdf>

8 UCSF Institute for Health & Aging, UC Berkeley Center for Environmental Research and Children's Health, Informed Green Solutions, and California Department of Pesticide Regulation (2013). Green Cleaning, Sanitizing, and Disinfecting: A Toolkit for Early Care and Education, p. 49. University of California, San Francisco School of Nursing: San Francisco, California, 2013.

9 Centers for Disease Control and Prevention. (2010). How To Clean and Disinfect Schools To Help Slow the Spread of Flu. Retrieved from <http://www.cdc.gov/flu/school/cleaning.htm>

10 National Education Association Health Information Network (2010). Cleaning, Sanitizing, and Targeted Disinfecting School Wide (p. 1). Retrieved from http://www.neahin.org/assets/pdfs/cleaning_school-wide_fs.pdf

11 The Clorox Company. (2009). Material Safety Data Sheet. Retrieved from http://www.thecloroxcompany.com/products/msds/bleach/cloroxregularbleach0809_.pdf

12 New Jersey Department of Health and Senior Services, Division of Epidemiology, Environmental and Occupational Health. (n.d.). Common Cleaning Products May Be Dangerous When Mixed [Fact sheet]. Retrieved from http://www.state.nj.us/health/eoh/cehsweb/bleach_fs.pdf

13 Education Data Partnership. (2010). State of California Education Profile, Fiscal year: 2009–2010. Retrieved from http://www.ed-data.k12.ca.us/App_Resx/EdDataClassic/fsTwoPanel.aspx?bottom=/_layouts/EdDataClassic/profile.aspx?Tab=1&level=04&reportnumber=16#studentsbyrace/ethnicity

14 California Breathing. (2011). County Asthma Profiles, Lifetime Asthma Prevalence, 2009. Retrieved from <http://www.californiabreathing.org/asthma-data/county-asthma-profiles/solano-county-asthma-profile>

15 Rosenman K. (2006). Cleaning products-related asthma. Clinical Pulmonary Medicine. 13(4):221–228.

16 Zock JP, Vizcaya D, Le Moual N. (2010). Update on asthma and cleaners. Current Opinion in Allergy and Clinical Immunology 10(2):114–20.

17 Rosenman K. (2006). Cleaning products-related asthma, Obstructive Airway Disease. Clinical Pulmonary Medicine. 13(4):221–228.

18 Milet M, Lutzker L, Flattery J. Asthma in California: A Surveillance Report. Richmond, CA: California Department of Public Health, Environmental Health Investigations Branch, May 2013 (p. 93).

19 California Work-Related Asthma Prevention Program, California Department of Public Health. (2014). Work-related Asthma: What you should know. Retrieved from <http://www.cdph.ca.gov/programs/ohsep/Documents/WRAWhatYouShouldKnow.pdf>

20 California Work-Related Asthma Prevention Program, California Department of Public Health. (2012). Cleaning Products and Work-Related Asthma. Retrieved from <http://www.cdph.ca.gov/programs/ohsep/Documents/WRA-CleaningProd.pdf>

21 American School and University (2012). Green Cleaning Award for Schools & Universities. Green Cleaning Award K-12/School District Honorable Mention: Catoosa (Georgia) County Schools. Retrieved from <http://asumag.com/greenCleaningaward/gca-k-12school-district-honorable-mention-catoosa-ga-county-schools>

22 Milet M, Tran S, Eatherton M, Flattery J, Kreutzer R. (2007). “The Burden of Asthma in California: A Surveillance Report.” Richmond, CA: California Department of Health Services, Environmental Health Investigations Branch, June 2007, (p. 13).

23 California Breathing. California Department of Public Health. (2010). California Asthma Quick Facts: School Absences Due to Asthma. Retrieved from <http://www.californiabreathing.org/asthma-data/factsheets/school-absences-fact-sheet>

24 Taras H, Potts-Datema W. (2005). Childhood Asthma and Student Performance at School. Journal of School Health. October 2005, Vol. 75, No. 8 (p. 312). Retrieved from http://newsite.rampasthma.org/uploads/resources/asthma_and_student_performance.pdf

25 California Department of Education. (2000). The School Attendance Improvement Handbook, p. 9. Retrieved from http://www.cde.ca.gov/ls/ai/cw/documents/schoolattendance_.pdf#search=schools%20lose%20revenue%20absences&view=FitH&pageMode=none

26 California Breathing. (2013). AIR (Achievements in Respiratory) Health Awards. Retrieved from <http://www.californiabreathing.org/grants-awards/air-health-awards>

27 National Institute of Environmental Health Sciences. (2012). Children's Health. Retrieved from <http://www.niehs.nih.gov/health/topics/population/children/index.cfm>

28 Kortenkamp A, Martin O, Faust M, Evans R, McKinlay R, Orton F, Rosivatz E (2011). State Of The Art Assessment of Endocrine Disruptors Final Report, p. 7.

29 Children's Environmental Health Network. (2009). Children's Environmental Health 101. Retrieved from <http://www.cehn.org/resources/ceh101>

30 Centers for Disease Control and Prevention (2011). Vital Signs. Retrieved from <http://www.cdc.gov/vitalsigns/asthma/>

31 Children's Environmental Health Network. (2009). Children's Environmental Health 101. Retrieved from <http://www.cehn.org/resources/ceh101>

32 Canadian Association of Physicians for the Environment. (2000). Children's Environmental Health Project. Retrieved from <http://www.caape.ca/children/>

33 Children's Environmental Health Network. (2009). Children's Environmental Health 101. Retrieved from <http://www.cehn.org/resources/ceh101>

34 State of California Environmental Protection Agency Office of Environmental Health Hazard Assessment (2013). Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65 List). Chemicals Known to Cause Cancer or Reproductive Toxicity April 29, 2013. Retrieved from http://oehha.ca.gov/prop65/prop65_list/files/041913P65list.pdf

35 State of California Environmental Protection Agency Office of Environmental Health Hazard Assessment (2013). Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65 List). Chemicals Known to Cause Cancer or Reproductive Toxicity April 29, 2013. Retrieved from: http://oehha.ca.gov/prop65/prop65_list/files/041913P65list.pdf

36 Children's Environmental Health Network. (2009). Children's Environmental Health 101. Retrieved from <http://www.cehn.org/resources/ceh101>

37 Office of Environmental Health Hazard Assessment. (2012). Fish are nutritious and good for you to eat. Retrieved from <http://www.oehha.ca.gov/fish.html>

38 Environmental Working Group (2009). Greener School Cleaning Supplies = Fresh Air + Healthier Kids, p. 15. Retrieved from http://static.ewg.org/reports/2009/school_cleaners/EWG-School-Cleaning-Supplies.pdf?_ga=1.238431109.460044378.1375737574

39 Healthy Schools Campaign (2013). Green Clean Schools Success Stories. Retrieved from <http://www.healthyschoolscampaign.org/programs/green-clean-schools/>

40 Environmental Working Group (2009). Greener School Cleaning Supplies = Fresh Air + Healthier Kids. Retrieved from http://static.ewg.org/reports/2009/school_cleaners/EWG-School-Cleaning-Supplies.pdf?_ga=1.238431109.460044378.1375737574

41 Environmental Working Group (2009). Greener School Cleaning Supplies = Fresh Air + Healthier Kids, p. 12. Retrieved from http://static.ewg.org/reports/2009/school_cleaners/EWG-School-Cleaning-Supplies.pdf?_ga=1.238431109.460044378.1375737574

42 International Facility Management Association Foundation Sustainability. (2011). "How-To Guide" Series, Global Green Cleaning 2011, p. 36 [Guide]. Retrieved from <http://www.issa.com/data/File/IFMA%20Sustainability%20Guide%20on%20Green%20Cleaning%20FINAL.pdf>

43 Jones M. (2012, April 03). Email interview.

44 San Diego Unified School District Custodial Services Supervisor (2011, November 18). Telephone interview.

45 Thomas K. (2010). How Green Cleaning Has Improved the Campus Environment, Worker Safety & the Bottom Line at UGA [PowerPoint slides]. 2010 Southeastern Regional Association of Physical Plant Administrators Annual Conference

46 San Diego Unified School District Custodial Services Supervisor (2011, November 18). Telephone interview.

47 Lee-Marnicio A. (2012, Nov 15). Telephone interview.

48 Environmental Protection Agency Region 9 Pollution Prevention Program. (2002). Environmental Best Practices for Health Care Facilities: Using Microfiber Mops in Hospitals [Fact sheet]. p. 3. Retrieved from <http://www.epa.gov/region9/waste/p2/projects/hospital/mops.pdf>

49 Centers for Disease Control and the Healthcare Infection Control Practices Advisory Committee. (2003). Guidelines for Environmental Infection Control in Health-Care Facilities, pp. 32–33. Retrieved from <http://www.cdc.gov/MMWR/preview/MMWRhtml/r5210a1.htm>

50 Rose L, and Westinghouse C. (2010). Cleaning for Healthier Schools—Infection Control Handbook, 2010 pp. 24–25. Retrieved from <http://www.cdph.ca.gov/programs/ohsep/Documents/CleanSchoolsHandbook.pdf>

51 Rose L, and Westinghouse C. (2010). Cleaning for Healthier Schools—Infection Control Handbook, 2010 pp. 24–25. Retrieved from <http://www.cdph.ca.gov/programs/ohsep/Documents/CleanSchoolsHandbook.pdf>

