Respiratory Hazards and Janitorial Cleaners

What kinds of cleaning products can pose respiratory hazards?
Cleaning products containing ammonium quaternary disinfectants and monoethanolamine have caused asthma in some workers.[1] Tall oil or rosin, sometimes an ingredient in floor finishes, has caused asthma in manufacturing settings, but no cases from exposure in janitorial products have been confirmed.[2] However, users may wish to avoid this ingredient as a precautionary measure.

Specialty disinfectants containing chlorhexidine and chloramine-T have also caused asthma in workers who use them. These products are typically used in medical or industrial settings where elimination of specific pathogens is necessary.[3]

Does it matter how I use the product?
One study showed an increase in respiratory symptoms when janitorial spray products were used.[4] Most products are available in non-spray formulations, which may help reduce the risk of these symptoms.

Will avoiding these products eliminate my risk of developing occupational asthma?
California data from the mid-1990s indicate that janitorial workers experience the highest rates of occupational asthma (625 cases per million workers). This was more than twice the rate for any other occupation.[5] Many studies have shown that janitorial workers experience an increased risk of developing work-related asthma, although not all studies confirm this.

Eliminating the use of janitorial cleaners that contain asthmagens and respiratory irritants is a precautionary approach that could reduce this risk. Janitorial workers and managers should be aware of the occupational risk posed by these products and report any respiratory symptoms to a health-care provider immediately.

How do I find products that do not include ammonium quaternary disinfectants, monoethanolamine, or other ingredients that can cause asthma?
When selecting products, review the material safety data sheet (MSDS) and ask the vendor if the product contains any of these ingredients. Also check the CAS number. (A chemical may be known by several different names but will have only one CAS number, so this can be used to identify any chemical you wish to avoid.)

- Monoethanolamine (CAS 141-43-5)
- Tall oil or rosin (CAS 8002-26-4)
- Chlorhexidine (CAS 55-56-1)
- Chloramine-T (CAS 127-65-1)

Ammonium quaternary compounds (also known as "quats"):

- Parasterol or benzalkonium chloride (CAS 8001-54-5)
- Benzethonium chloride (CAS 121-54-0)
- Cetalkonium chloride (CAS 122-18-9)
- Cetrimide (CAS 8044-71-1)
- Cetylpyridinium chloride (CAS 123-03-5)
- Benzyldimethylstearylammonium chloride (CAS 122-19-0)

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What kinds of disinfectants can I use instead of ammonium quaternary compounds?
Peroxide-based products (containing hydrogen peroxide or a similar chemical) are effective and may be more tolerable to sensitive individuals than chlorine bleach-based products.

It is also important to evaluate why a disinfectant is being used and select a product appropriate for the application. In addition, the amount of disinfectant needed can be reduced by cleaning surfaces prior to disinfecting and avoiding products that claim to clean and disinfect at the same time. For more information on selecting and using disinfectants, see INFORM's publication *Cleaning for Health* at http://www.informinc.org/cleanforhealth.php.

Are there product lines that do not contain asthmagens?
The state of Massachusetts asked vendors for information on asthmagens when awarding its purchasing contract for janitorial cleaners. Four product lines claimed to contain none of the asthmagens discussed here. For more information, see http://www.comm-pass.com/Comm-PASS/Scripts/xdoc_view.idc?doc_id=014080&key_xx= .

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[5] F. Reinisch *et al.*, "Physician reports of work-related asthma in California, 1993-1996," *American Journal of Industrial Medicine,* Jan. 2001, vol. 39, no. 1, 72-83.

For more information contact Cameron S. Lory, 212-361-2400 x232, lory@informinc.org
or Carol Westinghouse, 802-626-8643, westies@ecoisp.com