

The Air You Breathe

BY MARJORI AND DUNCAN TODD

When he built a new prep room in 2003, Bob Skinner, funeral director in Cumberland, Wisconsin, could have been speaking for his colleagues throughout the industry when he told the firm of Duncan Stuart Todd, Ltd., "The bottom line is that the health and well being of my employees is of the utmost importance to me."

Sharing this concern, funeral directors nationwide recognize that they can most directly affect the health and well being of their employees by taking steps to insure that the quality of air circulating in the preparation room is clean and free of contaminants.

So vital to health and safety is the quality of air in the prep room that OSHA, watchdog of the workplace, has mandated stringent clean air requirements to protect embalmers from the hazards of breathing in formaldehyde fumes.

OSHA Standard 1910-1048 states:

Permissible Exposure Limit

The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds 0.75 parts formaldehyde per million parts of air as an 8-hour time-weighted average.

The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds two parts formaldehyde per million parts of air as a 15-minute short term exposure limit.

Side effects from the inhaling of formaldehyde begin at 0.5 to 2.0 parts per million (ppm) with irritation of the upper respiratory tract including the eyes, nose and throat. Skin contact with formalin causes cracking, discoloration, smarting, drying and scaling. At 10 to 20 ppm, one has difficulty in breathing, burning of the nose and throat and heavy tearing of the eyes. Overexposure can cause respiratory cancer or even death. Furthermore, the perception of formaldehyde by odor and eye irritation becomes less sensitive with time and causes a greater potential for overexposure.

A heightened awareness of the long term effects of exposure to formaldehyde fumes is even resulting in re-

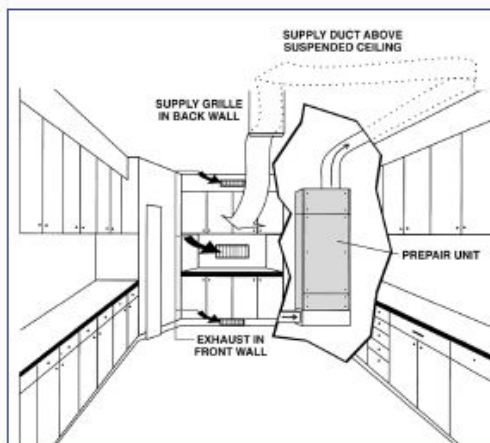
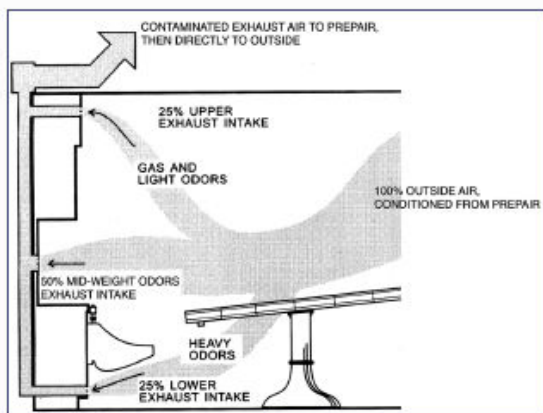
quests by employees that their funeral home owners and directors address this safety issue. This expressed desire by practitioners to be able to work in a comfortable atmosphere is becoming more and more important to employee satisfaction and thereby performance.

There are several requirements for creating a safe, comfortable and healthful environment in the preparation room. As mandated by OSHA, the ventilation system must foremost minimize the embalmer's exposure to formaldehyde fumes and other toxins that occur via the embalming process. It must also provide the necessary heating and cooling to make the room comfortable for the embalmer. In addition, the system should be designed such that polluted air is prevented from invading other parts of the funeral home. To satisfy this last requirement, we recommend a stand-alone heating, ventilating and air conditioning system, (HVAC) that is completely separate from other areas of the facility.

In the prep room, embalmers experience variances in movement of contaminated air. Some toxins rise, some fall and some hover at table height. We recommend that exhausts be installed at three levels – floor, chest height, and ceiling – to provide a complete solution for removing the toxins. The shape of the room can also contribute to toxin removal. Focusing the air toward the exhaust registers has been shown in tests to facilitate complete removal of pollutants as well as reduce toxin build-up in corners. Finally, a large flow of air across the table – as much as 100% outside air – may be required to effectively remove pollutants in difficult cases. Unfortunately, the need for 100% outside air makes it difficult for an air system to provide the necessary heating and cooling to maintain a comfortable work environment.

We have found through research and testing that the use of a heat recovery based system makes it possible to meet OSHA standards while simultaneously maintaining an appropriate room temperature for the embalmer. The operation of a heat recovery system is based on two air-flow patterns – the 100 percent fresh air supply and the exhausted air. The supply and exhaust pass through a heat exchanger in opposing directions without mixing,

How It Works



Typical preparation room layout.

thus avoiding any cross contamination. During the exchange, the heat or cold from the exhausted air is transferred to the incoming air, conditioning this fresh air prior to going through the heating and cooling elements of the system. This process significantly reduces the heating and cooling requirements of the air system.

The air system our firm most recommends has an energy efficient performance level that results in economical life cycle costs. We have found that some users have been able to attain an agreeable comfort level with a 1.5 ton cooling system using a heat recovery module that would otherwise require a conventional 6-ton system. By way of contrast, consider the economics of a conventional air conditioning system and the impact at the electric meter.

There are other systems, but as a package, we know of nothing else like it. Some prep rooms are equipped with air conditioning units supplemented by exhaust fans to expel the conditioned air. These systems are often located so that air is drawn directly across the face of the embalmer, exposing them unnecessarily to toxic fumes. In addition, when the contaminated air is exhausted, the cool or heated air goes out with the pollutants. So embalmers, who wear protective clothing in compliance with OSHA directives, may become so uncomfortable that they turn off the fan or open the prep room door exposing the facility.

A testimony to the effectiveness of a heat recovery system comes from Randall Danielson of Johnson-Danielson Funeral Home in Plymouth, Indiana. He constructed

a new prep room in the spring of 2002. His experience leads him to say, "Any prep room built today should have an isolated system for heating and cooling. Our room is equipped with PrepAir. This system provides heat through an efficient hydronic coil that is supplied from our existing boiler-hot water system. For cooling, we have used a 3-ton unit which is able to lower the temperature to nearly that of a morgue cooler. This system exchanges room air with fresh air at two volume levels and yet recoups cooling and heating of tempered air. Proper installation of a prep room air system should have ceiling or bulkhead supplies in line with the table at the head wall of the room. Return air ducts are located at three levels on the wall at the foot end again in line with the table. This flow of air across the table has been proven for a number of years now to be in the best interest of the practitioner. We consider this system to be an investment in our own health and that of our employees."

Mr. Skinner, whose values we stated at the outset, joins Mr. Danielson and many other funeral home owners in a commitment to providing staff with a healthful environment where "The Air You Breathe" is clean, pure and OSHA compliant.

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Marjori Todd and Duncan Todd may be reached at 877-832-6898 or info@dstlimited.com, or visit dstlimited.com



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