52 School Network for Absenteeism Prevention. (2013). Healthy Schools, Healthy People. Retrieved from <http://www.itsasnap.org/snap/faqs.htm>

53 Centers for Disease Control and Prevention. (2013). Handwashing: Clean Hands Save Lives. Retrieved from <http://www.cdc.gov/handwashing/>

54 Centers for Disease Control and Prevention. (2013). Handwashing: Clean hands Save Lives. Show Me the Science—When to Use Hand Sanitizer. Retrieved from <http://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html>

55 California Retail Food Code. (2012). Excerpt from California Health and Safety Code Part 7. Effective January 1, 2012. Retrieved from <http://www.cdph.ca.gov/services/Documents/fdbRFC.pdf>

56 Rose L, and Westinghouse C. (2010). Cleaning for Healthier Schools—Infection Control Handbook, 2010 pp. 24–25. Retrieved from <http://www.cdph.ca.gov/programs/ohsep/Documents/CleanSchoolsHandbook.pdf>

57 TerraChoice. (2010). “The Sins of Greenwashing, Home and Family Edition.” Retrieved from <http://sinsofgreenwashing.org/findings/greenwashing-report-2010/index.html>

58 Healthy Schools Campaign. (2013). The Quick + Easy Guide to Green Cleaning in Schools, Step 3. Retrieved from <http://www.greencleanschools.org/s3m-introduce-green-equipment.html>

59 Healthy Schools Campaign. (2013). The Quick + Easy Guide to Green Cleaning in Schools, Step 3, Choose Green Cleaning Equipment, Abrasive Floor Pads. Retrieved from <http://greencleanschools.org/s3-choose-green-equipment.html>

60 Healthy Schools Campaign. (2013). The Quick + Easy Guide to Green Cleaning in Schools, Step 3, Choose Green Cleaning Equipment, Floor Care Systems. Retrieved from <http://greencleanschools.org/s3-choose-green-equipment.html>

61 Cleanlink. (2011). Curbing Asthma in Schools. Retrieved from <http://www.cleanlink.com/sm/article/Curbing-Asthma-In-Schools-13030>

62 Cleanlink. (2011). Curbing Asthma in Schools. Retrieved from <http://www.cleanlink.com/sm/article/Curbing-Asthma-In-Schools-13030>

63 Environmental Protection Agency Region 9 Pollution Prevention Program. (2002). Environmental Best Practices for Health Care Facilities: Using Microfiber Mops in Hospitals [Fact sheet]. p. 3. Retrieved from <http://www.epa.gov/region9/waste/p2/projects/hospital/mops.pdf>

64 Environmental Protection Agency Region 9 Pollution Prevention Program. (2002). Environmental Best Practices for Health Care Facilities: Using Microfiber Mops in Hospitals [Fact sheet]. Retrieved from <http://www.epa.gov/region9/waste/p2/projects/hospital/mops.pdf>

65 University of Washington. (2011). Microfiber. Retrieved from <http://deohs.washington.edu/sites/default/files/brochures/microfiber-factsheet.pdf>

66 Environmental Protection Agency Region 9 Pollution Prevention Program. (2002). Environmental Best Practices for Health Care Facilities: Using Microfiber Mops in Hospitals [Fact sheet]. p. 2. Retrieved from <http://deohs.washington.edu/sites/default/files/brochures/microfiber-factsheet.pdf>

67 Collaborative for High Performing Schools. (2006). Best Practices Manual, Volume II, Design, 2006 Edition. Interior Surfaces and Furnishings, Guideline IS1: Carpeting. p. 144. Retrieved from <http://www.chps.net>

68 Herr M, Just J, Nikasinovic L, Foucault C, Le Marec AM, Giordanella JP, Momas JI. (2012). Influence of host and environmental factors on wheezing severity in infants: findings from the PARIS birth cohort. Clinical and Experimental Allergy: Journal of the British Society for Allergy and Clinical Immunology. 2012 Feb; 42(2):275–83.

69 Hill DJ, Thompson PJ, Stewart GA, Carlin JB, Nolan TM, Kemp AS, Hosking CS (1997). The Melbourne house dust mite study: eliminating house dust mites in the domestic environment. Journal of Allergy and Clinical Immunology. 1997 Mar; 99(3):323–9.

70 Lewis RD, Breysse PN, Lees PS, Diener-West M, Hamilton RG, Eggleston P (1998). Factors affecting the retention of dust mite allergen on carpet. American Industrial Hygiene Association Journal. 1998 Sep; 59(9):606–13.

71 Healthy Building Network. (2013). Full Disclosure Required: A Strategy to Prevent Asthma Through Building Product Selection. pp. 5, 10. Retrieved from http://healthybuilding.net/reports/astmagens/HBN_Report_Full_Disclosure_Asthma.pdf

72 Healthy Building Network. (2013). Full Disclosure Required: A Strategy to Prevent Asthma Through Building Product Selection. p. 24. Retrieved from http://healthybuilding.net/reports/astmagens/HBN_Report_Full_Disclosure_Asthma.pdf

73 Purohit A, Kopferschmitt-Kubler MC, Moreau C, Popin E, Blaumeiser M, Pauli G. (2000). Quaternary Ammonium Compounds and Occupational Asthma. International Archives of Occupational and Environmental Health. August 2000, Vol. 73, No. 6 (pp. 423–7).

74 Betco. (2012). Material Safety Data Sheet, Green Earth Daily Disinfectant Cleaner. Retrieved from http://www.betco.com/MSDS_EN/C3100_537/537CAN140611.pdf

75 United States Environmental Protection Agency. (2006). Prevention, Pesticides and Toxic Substances. Reregistration Eligibility Decision for Alkyl Dimethyl Benzyl Ammonium Chloride (ADBAC). August 2006 (pp. 45–46). Retrieved from http://www.epa.gov/opprrd1/REDs/adbac_red.pdf

76 Nalecz-Jawecki G, Grabinska-Sota E, and Narkiewicz P. (2003). The toxicity of cationic surfactants in four bioassays. Ecotoxicology and Environmental Safety. January 2003, Vol. 54, No. 1 (pp. 87–91).

77 UL Environment. (2011). UL 2759 Standard for Sustainability for Hard Surface Cleaners. First Edition, September 29, 2011. p. 11.

78 Green Seal. (2011). GS-37 Green Seal Standard for Cleaning Products for Industrial and Institutional Use. Sixth Edition, September 1, 2011. pp. 7–13. Retrieved from <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=23>

79 Bridges, B (2002). Fragrance: emerging health and environmental concerns. *Flavour and Fragrance Journal* 2002: Volume 17: 361–371.

80 Institute of Medicine (2000). Clearing the Air, Asthma and Indoor Exposures, Executive Summary. p. 9.

81 Canadian Centre for Occupational Health and Safety (2012). Scent-Free Policy for the Workplace. Retrieved from http://www.ccohs.ca/oshanswers/hsprograms/scent_free.html

82 Environmental Protection Agency (2013). An Introduction to Indoor Air Quality (IAQ). Retrieved from <http://www.epa.gov/iaq/ia-intro.html>

83 NRDC. (2007). Health Facts, Protect your Family From the Hidden Hazards in Air Fresheners. Retrieved from <http://www.nrdc.org/health/home/airfresheners/fairfresheners.pdf>

84 Natural Resources Defense Council. (2011). Smarter Living: Family Health. Toxic Air Fresheners? Retrieved from <http://www.nrdc.org/living/healthreports/hidden-hazards-air-fresheners.asp>

85 Ace Janitorial Professional Cleaning Services (2012). What is Green Cleaning. Retrieved from http://www.acejanitorial.net/what_is_greencleaning.html

APPENDIX A

CLEANING PRODUCT INGREDIENTS THAT CAN CAUSE ASTHMA (ASTHMAGENS)

The list of chemicals that are asthmagens came from the Association of Occupational and Environmental Clinics (AOEC) Exposure Code Lookup: <http://www.aoecdata.org/ExpCodeLookup.aspx>

CHEMICAL NAME	SYNONYM	TYPES OF CLEANERS
Acetic Acid ¹ CAS # 64-19-7	Ethanoic Acid; Glacial Acetic Acid; Vinegar Acid; Vosol	Vinegar for household cleaning, mildew cleaner, window cleaner, floor cleaner, and multi-surface cleaner
Aluminum Oxide ² CAS# 1344-28-1	Aluminum Oxide (Al ₂ O ₃); Aluminum Oxide (Ignited); Gamma-Alumina	Polisher, hard water spot remover, and surface cleaner
Aminoethyl Ethanolamine ³ CAS # 111-41-1	(2-Hydroxyethyl) Ethylenediamine; (Beta-Hydroxyethyl) Ethylenediamine; 1-(2-(Hydroxyethyl) Amino)-2- Aminoethane; 2-((2-Aminoethyl) Amino) Ethanol; 2-Aminoethyl Ethanolamine; Ethanoethylene Diamine; Hydroxyethyl Ethylenediamine; Monoethanoethylene diamine; N-(2-Hydroxyethyl) Ethylenediamine	Fungicide, rust remover, metal polish, and furniture cleaner
Ammonia ⁴ CAS # 1336-21-6	Ammonia Solution, Strong; Ammonium Hydroxide	Window cleaner, glass cleaner, floor polishing wax, toilet cleaner, bathroom cleaner, and multi- surface cleaner
Bleach (Sodium Hypochlorite) ⁵ CAS # 7681-52-9	Modified Dakin's Solution; Hypochlorous Acid; Sodium Salt; Sodium Hypochlorite	Tile cleanser, toilet cleaner, bathroom cleaner, floor cleaner, and disinfectant
Colophony (Rosin) ⁶ CAS # 8050-09-7	Rosin; Rosin Gum; Gum Rosin; WW Wood Rosin	Pine-oil cleaner and wood polish
Diethanolamine ⁷ CAS # 111-42-2	Diethanolamine; 2,2'-Iminobisethanol; Ethanol, 2,2'-Iminobis-; Ethanol, 2,2'-Iminodi-	Metal polish, stainless steel cleaner and polisher, degreaser, all-purpose cleaner, floor cleaner, stain remover, floor finish, bleach, bathroom cleaner, disinfectant, glass cleaner, and cleaning wipes
Dimethyl Ethanolamine ⁸ CAS # 108-01-0	Ethanol, 2-(Dimethylamino)-; 2-Dimethylaminoethanol; N,N-Dimethylethanolamine; N-Dimethylaminoethanol	Glass cleaner and floor polisher



