

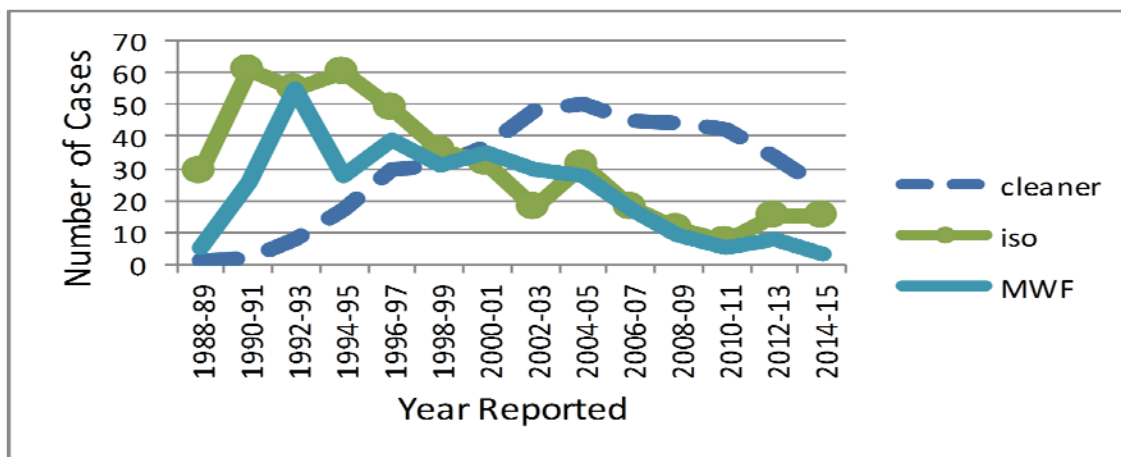
Update on Cleaning Agents and Asthma

In 2003, Michigan published a report that 12% of the patients with work-related asthma in four states, California, Massachusetts, Michigan and New Jersey were associated with exposure to cleaning products (1). Affected patients used the cleaning products as part of their job (i.e. housekeepers and janitors) or were bystanders who worked in the areas (i.e. health care workers, teachers or office workers). Before this publication, there had been case reports of work-related asthma from the ingredients of specific cleaning agents but very limited data on the overall prevalence of asthma from exposure to cleaning agents. In the last 10 years, there has been a marked increase in studies showing both an association of new-onset asthma and aggravation of pre-existing asthma in individuals exposed to cleaning agents both at home and work (2-6). These studies have consistently shown that exposure to ammonia, bleach, disinfectants, mixing cleaning products, and using spray cleaning products have been associated with an increased risk of developing asthma.

The 2003 publication reported 236 patients with confirmed work-related asthma associated with cleaning agents in the four states from 1993 to 1997, approximately 47 per year. From 1998 – 2012, those same four states have confirmed work-related asthma cases associated with cleaning agents in 1,122 patients, approximately 75 per year.

In Michigan, for the years 2008 – 2015, a cleaning agent is the presumed cause for 21.6% of the confirmed work-related asthma cases, up from 4.6% from 1988 – 1997, a 370% increase. This increase in asthma cases associated with cleaning agents in Michigan is inversely related to the number of cases associated with isocyanates and metal working fluids, which have shown a downward trend. There has been, however, a downward trend in cases associated with cleaning agents since the mid 2000's (Figure 1).

Figure 1. Trends in Work-Related Asthma from Exposure to Cleaning Agents, Isocyanates and Metal Working Fluids, Michigan 1988-2015



Health care is the most common industry where these individuals have worked. This presumably reflects the widespread use of cleaning agents, which contain disinfectants that are known to cause sensitization and asthma (Table 1). Reviews of the use of disinfectants in health care settings have concluded that more studies are needed to determine the frequency, type and use of disinfectants in health care settings (7). For example, whether non-patient contact areas such as hallway floors need to be disinfected. Other research has questioned the efficacy of the widespread use of disinfectants in non-health care settings such as homes, schools, and day care centers. Useful brochures and guidelines for the use of bleach and other disinfectants, cleaning in general, and cleaning in schools and day care centers are listed in Table 2.

