

Health Alert Bulletin

Fogging Ambulances with Toxic Disinfectants May Cause Illness

The New Jersey Department of Health is issuing this health alert bulletin in response to health concerns among emergency medical services (EMS) personnel following exposure to a fogging disinfectant used for ambulance cleaning. To date, four emergency medical technicians (EMTs) have been diagnosed with work-related asthma.

Fogging uses a fine mist to kill microorganisms and generates micro-particles (and possibly nano-particles) of disinfectant into the ambulance. Employees can become sick (nausea, eye irritation, headache, asthma) from exposure to these disinfectants when micro-misted. Micro-particles can be absorbed into the body much quicker and in greater quantities than larger particles. However, the long-term consequences of converting a disinfectant from liquid to a dry mist (i.e., fogging) are unknown.

Disinfectants are registered with the Environmental Protection Agency (EPA) as pesticides. Often, the active ingredients are respiratory irritants and sensitizers and include chemicals such as, chlorine, phenol, quaternary ammonium compounds ("quats"), alcohols, or hydrogen peroxide compounds (listed in decreasing order of toxicity).



Fogging is not recommended in ambulances. The following are guidelines for personnel involved in the cleaning and disinfection of EMS equipment and transport vehicles:

Select the Right Disinfectant

- Select an EPA-registered disinfectant, which is hospital-grade approved and is effective against mycobacteria (see Resources section).
- Know what types of bacteria/viruses the disinfectant is effective against. Refer to the Technical Data Sheet.
- Always follow manufacturer's instructions (e.g., safe use, amount, dilution, contact time, and disposal).
- Choose the least toxic EPA-registered disinfectant for the task.

Clean and Disinfect Items/Surfaces

- Cover all surfaces that may become contaminated especially those that are difficult to clean and disinfect. Remove and discard these barriers between patients.
- Clean surfaces before use. Disinfectants cannot penetrate the dirt/microbe barrier.
- Choose a product that cleans/disinfects in one step.
- Use low and intermediate-level disinfectants on surfaces.
- All reusable medical equipment must be cleaned, disinfected, and maintained prior to use on another patient.
- Focus on those surfaces in proximity to the patient and those that are frequently touched. CDC recommends disinfecting only surfaces that are "high touch" and/or come in contact with broken skin.

Apply a "Ready to Use" Non-Aerosol Disinfectant

- A pre-mixed solution eliminates the possibility of human error.
- Another option is to prepare a sufficient supply of fresh solution for daily cleaning (wet dusting). Discard any remaining solution, and dry out the container to help minimize bacterial contamination.
- Avoid spray-nozzle dispensers to minimize aerosol generation. Instead, apply detergent/disinfectants to cleaning cloths. Do not reuse cloths. Launder or dispose of cloths.
- The use of pre-moistened, disposable disinfectant wipes provides a convenient decontamination method. However, to be effective, two cloths must be used: one for cleaning, followed by a second for disinfection.

Consider Ease of Use and Time Constraints

- Keep disinfectants inside the transport vehicle to facilitate compliance with cleaning and disinfection.
- Establish written policies and procedures specifically for cleaning/disinfection of items and environmental surfaces which include an established schedule for every trip, shift, and week.

[See back for resources>>](#)

IMPORTANT: EMS personnel who perform environmental cleaning and disinfection must wear gloves and other personal protective equipment to prevent occupational exposure to infectious agents and hazardous chemicals. Adequate ventilation is also critical. Employers should evaluate disinfection procedures periodically and update the written protocol accordingly.



If fogging is practiced, follow these recommendations:

- ✓ Use hydrogen peroxide, the only EPA-registered disinfectant approved for this application.
- ✓ Do not fog on a daily basis; only for maintenance as a supplemental measure.
- ✓ Continue normal cleaning/disinfection routine along with fogging.
- ✓ Isolate the area and strictly follow return times (may be up to 4 hours).



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References and Resources

- Schulster L and Chinn R. "Guidelines for Environmental Infection Control in Health-Care Facilities: Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)." MMWR 52 (2003): 1-42.
- Rutala W and Webber D. "Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008: Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)."
- Guide to Infection Prevention in Outpatient Settings: Minimum expectations for safe care (July 2011). Available at <http://www.cdc.gov/HAI/pdfs/guidelines/standards-of-ambulatory-care-7-2011.pdf>.
- Be Safe Paramedical. The Responder-Newsletter. Available at <http://www.be-safe.co.za/index.php/news/36-ambulance-hygiene-rationale>.
- National Guidance and Procedures for Infection Prevention & Control. Managing Health Care Associated Infection & Control of Serious Communicable Disease in Ambulance Services. The Ambulance Service Association. June 2004.
- College of Respiratory Therapists of Ontario. Infection Prevention & Control – Clinical Best Practice Guideline (2011) . Available at http://www.crto.on.ca/pdf/ppg/infection_control_cbpg.pdf.
- Cleaning in Healthcare Facilities: Reducing human health effects and environmental impacts (April 2009). Available at <http://www.sustainableproduction.org/downloads/CleaninginHealthcareFacilities.pdf>
- US Environmental Protection Agency (EPA). Selected EPA-registered Disinfectants. Available at <http://www.epa.gov/oppad001/chemregindex.htm>.
- Rosenman KD, Reilly MJ, Schill DP, Valiante D, Flattery J, Harrison R, Reinisch F, Pechter E, Davis L, Tumpowsky CM, Filios M. Cleaning products and work-related asthma. J Occup Environ Med. 2003 May;45(5):556-63.
- New Jersey Department of Health, Office of Emergency Medical Services. Web site: <http://nj.gov/health/ems/>.

The New Jersey Department of Health is currently conducting a work-related asthma research project funded by Cooperative Agreement No. 5U60OH008485-08 from the National Institute for Occupational Safety & Health (NIOSH). This project seeks to identify the factors that contribute to work-related asthma and provides recommendations for controlling workplace exposures associated with work-related asthma.

We hope you find this bulletin informative and that you will share it with others. If you have any comments or questions, or need additional copies of this bulletin, please call the Occupational Health Surveillance Unit at (609) 826-4984. Visit us on the Web: <http://nj.gov/health/surv>.