CHEMICAL NAME	SYNONYM	TYPES OF CLEANERS
Enzymes	There are many types of enzymes. Most enzymes used for cleaning products are known asthmagens.	Stain remover, dish washer detergent, drain cleaner, and laundry detergent
• Alpha Amylase⁹ CAS #s 9000-85-5, 9000-90-2;	Alpha Amylase: Pancreatic Amylase; Savinase; Termamyl	
• Cellulase¹⁰ CAS #9012-54-8	Cellulase: Carenzyme; Endolase; Celluzyme	
• Esperase¹¹ CAS # 9073-77-2	Esperase: Mesentericapeptidase; Proteinase; Bacillus Subtilis Neutral Protease; Bacterial Protease; Endopeptidase; Enzyme; Proteolytic; Protease; Proteolytic Enzyme	
• Lipase¹² CAS # 9001-62-1	Lipolase: Lipolase Ultra; LipoPrime; Triacylglycerol; Rizolipase	
• Protease¹³ CAS # 9014-01-1, 000000-70-2	Protease: Savinase; Everlase; Neutrerase; Protamax	
• Subtilisin¹⁴ CAS #s 9014-01-1, 68038-70-0	Subtilisin: Alcalase; Bacillus Subtilis Enzymes; Bacillopeptidase B; Maxatase; Subtilopeptidase C; Subtilopeptidase B; Subtilopeptidase A; Bacillopeptidase A; Bacillus Subtilis Carlsberg	
Formaldehyde¹⁵ CAS # 50-00-0	Formalin; Formaldehyde; Formic Aldehyde; Methaldehyde; Methanal	Disinfectant, rug cleaner, floor polish, and graffiti remover
Glutaraldehyde¹⁶ CAS # 111-30-8	Glutaral; Pentanedral	Disinfectant, floor cleaner, spray cleaner, and disinfectant wipes

CHEMICAL NAME	SYNONYM	TYPES OF CLEANERS
Hydrochloric Acid ¹⁷ CAS # 7647-01-0	Hydrogen Chloride; Muriatic Acid	Disinfectant, toilet bowl cleaner, and bathroom cleaner
Latex ¹⁸ CAS # 9006-04-6	Latex Gum	An ingredient in some gloves used for hand protection
Monoethanolamine ¹⁹ CAS # 141-43-5	2-Aminoethanol; 2-Hydroxyethanamine; Ethanol, 2-Amino-; Ethanolamine; MEA	Multi-purpose cleaner, floor cleaner, glass cleaner, bathroom cleaner, cleaning wipes, kitchen cleaner, disinfectant, metal cleaner, degreaser, floor cleaner, and stain remover
Quaternary Ammonium Compounds ²⁰	There are many synonyms for this class of chemicals. The most commonly used include the following and other similar sounding names:	Disinfectant, all-purpose cleaner, and sanitizer
Multiple CAS #s	Benzyl-C10-16-Alkyldimethyl, Chlorides; Benzyl-C12-18-Alkyldimethyl, Chlorides; Benzyl-C12-16-Alkyldimethyl, Chlorides; Benzyl-C16-18-Alkyldimethyl, Chlorides; Dodecyl-Dimethyl-Benzyl Ammonium Chloride; Lauryl Dimethyl Benzyl Ammonium Chloride; NOS; Quats; Benzalkonium Chloride; Benzylidemethylstearylammmonium Chloride; Cetalkonium Chloride; Dialkyl Mehtyl Benzyl Ammonium Chloride; And Dimethyl Ethyl Benzyl Ammonium Chloride	
Sodium Metabisulfite ²¹ CAS # 007681-57-4	Disulfurous Acid, Disodium Salt; Disodium Disulphite; Pyrosulfurous Acid	Bathroom cleaner
Sulfuric Acid ²² CAS # 7664-93-9	Sulphuric Acid	Kitchen cleaner, toilet bowl cleaner, and drain declogger
**Thymol ²³ CAS # 89-83-8	Isopropyl Cresol; 2-Isopropyl-5-Methylphenol; 3-Hydroxy-1-Methyl-4-Isopropylbenzene; 5-Methyl-2-(1-Methylethyl) Phenol; 5-Methyl-2-(1-Methylethyl); P-Cymene, 3-Hydroxy-; Phenol	Surface cleaner, disinfectant, and sanitizer
Triethanolamine ²⁴ CAS # 102-71-6	2,2',2"-Nitrilotriethanol; 2,2',2"-Nitrilotris (Ethanol); Ethanol, 2,2',2"-Nitrilotri-; Ethanol, 2,2',2"-Nitrilotris-; Nitrilotriethanol; TEA; TEA (Amino Alcohol); Triethanolamine; Triethylamine, 2,2',2"-Trihydroxy-; Triethylolamine; Trihydroxytriethylamine; Tris (2-Hydroxyethyl) Amine	Disinfectant, all-purpose cleaner, glass cleaner, surface cleaner, metal cleaner, and kitchen cleaner

** Thymol is a skin sensitizer (it can cause skin allergies). Skin sensitizers are often respiratory sensitizers, meaning they are often asthmagens. Thymol comes from the thyme plant, and thyme is an asthmagen. Because of these associations, thymol is viewed as a suspected asthmagen.

Appendix A References

1 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=67&query=acetic+acid&searchas=TblChemicals>

2 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=191&query=1344-28-1&searchas=TblChemicals>

3 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=3267&query=111-41-1&searchas=TblChemicals>

4 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=42&query=1336-21-6&searchas=TblChemicals>

5 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=20&query=7681-52-9&searchas=TblChemicals>

6 U.S. Department of Health & Human Services. (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=179&query=008050-09-7&searchas=TblChemicals>

7 U.S. Department of Health & Human Services. (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=196&query=111-42-2&searchas=TblChemicals>

8 U.S. Department of Health & Human Services. (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=1693&query=108-01-0&searchas=TblChemicals>

9 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=1697&query=alpha+amylase&searchas=TblChemicals&prodcat=all>

10 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2029&query=cellulase&searchas=TblChemicals1&prodcat=all>

11 ASTHME. (n.d.). List of Agents Causing Occupational Asthma. Retrieved from http://www.asthme.csst.qc.ca/document/Info_Gen/AgenProf/Bernstein/BernsteinAng.htm#N2_8

12 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2423&query=lipase&searchas=TblChemicals&prodcat=all>

13 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2648&query=protease&searchas=TblChemicals2&prodcat=all>

14 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=1699&query=9014-01-1&searchas=TblChemicals>

15 U.S. Department of Health & Human Services (2012). Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=110&query=50-00-0&searchas=TblChemicals>

16 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=911&query=111-30-8&searchas=TblChemicals>

17 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=14&query=7647-01-0&searchas=TblChemicals>

18 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2465&query=9006-04-6&searchas=TblChemicals>

19 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=113&query=141-43-5&searchas=TblChemicals>

20 Purohit A, Kopferschmitt-Kubler MC, Moreau C, Popin E, Blaumeiser M, Pauli G. (2000). Quaternary Ammonium Compounds and Occupational Asthma. International Archives of Occupational and Environmental Health. August 2000, Vol. 73, No. 6 (pp. 423-7).

