

NFDA Formaldehyde Best Management Practices

More than 15 years ago, NFDA issued Environmental Best Practices, which were designed to assist members in meeting the high standards of the funeral profession by providing guidelines for protecting the health and safety of the public; the environment in the community in which funeral directors live and work; and themselves, their employees and families. Six years ago, NFDA issued the Best Environmental Safety and Health Poster, to be placed on the door of preparation rooms in funeral homes throughout the United States as a reminder of these important principles.

NFDA issues these Formaldehyde Best Management Practices (BMPs) at a time when there are continuing appraisals about the health hazards associated with formaldehyde. In 2004, the International Agency for Research on Cancer (IARC), the leading international cancer agency, reclassified formaldehyde as a Group I carcinogen, finding a link between formaldehyde and nasal cancer. In 2009, after reviewing additional scientific studies, IARC found sufficient evidence to conclude that

formaldehyde exposure may cause leukemia, a disease of the blood and bone marrow. In 2009, following a 20-year study of embalmers, the National Cancer Institute published a report that observed an association between embalming and death from myeloid leukemia, with the greatest risk among those who practiced embalming for more than 20 years and who experienced greater formaldehyde exposure in the preparation room.

Thus, in the face of formaldehyde's new scrutiny and in the absence of definitive and conclusive scientific results, NFDA believes it important to protect its members by keeping them informed about formaldehyde and its potential risks and to provide members with tools to protect their employees and themselves. NFDA intends that these Formaldehyde Best Management Practices will serve that purpose.

The Formaldehyde Best Management Practices is a working document. It may be updated or modified as important new information about formaldehyde becomes available.

1.0 Ensure adequate and effective ventilation in the preparation room.

2.0 Select and use the proper embalming product in considering the environmental, health and safety characteristics of the product and the condition of the remains.

3.0 Take precautions in the preparation room to limit formaldehyde exposure and emissions during routine embalmings.

4.0 Observe special precautions to limit formaldehyde exposure and emissions when embalming organ procurement cases and autopsied remains, as such embalmings may increase the embalmer's formaldehyde exposure risk.

5.0 Be familiar with and follow federal, state and local environmental, OSHA and health requirements that apply when embalming is performed.

1.0 Ensure Adequate and Effective Ventilation in the Preparation Room

Preparation room ventilation is the single most important factor in reducing health risks associated with formaldehyde exposure. Make sure that the ventilation system in your funeral home's preparation room is properly designed and oper-

ating effectively. An effective ventilation system ensures that as much formaldehyde as possible is drawn away from the embalmer's breathing zone. Consult an HVAC professional to assess and maintain the ventilation system and the heating and cooling needs of the work area.

1.1 *Have no fewer than 15 air changes per hour in the preparation room.*

The appropriate air change rate for the space will be dependent on site-specific factors, such as the configuration of the preparation room and the nature of the funeral home's business, including the number of daily embalmings and whether more than one embalming table is used simultaneously for embalming.¹ A minimum of 15 air changes per hour indicates that preparation room air will be changed approximately every four minutes. Scientific studies show that preparation room activities that have the greatest formaldehyde generation rate usually have a duration of four to five minutes.

1.2 *Employ a local exhaust ventilation (LEV) system for added capture of formaldehyde emissions.*

LEV systems are commonly used in a wide variety of industrial settings, typically at low cost, to enhance room ventilation systems. An LEV system, to be effective in a preparation room, must cap-

ture formaldehyde emissions before those emissions enter the breathing zone of the embalmer. An LEV system is especially useful for any funeral home that engages in osmotic embalming for cases with poor circulation, organ and tissue procurement cases and autopsied remains.

1.3 *Provide a source of fresh, clean air that prevents excessive negative pressure and improves air quality in the preparation room.*

Air introduced into the space should be equal to or greater than the volume of air exhausted from the space and drawn from a source free of contaminants. Embalming room air should never be recycled or re-used.

1.4 *Establish a standard operating procedure for ventilation system activation whenever an individual is in the preparation room.*

To ensure use of the ventilation system, wire its activation to the preparation room's light switch.

1.5 *Vent waste air from the preparation room HVAC system to the outdoors.*

The ventilation discharge should be located above ground level, away from human receptors and free of any obstruction that would impede airflow. Because formaldehyde is heavier than air, locate

the discharge vent below and away from the breathing zone of the embalmer.

1.6 Monitor the effectiveness of the preparation room HVAC system no less often than annually.

A properly functioning HVAC system is key to eliminating the risk of formaldehyde exposure in the workplace. To ensure that formaldehyde exposure does not exceed acceptable limits, conduct and document exposure monitoring annually, more frequently than OSHA requirements.² Consult an HVAC professional regularly to ensure effective working of the funeral home's ventilation system.

1.7 Do not use ozone generators.

Scientific studies show that at concentrations below public health standards, ozone generators do not remove or even reduce formaldehyde. The U.S. EPA has issued a warning based on peer-reviewed, scientifically supported findings against the use of ozone generators because ozone, like formaldehyde, may cause serious health effects.