<u>Chlorine Based</u>
Bleach (Sodium Hypochlorite)
Chloramine T
Chlorhexidine
Hexachlorophene
Quaternary Ammonium Chloride Compounds
<u>Aldehydes</u>
Formaldehyde
Glutaraldehyde
<u>Peroxide</u>
Mixture of Hydrogen Peroxide and Peracetic Acid

Some examples of patients reported to the Michigan work-related asthma surveillance program follow:

CASE #1

A female lifeguard in her 20s developed work-related asthma about a year after beginning to work at a health club. Part of her duties were to mop the pool deck. She used a product containing quaternary amines for this task. She developed a cough, wheezing, shortness of breath and chest tightness and was prescribed Albuterol and Flovent. Shortly after her diagnosis, she quit this job because of her asthma. After leaving work, she was able to stop using asthma medication. She was a life-long non-smoker.

CASE #2

A female in her 40s experienced an exacerbation of her pre-existing asthma in her job at a tree fruit farm. She was exposed to bleach, which was used to clean the fruit. The bleach triggered wheezing, and she sought treatment at an emergency department where she was prescribed Albuterol, Benadryl, Flonase and Prednisone. She was a life-long nonsmoker.

CASE #3

A female in her 50s experienced an exacerbation of her pre-existing asthma when she was exposed to

cleaning agents in a group home for mentally disabled adults where she was a direct care worker. A co-worker was boiling the cleaning agent in the kitchen as an air freshener. The fumes triggered her cough, shortness of breath, wheezing and chest tightness. She continued to work at the group home. She smoked a half a pack of cigarettes a day for less than five years in her teens.

CASE #4

A male in his late teens with asthma since childhood experienced an exacerbation of his asthma at his job as a janitor for a landscaping and contracting company. He was exposed to a mixture of cleaning agents when he was cleaning the bathrooms, which did not have any ventilation. He had worked at this job for five months before this exacerbation of his asthma occurred. He experienced wheezing, chest tightness and shortness of breath. He required two trips to the Emergency Department from exposure to the cleaning agents. He was reassigned to a different job a couple of months later and since that time his asthma symptoms improved and he required less asthma medication. He was a lifetime non-smoker.

Table 2.
Resources on Cleaning with Bleach and Other Disinfectants

Cleaning and Sanitizing With Bleach at the Workplace: What You Need to Know! - Guidelines for Employees: <http://www.oem.msu.edu/images/resources/BleachBrochureJuly2017.pdf>

Asthma and Cleaning Agents: What You Need To Know!: http://www.oem.msu.edu/images/misc/Asthma_CleaningAgents2017.pdf

Healthy Cleaning & Asthma-Safer Schools: A How-To Guide: <https://archive.cdph.ca.gov/programs/ohsep/Documents/CLASSguidelines.pdf>

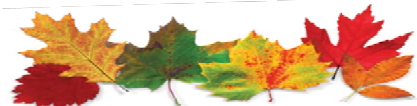
Disinfecting and Sanitizing in Child Care Centers: Model Recommendations from San Francisco Asthma Task Force: http://www.cleaningforhealthyschools.org/documents/San_Francisco_disinfecting_and_asthma_factsheet_2012.pdf

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Dr. Rosenman remains available for consultation on management issues of patients with exposure to cleaning agents. We continue to be interested in reports from you on your patients with known or suspected work-related asthma, 1-800-446-7805.



*Project

S E.N.S.O.R.

News

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In this issue: V28n4 Update on Cleaning Agents and Asthma

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S Remember to report all cases of occupational disease!

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the Reporting of
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Occupational Diseases**

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