21 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=345&query=Sodium+Metabisulfite&searchas=TblChemicals>

22 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=391&query=7664-93-9&searchas=TblChemicals>

23 U.S. Department of Health & Human Services. (2011). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=437&query=89-83-8&searchas=TblChemicals>

24 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=77&query=102-71-6&searchas=TblChemicals>

APPENDIX B

ADDITIONAL HEALTH CONCERNS FROM PRODUCT INGREDIENTS THAT CAN CAUSE ASTHMA

The list of chemicals that are asthmagens came from the Association of Occupational and Environmental Clinics Exposure Code Lookup: <http://www.aoecdatal.org/ExpCodeLookup.aspx>

CHEMICAL NAME	HEALTH CONCERNS	TYPES OF CLEANERS
Acetic Acid ¹	<p>SHORT-TERM: Irritates eye, nose, throat, and skin; causes eye and skin burns</p> <p>LONG-TERM: Erodes teeth; causes conjunctivitis, swelling of throat, chronic bronchitis, asthma, skin allergies, and thickening of outer layer of skin</p>	Vinegar for household cleaning, mildew cleaner, window cleaner, floor cleaner, and multi-surface cleaner
Aluminum Oxide ^{2,3}	<p>SHORT-TERM: Irritates eyes and skin; causes pink eye, coughing and difficulty breathing</p> <p>LONG-TERM: Affects brain, causes throat inflammation, chronic lung problems, and asthma</p>	Polisher, hard water spot remover, and surface cleaner
Aminoethyl Ethanolamine ⁴	<p>SHORT-TERM: Severely irritates and burns eyes and skin; irritates nose and throat; causes coughing, wheezing</p> <p>LONG-TERM: Causes bronchitis with cough, phlegm, and shortness of breath; causes dermatitis, skin allergies, asthma</p>	Fungicide, rust remover, metal polish, and furniture cleaner
Ammonia ⁵	<p>SHORT-TERM: Irritates eye, nose, and throat; causes difficulty breathing, wheezing, chest pain, skin burns</p> <p>LONG-TERM: Causes coughing up of blood, fluid in lungs, asthma, vesicles in or beneath skin, frostbite</p>	Window cleaner, glass cleaner, floor polishing wax, toilet cleaner, bathroom cleaner, and multi-surface cleaner
Bleach ⁶	<p>SHORT-TERM: Irritates nose, throat, and lungs; severely irritates and burns eyes and skin; causes headaches, dizziness, nausea, vomiting</p> <p>LONG-TERM: Causes fluid in lungs, bronchitis with phlegm and shortness of breath, asthma; affects reproduction</p>	Tile cleanser, toilet cleaner, bathroom cleaner, floor cleaner, and disinfectant
Colophony (Rosin) ⁷	<p>SHORT-TERM: Irritates eyes and skin</p> <p>LONG-TERM: Toxic to lungs and skin; causes asthma, damage to organs</p>	Pine-oil cleaner and wood polish

CHEMICAL NAME	HEALTH CONCERNS	TYPES OF CLEANERS
Diethanolamine ^{8, 9}	<p>SHORT-TERM: Causes eye and skin irritation</p> <p>LONG-TERM: Causes cancer, asthma, and dermatitis</p>	Metal polish, stainless steel cleaner and polisher, degreaser, all-purpose cleaner, floor cleaner, stain remover, floor finish, bleach, bathroom cleaner, disinfectant, glass cleaner, and cleaning wipes
Dimethyl Ethanolamine ^{10, 11}	<p>SHORT-TERM: Irritates eyes, nose, throat, and skin</p> <p>LONG-TERM: Affects brain; causes shortness of breath, wheezing, cough, chest tightness, fluid in lungs; asthma</p>	Glass cleaner and floor polisher
Enzymes ¹² (Alpha Amylase, ¹³ Cellulase, ¹⁴ Esperase, ¹⁵ Lipase, ¹⁶ Protease, ¹⁷ Subtilisin ¹⁸)	<p>SHORT-TERM: Irritates eyes and skin, causes headaches, coughing, breathlessness, wheezing, chest pain, flu-like symptoms, and sweating</p> <p>LONG-TERM: Causes respiratory allergies and asthma</p>	Stain remover, dish washer detergent, drain cleaner, and laundry detergent
Formaldehyde ^{19, 20, 21, 22}	<p>SHORT-TERM: Causes headaches; irritates eyes, nose, and throat; causes coughing, shortness of breath, nausea</p> <p>LONG-TERM: Endocrine disruptor; causes cancer; causes dermatitis, fluid in lungs, asthma</p>	Disinfectant, rug cleaner, floor polish, and graffiti remover
Glutaraldehyde ²³	<p>SHORT-TERM: Causes coughing; irritates eyes and skin; causes skin rash, nausea, vomiting</p> <p>LONG-TERM: Causes asthma and dermatitis</p>	Disinfectant, floor cleaner, spray cleaner, and disinfectant wipes
Hydrochloric Acid ²⁴	<p>SHORT-TERM: Corrosive to the eyes, skin, and mucous membranes; causes coughing, hoarseness, fluid in the lungs, chest pain, and inflammation and ulceration of respiratory tract; skin contact may cause severe burns, ulceration, and scarring</p> <p>LONG-TERM: Erodes and discolors teeth; causes respiratory tract ulcers, chronic bronchitis, asthma, gastritis, eye and skin sensitivity to light, and dermatitis</p>	Disinfectant, toilet bowl cleaner, and bathroom cleaner
Latex ²⁵	<p>SHORT-TERM: Not documented</p> <p>LONG-TERM: Causes asthma, mild to severe allergies, sensitive skin</p>	An ingredient in some gloves used for hand protection
Monoethanolamine ^{26, 27}	<p>SHORT-TERM: Causes drowsiness; irritates eyes, nose, lung, throat, and skin; causes coughing, wheezing, shortness of breath, chest pain, choking</p> <p>LONG-TERM: Damages brain, respiratory tract, lungs, liver, and kidneys; causes asthma and skin allergies</p>	Multi-purpose cleaner, floor cleaner, glass cleaner, bathroom cleaner, cleaning wipes, kitchen cleaner, disinfectant, metal cleaner, degreaser, floor cleaner, and stain remover cleaner

CHEMICAL NAME	HEALTH CONCERNS	TYPES OF CLEANERS
Quaternary Ammonium Compounds ²⁸	SHORT-TERM: Irritates nose and throat LONG-TERM: Causes allergic responses and asthma	Disinfectant, all-purpose cleaner, and sanitizer
Sodium Metabisulfite ²⁹	SHORT-TERM: Irritates eyes, skin, nose, throat, and lungs; causes coughing, wheezing, and shortness of breath LONG-TERM: Causes asthma; bronchitis with cough and phlegm	Bathroom cleaner
Sulfuric Acid ^{30, 31}	SHORT-TERM: Severely irritates nose and throat, causes fluid in lungs, coughing, shortness of breath, difficulty breathing, and tightness in the chest; eye contact causes severe burns with redness, swelling, pain, and blurred vision; skin contact may cause pain, redness, burns, and blistering LONG-TERM: Causes cancer; wears away tooth enamel; irritates and inflames airways; harms respiratory system; causes asthma; dry, red, and cracked skin (dermatitis); permanent scarring; blindness	Kitchen cleaner, toilet bowl cleaner, and drain declogger
**Thymol ³²	SHORT-TERM: Irritates throat, lung, and respiratory tract; causes coughing, choking, mucous membrane damage, chest tightness, shortness of breath, dizziness, headaches, nausea and weakness; eye contact can cause extreme irritation and burns; skin contact can cause chemical burns LONG-TERM: Erodes teeth, causes swelling and ulceration of mouth lining; irritates airways; inflammation of lung tissue; causes asthma and inflammation of skin	Surface cleaner, disinfectant, and sanitizer
Triethanolamine ³³	SHORT-TERM: Irritates eyes, nose, throat, and skin; causes coughing LONG-TERM: Causes asthma and skin allergies	Disinfectant, all-purpose cleaner, glass cleaner, surface cleaner, metal cleaner, and kitchen cleaner

** Thymol is a skin sensitizer (it can cause skin allergies). Skin sensitizers are often also respiratory sensitizers, meaning they are often asthmagens. Thymol comes from the thyme plant, and thyme is an asthmagen. Because of these associations, thymol is viewed as a suspected asthmagen.

APPENDIX B REFERENCES

1 Centers for Disease Control and Prevention. (2011). NIOSH Pocket Guide to Chemical Hazards. Retrieved from <http://www.cdc.gov/niosh/npg/npgd0002.html>

2 Centers for Disease Control and Prevention (2011). NIOSH Pocket Guide to Chemical Hazards. Retrieved from <http://www.cdc.gov/niosh/npg/npgd0021.html>

3 New Jersey Department of Health and Senior Services. (2011). Right to Know Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/2891.pdf>

4 New Jersey Department of Health and Senior Services. (1998). Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/0074.pdf>

5 New York State Department of Health. (2004). The Facts About Ammonia. Retrieved from http://www.health.ny.gov/environmental/emergency/chemical_terrorism/ammonia_tech.htm

6 The State of New Jersey Department of Health. (2008). Right to Know Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/1707.pdf>

7 New Jersey Department of Health and Senior Services. (n.d.). Asthma and Rosin-Core Solder, What You Need to Know. Retrieved from <http://www.state.nj.us/health/surv/documents/wraron.pdf>

8 United States Department of Labor. (2004). Occupational Safety & Health Administration, Diethanolamine. Retrieved from https://www.osha.gov/dts/chemicalsampling/data/CH_234685.html

9 State of California Environmental Protection Agency. (2013). Office of Environmental Health Hazard Assessment, Safe Drinking Water and Toxic Enforcement Act of 1986. Chemicals Known to Cause Cancer or Reproductive Toxicity April 29, 2013. Retrieved from http://oehha.ca.gov/prop65/prop65_list/files/041913P65list.pdf

10 New Jersey Department of Health & Senior Services. (2007). Right to Know Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/3111.pdf>

11 National Institute for Occupational Safety and Health. (2005). International Chemical Safety Cards. Retrieved from <http://www.cdc.gov/niosh/ipcsneng/heng0654.html>

12 Rosenman, K. (2014). Review of Medical Literature for Agents Already Listed or Nominated to be listed on the AOEC Exposure Code List of Designated Asthmagens.