2.0 Select and use the proper embalming product considering the condition of the remains.

2.1 Make a practice of using the least concentrated solution and reserving the most highly concentrated solution for the most difficult cases.

The art and science of embalming requires selection of the proper product in view of the condition of the remains.

2.2 Substitute environmentally friendly products for traditional embalming products.

Discuss product options with the funeral home's chemical supplier. Funeral service suppliers might be able to provide environmentally friendly, less toxic embalming products to funeral service professionals. Consider using formaldehyde-free products.

2.3 When mixing embalming solutions, always add arterial fluids to water.

Studies indicate that bursts of formaldehyde from mixing solutions pose risk for the embalmer. Do not add water to arterial solution. This simple change in procedure will reduce the embalmer's exposure to emissions from products

containing formaldehyde. Start with the smallest amount of arterial fluid in the embalming solution product; more arterial fluid can be added later.

3.0 Take precautions in the preparation room to limit formaldehyde exposure and emissions during routine embalmings.

3.1 Institute work practices to avoid formaldehyde spills; if spills occur, clean immediately.

Spills of formaldehyde have been shown to be a significant source of formaldehyde emissions in the preparation room. Chemical pillows and other chemicals are commercially available from industry suppliers for spill response. Ammonia serves as an inexpensive and effective neutralizer of formaldehyde. However, be sure to use a product containing a material that either permanently absorbs or destroys the formaldehyde.

3.2 Always keep the lid on the embalming machine.

The embalming machine lid should be

removed only when water and embalming fluids are added to the machine. The lid is designed to reduce emissions from the embalming solution in the machine.

3.3 If embalming wastewater is discharged into a sink, always use a sink cover to limit splashing and exposure.

Covering an embalming waste sink with Plexiglas or other appropriate material will prevent splashes and aerosols from entering the embalmer's work area.

3.4 Use all appropriate personal protective equipment to avoid skin and eye contact with formaldehyde-containing products (and any chemical products of any type).

Make the switch from latex gloves to nitrile gloves. Nitrile has high chemical resistance against formaldehyde without the failure rate of latex.

3.5 Limit exposure to formaldehyde and bloodborne pathogens through the use of a drain tube.

Run the drain tube from the remains to the end of the embalming table, away

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from the embalmer, into the sink or discharge opening.

3.6 Follow the funeral home's written 30-day cleaning, decontamination and inspection schedule to ensure proper functioning of eyewash stations and emergency drench showers.

Emergency equipment must be tested to ensure that it will function properly when it is needed. Prepare a written policy that establishes a routine inspection procedure implemented every 30 days to test the functioning of eye wash stations and emergency showers.

4.0 Observe special precautions to limit formaldehyde exposure and emissions when embalming organ procurement cases and autopsied remains, as such embalming may increase the embalmer's formaldehyde exposure risk.

4.1 Employees may elect to use a properly fitted respirator, even when measured

exposure limits do not exceed OSHA standards.

If this is the case, the funeral home must obtain a medical evaluation of each employee who wishes to use a respirator, even though a full OSHA-mandated respiratory program is not required.³

4.2 Carefully monitor and restrict the use, to the greatest extent possible, of the most highly concentrated formaldehyde products, such as osmotic gels, hardening compounds and disinfecting sprays.

Studies have indicated that the use of compounds containing high concentrations of formaldehyde contributes significant amounts of formaldehyde to preparation room air. For that reason, use of these compounds should be limited and other alternatives investigated.

5.0 Be familiar with and follow all federal, state and local environmental, OSHA and health requirements that apply when embalming is performed.

Various environmental, OSHA and health requirements apply when an embalming is performed. Often product selection will govern the application of these requirements.

Periodically review and re-evaluate the products used in the preparation of the remains. Know the constituents of the products and the requirements that these constituents make applicable. Determine whether your locality has a mechanical code or other requirements that apply to ventilation systems. *

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Footnotes

¹More information on effective preparation room ventilation can be found in NFDA's ventilation report, "Formaldehyde Vapor Reduction in the Funeral Home Preparation Room – Recommendations for Effective Preparation Room Ventilation." (August 2010).

²Be sure to follow OSHA formaldehyde exposure monitoring requirements, which necessitate monitoring anytime there is a significant change in the preparation room, such as the installation of new equipment, a change in the ventilation system itself, a renovation of the preparation room, the introduction of a new chemical product containing formaldehyde, the introduction of new procedures, an increase in the number of preparations conducted or when a new embalmer is assigned and begins work in the preparation room. According to OSHA's current standard, 29 CFR Section 1919.1048(c), the employer must ensure that no employee is exposed to an airborne concentration of formaldehyde that exceeds 0.75 parts per million formaldehyde as an eight-hour time-weighted average and 2.00 parts per million as a 15-minute short-term exposure limit.

³If a respirator must be used when OSHA exposure limits are exceeded, be sure to institute a full written respirator protection program that includes a medical evaluation and clearance of all individuals required to use the respirator.

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