13 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=1697&query=alpha+amylase&searchas=TblChemicals&prodcat=all>

14 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2029&query=cellulase&searchas=TblChemicals&prodcat=all>

15 Haz-Map. (2013). Retrieved from <http://hazmap.nlm.nih.gov/category-details?id=741&table=copytblagents>

16 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2423&query=lipase&searchas=TblChemicals&prodcat=all>

17 U.S. Department of Health & Human Services (2012). Household Products Database. Retrieved from <http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=chem&id=2648&query=protease&searchas=TblChemicals2&prodcat=all>

18 New Jersey Department of Health and Senior Services. (2003). Right to Know Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/1750.pdf>

19 Canadian Centre for Occupational Health and Safety (CCOHS). (2012). Formaldehyde. Retrieved from <http://www.inchem.org/documents/icsc/eics0275.htm>

20 Occupational Safety and Health Administration. (2011). OHSA Factsheet. Retrieved from http://www.osha.gov/OshDoc/data_General_Facts/formaldehyde-factsheet.pdf

21 State of California Environmental Protection Agency. (2013). Office of Environmental Health Hazard Assessment, Safe Drinking Water and Toxic Enforcement Act of 1986. Chemicals Known to Cause Cancer or Reproductive Toxicity April 29, 2013. Retrieved from http://oehha.ca.gov/prop65/prop65_list/files/041913P65list.pdf

22 European Commission. (n.d.). Annex 10. List of 564 Substances With Their Selection Criteria. http://ec.europa.eu/environment/archives/docum/pdf/bkh_annex_10.pdf

23 Centers for Disease Control and Prevention. (2011). NIOSH Pocket Guide to Chemical Hazards. Retrieved from <http://www.cdc.gov/niosh/npgd0301.html>

24 United States Environmental Protection Agency. (2013). Technology Transfer Network—Air Toxics Web Site. Retrieved from <http://www.epa.gov/ttnatw01/hlthef/hydrochl.html>

25 Centers for Disease Control and Prevention. (2014). The National Institute for Occupational Safety and Health (NIOSH), Latex Allergy A Prevention Guide. Retrieved from <http://www.cdc.gov/niosh/docs/98-113/>

26 Centers for Disease Control and Prevention. (2011). NIOSH Pocket Guide to Chemical Hazards. Retrieved from <http://www.cdc.gov/niosh/npgd0256.html>

27 New Jersey Department of Health and Senior Services. (2002). Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/0835.pdf>

28 Purohit A, Kopferschmitt-Kubler MC, Moreau C, Popin E, Blaumeiser M, Pauli G. (2000). Quaternary Ammonium Compounds and Occupational Asthma. International Archives of Occupational and Environmental Health. August 2000, Vol. 73, No. 6 (pp. 423–7).

29 New Jersey Department of Health and Senior Services. (2005). Hazardous Substance Fact Sheet. Retrieved from <http://nj.gov/health/eoh/rtkweb/documents/fs/1708.pdf>

30 Canadian Centre for Occupational Health and Safety. (2013). Occupational Health and Safety Answers, Chemicals & Materials, Chemical Profiles. Retrieved from http://www.ccohs.ca/oshanswers/chemicals/chem_profiles/sulfuric_acid.html#_1_4

31 State of California Environmental Protection Agency. (2013). Office of Environmental Health Hazard Assessment, Safe Drinking Water and Toxic Enforcement Act of 1986. Chemicals Known to Cause Cancer or Reproductive Toxicity April 29, 2013. Retrieved from http://oehha.ca.gov/prop65/prop65_list/files/041913P65list.pdf

32 Santa Cruz Biotechnology Inc. (2010). Thymol Material Safety Data Sheet. Retrieved from <http://datasheets.scbt.com/sc-215984.pdf>

33 National Institute for Occupational Safety and Health. (2010). International Chemical Safety Cards. Retrieved from <http://www.cdc.gov/niosh/ipcsneng/neng1034.html>

APPENDIX C: ASTHMA-SAFER CLEANING RESOURCES

PURCHASING & VERIFYING PRODUCTS

Purchasing and verifying Green Seal certified cleaning products

<http://www.greenseal.org/FindGreenSealProductsAndServices.aspx>

Purchasing and verifying UL ECOLOGO certified cleaning products and graffiti removers

<http://productguide.ulenvironment.com/SearchResults.aspx?CertificationID=27&CategoryID=30>

Purchasing decisions from Informed Green Solutions on cleaning for health

<http://www.informedgreensolutions.org/>

Purchasing carpet extractors (certification program) and highest performing vacuums (Green Label program)

<http://www.carpet-rug.org/>

Purchasing and verifying Design for the Environment Antimicrobial Pesticide Pilot Project's products

<http://www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html>

WEBINAR

Cleaning for Asthma-Safe Schools Webinar given in partnership with University of California at Berkeley's Labor Occupational Health Program (July 2013)

<http://www.youtube.com/watch?v=yEF1zEumIbg&feature=youtu.be>

NEWSLETTERS & ANNOUNCEMENTS

Manteca Schools Make the Switch to Green Cleaners—Green Schools Initiative Newsletter, September 2010

<http://www.greenschools.net/article.php?id=320>

California School District Cleans Up—With CLASS-Environmental Working Group Enviroblog, April 2010

<http://www.ewg.org/enviroblog/2010/04/california-school-district-cleans-class>

Cleaning for Asthma-Safe Schools—Coalition for Adequate School Housing Newsletter, January 2010

http://www.cashnet.org/members/CASHRegister/2010/Jan_IndividualArticles/AsthmaSafeClean.pdf

FACT SHEETS & EDUCATIONAL MATERIALS

Breathing Easier, School Districts Make the Switch to Certified Green Cleaning Products Report, RAMP 2009

<http://www.rampasthma.org/wp-content/uploads/2009/11/Breathing-Easier-Report.pdf>

Cleaning for Healthy Schools—Infection Control Handbook, National Cleaning for Healthy Schools and Infection Control Workgroup, November 2010

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/CDPH%20Document%20Library/CleanSchoolsHandbook.pdf>

Cleaning Products and Work-Related Asthma—Work-Related Asthma Prevention Program Fact Sheet, July 2012

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/CDPH%20Document%20Library/WRA-CleaningProd.pdf>

Cleaning Products and Work-Related Asthma: Information for Workers—Work-Related Asthma Prevention Program Fact Sheets

English: <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/CDPH%20Document%20Library/CleaningProductsWRA-Workers.pdf>

Spanish: <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/CDPH%20Document%20Library/WRA-CleaningWorkersSpan.pdf>

Chinese: <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/CDPH%20Document%20Library/WRA-CleaningWorkersChin.pdf>

Greener School Cleaning Supplies = Fresh Air + Healthier Kids, Environmental Working Group Cleaning in Schools Report, November 2009

<http://www.ewg.org/research/greener-school-cleaning-supplies>

Protecting Workers Who Use Cleaning Chemicals—OSHA-NIOSH INFOSHEET, July 2012

<http://www.osha.gov/Publications/OSHA3512.pdf>

RELEVANT WEBSITES

Work-Related Asthma Prevention Program in the California Department of Public Health

<http://www.cdph.ca.gov/wrapp/asthma>

The Green Cleaning Toolkit—Green Schools Initiative online resource

<http://www.greenschools.net/article.php?id=245>

California Breathing

<http://www.californiabreathing.org>

Healthy Schools Campaign's Green Clean Schools, including their Quick + Easy Guide to Green Cleaning in Schools

<http://www.healthyschoolscampaign.org/programs/gcs/>

Healthy Schools Network

<http://www.healthyschools.org>

PowerPoint Presentations on Cleaning for Healthy Schools

<http://www.cleaningforhealthyschools.org/documents/Module2Sample.pdf>

School Action for Safety and Health (SASH) Program: A California Initiative to Promote Safe and Healthy Workplaces for California's School Employees

<http://www.dir.ca.gov/Chswc/SASH/index.htm>

APPENDIX D: CLEANING PRODUCT INVENTORY FORM (ADD IN MORE ROWS IF NEEDED)

Include all products on this inventory, including all-purpose cleaner, bathroom cleaner (non-disinfecting), glass cleaner, toilet cleaner, disinfectant, degreaser, enzymes/bacterial, floor stripper, floor finish, floor cleaner, furniture polish, heavy duty cleaner, graffiti remover, gum remover, air freshener, and carpet cleaner.



APPENDIX E:

WORKSHEET: SELECTING WHICH PRODUCTS TO TEST

To pick which types of cleaning products you would like to include in your test, ask your Asthma-Safer Cleaning Team the following.

1. Which products are of greatest concern? List them here.

Which criteria do you want to use to find a safer alternative? Check all that apply:

- Most toxic products
- Highest volume used
- Products not UL ECOLOGO or Green Seal certified
- Other reason: _____

2. Prioritize testing cleaning products that are third-party certified, and asthma-safer disinfectants (hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, or isopropyl alcohol). Consider testing dilution control systems, microfiber mops and cloths, and products that do not contain fragrances. Many districts simultaneously test 3-5 products, often a combination of all-purpose cleaners, bathroom cleaners, neutral floor cleaners, graffiti removers, and disinfectants)

How many and which types of products you would like to test?

What equipment would you like to test?

Knowing exactly which products you plan to test will help you determine which vendors to invite to show you their line of green products. It will also help you create your bid requirements for potential vendors.

APPENDIX F: GREEN SEAL'S THIRD-PARTY CERTIFICATIONS FOR CLEANING PRODUCTS

Company, Number	Standard Name	Purpose	Prohibits asthmagens?	Revision Date
Green Seal 37	Cleaning Products for Industrial and Institutional Use	Establishes criteria for industrial and institutional general purpose, restroom, glass, and carpet cleaners.	Yes. Except for enzymes, the product shall not contain ingredients identified as asthmagens.	2012
Green Seal 53	Specialty Cleaning Products for Industrial and Institutional Use	Establishes criteria for specialty cleaning products for industrial and institutional use including graffiti removers, odor removers, gum removers, polishes, and waxes.	Yes. Except for enzymes, the product shall not contain ingredients identified as asthmagens or respiratory sensitizers.	2012
Green Seal 8	Cleaning Products for Household Use	Establishes criteria for general purpose, bathroom, glass, and carpet cleaners for household/residential use.	No	2012
Green Seal 34	Cleaning and Degreasing Agents	Establishes criteria for cleaning and degreasing agents for cleaning soils in production and maintenance applications.	No	2011
Green Seal 40	Floor-Care Products for Industrial and Institutional Use	Establishes criteria for industrial and institutional floor-care products, including floor finish and floor finish stripper.	No	2011

APPENDIX G:

UL ECOLOGO'S THIRD-PARTY CERTIFICATIONS FOR CLEANING PRODUCTS

Company, Number	Standard Name	Purpose	Prohibits asthmagens?	Revision Date
UL ECOLOGO UL 2759	Hardsurface Cleaners	Establishes criteria for hard surface cleaners including bathrooms, windows, general-purpose, and degreasers.	Yes. Products shall not contain ingredients identified as skin sensitizers or asthmagens	2011
UL ECOLOGO UL 2795	Carpet and Upholstery Cleaners	Establishes criteria for carpet cleaners, carpet spot and stain removers, and upholstery care products.	Yes. Products are not to be formulated or manufactured with ingredients identified as asthmagens	2004
UL ECOLOGO UL 2767	Paint and Varnish Removers	Establishes criteria for graffiti removers	No	2007
UL ECOLOGO UL 2792	Biologically-Based Cleaning and Degreasing Compounds	Establishes criteria for cleaning and degreasing compounds.	No	April 2011
UL ECOLOGO UL 2777	Hard Floor Care Products	Establishes criteria for hard floor care products, including floor finish, neutralizers, sealers, and strippers.	No	2010
UL ECOLOGO UL 2780	Urinal Blocks	Establishes criteria for urinal blocks.	No	2009

APPENDIX H: SAMPLE VENDOR LETTER

This letter was adapted by the Work-Related Asthma Prevention Program and the Green Schools Initiative. You can send this on your letterhead or via email.

<DATE>

Dear <VENDOR NAME>,

<SCHOOL/DISTRICT NAME> is in the process of developing and implementing a Cleaning for Asthma-Safer Schools program. The program follows the California Department of Public Health's (CDPH) Healthy Cleaning and Asthma-Safer Schools: A How-To Guide. We are modifying the purchase of cleaning products, practices, and equipment to be greener and asthma-safer. To kick off this green cleaning initiative, we would like to invite you to give a 20-minute presentation to our district's Purchasing Department and members of our Asthma-Safer Cleaning Team about the environmentally preferable cleaning products and training programs that your company offers. We will set aside 10 minutes for questions after your presentation.

We would like to schedule a 20-minute presentation for the following date.

< DATE, TIME, ADDRESS>

Please let us know if you are available during that time. If not, please suggest an alternate date and time.

During this 30-minute meeting (including Q&A), we would like you to describe the following:

- Green Seal or UL ECOLOGO certified cleaning products, such as all-purpose cleaners, bathroom cleaners, neutral floor cleaners, and graffiti removers.
- Safer disinfectants, such as products whose active ingredients contain hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, or isopropyl alcohol. We want products that can replace bleach, quaternary ammonium compounds, benzalkonium chloride, and other ingredients that cause asthma.
- Automatic dilution equipment for green-certified cleaners and floor maintenance products.
- Microfiber mops and cloths.

During your presentation, we would also be interested in hearing about:

- Your company's asthma-safer and green cleaning training approach and experience.
- At least one other municipality or school district that you have worked with to implement asthma-safer and greener cleaning.
- Any asthma-safer or green certifications or accreditations your company has received.
- Any cooperative purchasing opportunities your company can offer through contracts with other public agencies.
- Pricing, and any discounts offered to schools or other cost saving programs.

If you have any questions, let me know (contact info below). Please confirm whether this day and time work for you.

Sincerely,

<NAME>

<CONTACT INFO>

APPENDIX I: VENDOR EVALUATION FORM

Your Name:	Date:	School:	
Vendor Name:	Phone:	Email:	
Do you currently use this vendor? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Cleaning Product Information			
Product #1 (Name, type):	<input type="checkbox"/> Green Seal	<input type="checkbox"/> UL ECOLOGO	<input type="checkbox"/> Design for the Environment
Product #2 (Name, type):	<input type="checkbox"/> Green Seal	<input type="checkbox"/> UL ECOLOGO	<input type="checkbox"/> Design for the Environment
Product #3 (Name, type):	<input type="checkbox"/> Green Seal	<input type="checkbox"/> UL ECOLOGO	<input type="checkbox"/> Design for the Environment
Disinfectant (Name):	<input type="checkbox"/> Hydrogen peroxide, citric acid, lactic acid, ethyl alcohol, or isopropyl alcohol based?		<input type="checkbox"/> Design for the Environment Rinsing required? <input type="checkbox"/> Yes <input type="checkbox"/> No Dwell Time? _____
Comments:			
CLEANING EQUIPMENT			
<input type="checkbox"/> Ready-to-Dispense (RTD), on bottle <input type="checkbox"/> Installed by vendor? <input type="checkbox"/> Servicing of equipment by vendor?		<input type="checkbox"/> Free w/purchase of chemicals? <input type="checkbox"/> Other:	
MICRO-FIBER	<input type="checkbox"/> Microfiber cloths	<input type="checkbox"/> Mops	<input type="checkbox"/> Laundry system
SAFETY AND TRAINING			
<input type="checkbox"/> Provides Hazard Communication (HazCom) training for products to test?	<input type="checkbox"/> Provides Safety Data Sheets (SDS) to test products?	<input type="checkbox"/> Other	
ORDERING			
<input type="checkbox"/> Online	<input type="checkbox"/> Delivery time?	<input type="checkbox"/> Procurement contracts?	
Is the vendor committed to asthma-safer and greener cleaning? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Answer yes if vendor a) presented Green Seal or UL ECOLOGO certified products and b) presented disinfectants that contain hydrogen peroxide, lactic/citric acid, ethyl/isopropyl alcohol. If not, consider other vendors, especially if showed products with asthmagens, like quaternary ammonium compounds.			
Do you recommend working with this vendor and testing these products? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Comments:			

APPENDIX I

APPENDIX J:

ASTHMA-SAFER CLEANING PRODUCT EVALUATION FORM

Name:	School:	Phone Number:	Date:
Type of cleaner:	Green Product Name:	Name of Product Potentially Replacing:	
DO YOU RECOMMEND YOUR SCHOOL USE THIS PRODUCT? <input type="checkbox"/> Yes <input type="checkbox"/> No	Surfaces used on:	Amount used (oz per gallon): _____ Dilution rate used for old product: _____	
What I liked best about the product:	What I liked least about the product:	Other Comments:	
Put check where you noticed symptoms (if any) when using this product: <input type="checkbox"/> Skin irritation or rash <input type="checkbox"/> Eye, nose, throat irritation <input type="checkbox"/> Runny nose <input type="checkbox"/> Headache <input type="checkbox"/> Wheezing <input type="checkbox"/> Coughing <input type="checkbox"/> Chest Tightness <input type="checkbox"/> Difficulty Breathing <input type="checkbox"/> Asthma <input type="checkbox"/> None Please list health symptoms from your existing product (if any):	Please compare the new product to your existing product (circle answer).		
	Agree	Same as regular product	Disagree
	1. The new product worked well		
	2. I needed to use less of the new product		
3. It took a shorter time to clean with the new product			
4. The new product left a cleaner surface			
5. I liked the smell of the new product			



DILUTION EQUIPMENT				
DO YOU RECOMMEND YOUR SCHOOL USE THIS EQUIPMENT? <input type="checkbox"/> Yes <input type="checkbox"/> No	Type of Dilution Equipment: <input type="checkbox"/> Ready-To-Dilute Bottle-Mounted <input type="checkbox"/> Wall-Mounted <input type="checkbox"/> Other:		What I liked best about the equipment:	
Please rate the equipment	Agree	Same as regular product	Disagree	What I liked least about the equipment:
	1. It was easy to use			
2. It worked well				
3. It took a shorter time to clean with the new product				
ASTHMA-SAFER CLEANING PROGRAM EVALUATION				
<p>Please write your comments, suggestions or questions relating to the Asthma-Safer Cleaning Pilot Test.</p>				

EVALUACION PARA LOS PRODUCTOS “GREEN”

Nombre:	Escuela:	Numero de telefono:	Fecha:	
Typo de producto:	Nombre del producto nuevo:	Nombre del producto que tal vez van a reemplazar:		
RECOMIENDA QUE LA ESCUELA USE ESTE PRODUCTO? <input type="checkbox"/> Sí <input type="checkbox"/> No	Donde uso el producto:	Cuento uso (oz per gallon): _____ Dilution rate used for old product/Tasa de dilucion para el viejo producto: _____		
Me gusto el producto porque:	No me gusto el producto porque:	Otros comentarios:		
<p>Marque la cajita donde se sintio sintomas cuando uso el producto “green”:</p> <p><input type="checkbox"/> irritacion de la piel o erucion</p> <p><input type="checkbox"/> irritacion de los ojos, nariz, garganta</p> <p><input type="checkbox"/> nariz que moquea</p> <p><input type="checkbox"/> dolor de cabeza</p> <p><input type="checkbox"/> respiracion ruidosa</p> <p><input type="checkbox"/> tos</p> <p><input type="checkbox"/> pecho apretado</p> <p><input type="checkbox"/> dificultad para respirar</p> <p><input type="checkbox"/> asma</p> <p><input type="checkbox"/> nada</p> <p>Liste por favor sintomas de salud de su producto existente:</p>	<p>Compare el producto “green” con el viejo producto (haga un circulo para la mejor respuesta).</p> <p>El nuevo producto funciono bien</p> <p>Use menos del nuevo producto</p> <p>Demoro menos tiempo para limpiar</p> <p>El producto nuevo dejó una superficie más limpia</p> <p>Me gusto el olor del nuevo producto</p>	Totalmente de acuerdo	De acuerdo	Totalmente en desacuerdo



DILUTION EQUIPMENT/EQUIPO DE DILUCION

RECOMIENDA QUE LA ESCUELA USE ESTE PRODUCTO? <input type="checkbox"/> Sí <input type="checkbox"/> No	Type of Dilution Equipment/que tipo: <input type="checkbox"/> Ready-to-Dilute (RTD) Bottle-mounted/ de la botella <input type="checkbox"/> Wall-mounted/de la pared <input type="checkbox"/> Otro:			Me gusto el producto porque:
Haga un circulo para la mejor respuesta Fue facil usarlo Funciono bien No tenia ningunas problemas	Totalmente de acuerdo	De acuerdo	Totalmente en desacuerdo	No me gusto el producto porque:
				Otros comentarios:

POR FAVOR, ESCRIBA SUS COMENTARIOS, SUGERENCIAS O PREGUNTAS RELATIVAS AL PROGRAMMA.

APPENDIX K: SCHOOL NEWSLETTER

Here is a sample school newsletter to use if you would like to promote healthy and asthma-safer cleaning efforts in your schools to students, the school board, and the school community. Simply populate the newsletter with your school or district's information and any supporting information you would like to add.

<SCHOOL NAME> Transitions to Asthma-Safer and Green Cleaning

Did you know that some traditional cleaning supplies used in many California school districts could be polluting classroom air? Well, we're happy to report that we just successfully transitioned to asthma-safer and greener cleaning practices by following the California Department of Public Health's (CDPH) *Healthy Cleaning and Asthma-Safer Schools: A How-To Guide*. This project, developed through a partnership of CDPH's Work-Related Asthma Prevention Program and the Green Schools Initiative, helps to safeguard workers' and students' health through the use of safer cleaning products and methods.

<SCHOOL NAME>'s custodians, facilities, and purchasing staff partnered to find safer, less expensive, and high quality products for our school. "I commend our custodial staff for their commitment to healthy schools and healthy kids, and their professional expertise in testing and finding better products," says <NAME, TITLE>.

"Our school is still focused on best practices for disinfection and germ control," says <NAME, TITLE>, "but we expanded our efforts to address poor indoor air quality. In addition to helping us reduce asthma and absenteeism, green cleaners even helped us save money!"

<SCHOOL NAME>'s transition to asthma-safer and greener cleaning also decreased our environmental footprint. All of the cleaning products now used by the school are certified to meet stringent environmentally preferable criteria.

We're proud to be an asthma-safer and greener school, and look forward to working with parents, staff, teachers, and the whole school community to continue to grow our asthma-safer and greener initiatives.

APPENDIX L:

PRESS RELEASE FOR LOCAL NEWSPAPER

Here is a sample press release you could use to promote healthy and asthma-safer cleaning efforts in your schools. Simply populate the release with your school or district's information and any supporting information you would like to add.

<USE LETTERHEAD OR INSERT SCHOOL LOGO HERE>

FOR IMMEDIATE RELEASE

CONTACT:

<NAME>

<PHONE>

<INSERT DATE>

<SCHOOL DISTRICT NAME> Cleans for Asthma Safe Schools

*Leads a growing wave of schools replacing cleaning chemicals
linked to asthma, cancer*

<CITY NAME, STATE>—<SCHOOL DISTRICT NAME> announced today that it has successfully transitioned to asthma-safer and greener cleaning practices by following the California Department of Public Health's (CDPH) *Healthy Cleaning and Asthma-Safer Schools: A How-To Guide*. This Guide, developed by CDPH's Work-Related Asthma Prevention Program, helps to safeguard workers' and students' health through the use of less-toxic cleaning products.

<SCHOOL NAME>'s participation was a response, in part, to the fact that one in nine work-related asthma cases are related to cleaning products, according to the Work-Related Asthma Prevention Program. High rates of childhood asthma were another factor: one in six children in California have been diagnosed with asthma. It is the most common chronic disease among school-aged children, and is the leading cause of school absences due to chronic illness nationwide.

A study of air pollution caused by school cleaning supplies also motivated the school to switch. Conducted by the Environmental Working Group (EWG), the study revealed that cleaning supplies used in many California school districts could be polluting classroom air with chemicals linked to asthma and cancer.

"Our school is still focused on best practices for disinfection and germ control," said <NAME, TITLE>, "but we expanded our efforts to address poor indoor air quality, which could affect the health and productivity of students and educators alike. In addition to helping us reduce asthma and absenteeism, green cleaners will even help us save money."

<SCHOOL NAME>'s participation also decreased their environmental footprint. All of the

cleaning products now used by the school are certified to meet stringent environmentally preferable criteria. They are free of ozone-depleting chemicals, less toxic to aquatic life, have fewer smog-producing chemicals, degrade quickly in the environment, and are more concentrated to reduce greenhouse gas emissions from shipping. The products must even meet criteria concerning recyclable packaging.

Schools interested in learning more about how to make the switch to asthma-safer and greener cleaners can contact the California Department of Public Health's Work-Related Asthma Prevention Program via email at workrelatedasthma@cdph.ca.gov.

#

<INSERT SCHOOL BOILERPLATE HERE>

About the Cleaning for Asthma-Safe Schools Partners:

The Occupational Health Branch is a program in the California Department of Public Health devoted to improving worker health and safety through prevention activities
<http://www.cdph.ca.gov/ohb>

Information about the CLASS project:

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/Pages/CLASS.aspx>

APPENDIX M: GREEN, HEALTHY, AND ASTHMA-SAFER SCHOOLS CLEANING MODEL POLICY

Green, Healthy, and Asthma-Safer Schools Cleaning Policy

<SCHOOL/DISTRICT NAME> shall develop, put into place, and monitor a Green, Healthy, and Asthma-Safer Cleaning (GHAC) plan. The plan will create the best conditions for learning and minimize exposures to harmful chemicals, allergens, irritants, and pollutants. It is therefore the policy of <SCHOOL/DISTRICT> to incorporate Green, Healthy, and Asthma-Safer Cleaning procedures for all school buildings.

Green, Healthy, and Asthma-Safer Cleaning Plan

A comprehensive GHAC plan focuses on using asthma-safer and greener cleaning practices, products, equipment, and training. Dozens of manufacturers offer third-party certified green cleaning chemicals that work well and are cost-competitive compared to conventional products. Vacuums, floor buffers, and burnishers have filters that help improve indoor air quality. These high-efficiency filters remove microscopic materials that might affect people's health or damage equipment. Placing eco-friendly floor mats, especially at building entrances, traps dirt before it even enters the building. Ideally, each school will have a mat at every entrance and exit.

Cleaning Practices

GHAC promotes purchasing third-party certified asthma-safer cleaners and the use of equipment that reduce the need to use harsh, conventional chemicals. GHAC also promotes frequent cleaning, disinfecting only when necessary, and only allows products approved by the district. Individuals cannot bring in disinfectant wipes or air fresheners. The cleaning industry has made remarkable advances with newer technologies that perform effectively, reduce health and environmental impacts, and are cost-competitive compared with conventional products.

It is best to promote cleaning programs based on Green Seal's GS-42 Environmental Standard for Commercial and Institutional Cleaning Services.

Procurement of Cleaning Products and Equipment

A purchasing program that promotes GHAC uses the safest and healthiest products and equipment. See table for guidance.

Recommended Labeling Programs

LEVEL 1: Prohibits the most asthma-causing chemicals (safest and healthiest options)*

Recommended third-party certified cleaning products

UL ECOLOGO UL 2759: Hardsurface Cleaners

(General purpose/bathroom cleaners, dish detergents, degreasers, and other cleaning products for household, institutional, and industrial use)



UL ECOLOGO UL 2795: Carpet and Upholstery Care Products

(carpet cleaners, carpet spot and stain removers, and upholstery care products)



Green Seal GS-37: Cleaning Products for Industrial and Institutional use

(General purpose, restroom, glass, and carpet cleaning products)

Green Seal GS-53: Specialty Cleaning Products for Industrial and Institutional use

(Dish soaps, graffiti removers, car cleansers, deck/outdoor cleaners, odor removers, polishes, and waxes)



LEVEL 2: Prohibits some asthma-causing chemicals**

Design for the Environment (DfE)

DfE's criteria prohibit chemicals that may cause cancer or have developmental, reproductive, or neurotoxicity issues and limit some asthma-causing agents. For a list of products, visit: <http://www.epa.gov/dfe/products>

Design for the Environment Antimicrobial Pesticide Pilot Project

Labels environmentally preferred disinfectants. DfE's criteria prohibit chemicals that may cause cancer, endocrine disruption, and are unlikely to cause developmental, reproductive, mutagenic, or neurotoxicity issues. Prohibits sodium hypochlorite (bleach) and quaternary ammonium compounds. This is the only labeling program available for disinfectants.

LEVEL 3: Do not prohibit asthma-causing chemicals. May still be a healthier choice than uncertified products.

Carpet and Rug Institute products help limit or get rid of asthma triggers

Green Label Plus

Tests VOC emission levels for carpet and adhesive products for a variety of chemicals. Does NOT prohibit ingredients that cause asthma. This is the only labeling program for carpets and adhesives.

Seal of Approval for Residential Use Vacuums

Measures soil removal, dust containment, and surface appearance change. This is the only labeling program for vacuums.

These third-party certified products may contain ingredients that cause asthma. However, they do not contain ingredients that are known to cause cancer or reproductive harm, and they contain fewer VOCs and cause less pollution.



Green Seal GS-8: Cleaning Products for Household Use

Green Seal GS-34: Cleaning and Degreasing Agents

Green Seal GS-40: Floor-Care Products for Industrial and Institutional Use



UL ECOLOGO UL 2767: Paint and Varnish Removers

UL ECOLOGO UL 2792: Biologically-Based Cleaning and Degreasing Compounds

UL ECOLOGO UL 2777: Hard Floor Care Products

UL ECOLOGO UL 2780: Urinal Blocks

*UL ECOLOGO prohibits asthmagens that cause allergic-type asthma. Green Seal allows the use of enzymes, which can cause allergic-type asthma. WRAPP recommends only Green Seal certified products that do not contain enzymes.

**Prohibits some asthmagens that can cause allergic-type asthma

Training

GHAC practices provide proper training of custodians in the hazards, use, proper dilution, safety, maintenance, and disposal of cleaning chemicals, dispensing equipment, and packaging.

Storage Procedures

Many cleaning products arrive in concentrated form that may require special handling, storage, and disposal. Staff must plan for the physically-isolated storage, safe usage, and proper disposal of cleaning agents and other hazardous chemicals that cannot be eliminated from school buildings and grounds.

Education

Staff, students, custodians, and the school community will be educated about the GHAC policy and procedures. Custodial staff, administrators, teachers, students, vendors, and visitors can learn about what they can do to promote a healthy school environment, such as maintaining uncluttered classrooms and workspaces, and handling spills properly.

This sample is adapted from a sample policy developed by the Healthy Schools Campaign:

<http://www.greencleanschools.org>.

APPENDIX N:

RESOLUTION ON ASTHMA-SAFER AND GREENER CLEANING

Adopted by the Board of Education at its Regular Meeting on <DATE>

Subject: Resolution <#>

In Support of Asthma-Safer and Greener Cleaning throughout <NAME OF SCHOOL DISTRICT>

WHEREAS: It is estimated that one in six students in California has asthma; and

WHEREAS: Regular exposure to chemicals found in many consumer and custodial cleaning products, including bleach, contain asthmagens, chemicals that can exacerbate or lead to the onset of asthma, and almost one in nine persons with work-related asthma linked their asthma to cleaning products; and

WHEREAS: A comprehensive Asthma-Safer and Greener Cleaning policy and plan will support an effective and sustainable transition to asthma-safer and greener cleaning products and help ensure the health of all students and staff; and

WHEREAS: The Director of Maintenance and Operations or Facilities Department has officially declared and distributed notification that unapproved classroom cleaning products are prohibited in any school or child care classrooms;

THEREFORE BE IT RESOLVED: That it is the policy of the Board of Education that <NAME OF SCHOOL DISTRICT> will purchase only approved asthma-safer and greener cleaning products verified by the Director of Maintenance and Operations or Facilities Department for use in <SELECT AREAS: Early Education, Student Nutrition, Special Education, office, and classroom cleaning> as soon as possible; and

BE IT FURTHER RESOLVED: That the District will make every effort to ensure that unapproved products are kept out of classrooms, schools, and offices by <DATE>; and

BE IT FURTHER RESOLVED: That the District will establish an Asthma-Safer and Greener Cleaning Oversight Committee by <DATE> (with representation from departments that could include Facilities and Maintenance, Custodial Services, Student Nutrition Services, Early Education Program, Special Education Program, labor partners, parent representatives, and others) to help:

Develop a comprehensive funding and implementation plan to ensure a full transition (100%) to approved asthma-safer and greener cleaning products, taking into consideration time and funding needs, with a target of full transition by <DATE>; and

Develop, in conjunction with <NAME OF SCHOOL DISTRICT>'s Cleaning for Asthma-Safer Schools Team, by <DATE>, a plan for a comprehensive education campaign, a funding plan, training program, and implementation schedule; and

Provide a report to the Board of Education annually to provide an update on implementation status, needs, barriers, and recommendations by <DATE>; and

Ensure that newly hired staff as well as appropriate staff of the Custodial, Early Education Program, Special Education, Before and After School Programs, and Student Nutrition Services receive training on asthma-safer and greener cleaning practices by <DATE>.

FURTHER BE IT RESOLVED: That Facilities & Maintenance, Custodial Services, Student Nutrition Services, Early Education Programs, and Special Education Programs will transition to 100% approved asthma-safer and greener cleaning products, and use of unapproved products will be terminated by <DATE>.

MODIFIED FROM THE SAN FRANCISCO UNIFIED SCHOOL DISTRICT'S RESOLUTION ON GREEN CLEANING.

APPENDIX O:

INFORMATION SHEET: WHY CAN'T I BRING IN DISINFECTANTS OR OTHER PRODUCTS FROM HOME?

Did you know that some common cleaning and disinfecting products may cause headaches, rashes, cancer, and asthma?

We decided that in order to clean our school AND keep everyone healthy, we needed to make some changes. And we did: we're now using asthma-safer and greener cleaning products in accordance with the California Department of Public Health's (CDPH) *Healthy Cleaning and Asthma-Safer Schools: A How-To Guide*. We are impressed with how well these products clean! They are safer for staff and students, and improve the air for everyone, especially our asthma sufferers.

We learned that bleach, strong deodorizing fragrances, some disinfectants, and bathroom cleaners may be bad for our health, our environment, and our equipment. They may also contribute to indoor air pollution and can harm aquatic life. We learned that many cleaning products labeled "green" may not actually be asthma-safer or greener. That's why we're using products that have been certified by two third-party organizations, Green Seal and UL ECOLOGO, to make sure we're using the right ones.

Disinfectants are pesticides, designed to kill germs. We are still disinfecting our school—but only when necessary. We learned that regular cleaning with microfiber removes up to 99% of germs, so it is generally not necessary to disinfect school classrooms, including desks, floors, and walls.

We created an Infection Control Plan that includes cleaning, sanitizing, and disinfecting in a routine, systematic way. This is the best way to ensure the health and safety of our school community. When there is an outbreak of an infectious disease, we will clean even more often than our regular routine, especially on surfaces touched by a variety of hands (like door knobs and shared equipment). And disinfectants are always used after cleanup of body fluids like blood or vomit or if warranted by specific outbreak circumstances.

How can you help?

Simple: Refrain from bringing in cleaning products from home and using any kind of disinfecting wipes or sprays. Please do not bring in plug-ins and air fresheners, either. All teachers will also receive asthma-safer products for use in their classrooms. If a teacher asks for hand sanitizers, please make sure they contain at least 60% alcohol.

If you have any questions or if you need anything specific done, please ask and contact us at <INSERT DEPARTMENT NAME, PHONE NUMBER, CONTACT PERSON, EMAIL>.

Countless schools in California have adopted healthier and more environmentally friendly cleaning practices, and we are proud to be one of them. Thank you for your commitment to creating asthma-safer schools for our children and staff!

APPENDIX P: CERTIFICATE FOR CUSTODIANS



TO RECOGNIZE AND HONOR

<CUSTODIAN NAME>

<Title>, <School>

for expertise and participation in completing the

Cleaning for Asthma Safe Schools Project

We thank you for taking an important step in reducing environmental asthma risks and protecting children's and workers' health.

The California Department of Public Health (CDPH), Green Schools Initiative, and the <District Name> hereby award this

CERTIFICATE OF COMMENDATION

GIVEN ON <MONTH> <DAY>, <YEAR>.

<YOUR NAME>

<District Name>





“Overall, certified green cleaning supplies produce much lower pollution levels and use fewer harmful chemicals than conventional products.”

—ENVIRONMENTAL WORKING GROUP

