



Expanding Encyclopedia Of Mortuary Practices

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FORMALDEHYDE EMBALMING SPRAYS: A MODERN MYTH

Part 2

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EXPOSURE PROBLEMS: Formaldehyde is a definite exposure hazard in the embalming room. More and more evidence of longterm insidious health effects is being found in the medical and toxicological literature. It is difficult to embalm with any significant amount of formaldehyde and maintain monitoring results within the limits of ACGIH (.3 ppm-ceiling). OSHA limits are currently higher at .75 ppm — yet many embalming exceed even these high limits. Formaldehyde, being a gas at room temperature, exhibits a very high relative vapor pressure in 37% water solution (typical formalin) and easily evolves out of solution into the atmosphere of the embalming theater.

Traditional formaldehyde sprays exacerbate the problems of formaldehyde exposure by the very mechanism of spraying the mixture into the atmosphere of the immediate breathing zone of the embalmer and creating an additional formaldehyde exposure scenario. In addition, the volatile alcohol solvent of the formaldehyde sprays encourage the vaporization process and further increases the total formaldehyde exposure values.

The exposures to formaldehyde during the moderate use of formaldehyde sprays is surprisingly high (far in excess of even what I would have assumed without verification by monitoring). Ten to fifteen minute exposures of 5 ppm or greater (some even in excess of 6-7 ppm) are typical during the moderate use of formaldehyde sprays (13-16 total sprays) despite the use of ventilation that is adequate for exposure control during normal embalming. Formaldehyde exposure readings in excess of 12-14 ppm can be registered by 10-15 minute monitorings in unventilated embalming rooms with moderate use of formaldehyde sprays (13-16 sprays — which is typical for a topical application use during a normal embalming operation). Obviously, the problem is the release of formaldehyde in a volatile solvent in close proximity to the embalmers breathing zone and, consequently, the typically measured monitoring zone by passive diffusion monitors, which are standard for formaldehyde monitoring in the embalming profession.

Obviously, formaldehyde spray use during embalming is creating a short-lived worse case scenario for formaldehyde volatilization in the immediate vicinity of the embalmers breathing zone, with potentially extraordinarily high short-term formaldehyde exposure readings during monitoring. Short-term ceiling monitorings of this early phase of embalming is characteristically not done, as it was assumed that this was a relatively low-exposure phase of the embalming process (as compared, for example, to cavity treatment with concentrated high-index formaldehyde cavity fluids). Formaldehyde/alcohol based embalming sprays are creating a significant additional exposure to formaldehyde during embalming without any real offsetting benefit or value to their use.

MODERN ALTERNATIVES: There are several modern high-tech alternatives to the old formaldehyde embalming sprays for disinfection. Particularly good is an alcohol-potentiated super quat available in a spray form (Metriguard). As with all commercially available disinfectants that are suitable for medical/dental/hospital use, they are EPA registered, tested and approved and assigned a registration number. Testing to acquire these type designations is extensive and standardized and results in a confirmed ability to function as labeled in disinfection usage. There are also available biphenolic sprays that exhibit similar disinfection capabilities to the alcohol-potentiated super quats. The modern disinfecting sprays all have extensive label claims for proven action against a number of resistant organisms (e.g. *M. tuberculosis*, MRSA, VRE, Poliovirus 1+2 and Coxsackievirus) under various contact times. These claims are essential for a spray to qualify as a true medium-level disinfectant under current guidelines. This designation on the label also qualifies a disinfectant to be rated as a hospital-approved disinfectant under other governmental agency guidelines.

These modern alternatives have none of the disadvantages of the old traditional formaldehyde embalming sprays. They are water-based (usually containing less than 20% total alcohols) and are very low exposure formulations. Of course, there is no formaldehyde in the formulations, consequently this additional exposure to formaldehyde is eliminated. They generate little if any fumes during spray use and are non-irritating. The water-based formulation and the low amount of alcohol in the formulation makes the exposure potential to alcohols almost nil. In addition, they are non-staining and non-corrosive (an absolute must for medical/hospital use). Due to the water-based formulation, they are not dehydrating in their usage as a facial and orifice spray during embalming operations. The formaldehyde embalming sprays exhibit a definite dehydration action due to the formaldehyde present in addition to the high alcohol content which also contributes to overall dehydration. These modern medium-level disinfectant sprays (e.g. Metriguard) are the highest rated disinfecting sprays available to the medical profession and offer the maximum in disinfection action and overall high-level sanitation for use in embalming operations. They are superior to formaldehyde embalming sprays in virtually all respects. They are the obvious preferred choice when disinfectant and sanitation action is required in an embalming spray.

SUMMARY: The traditional formaldehyde embalming sprays are inferior to modern alternatives available to the embalming profession. They are untested, unproven and have no label claims as to efficacy or suitability

of use. The formaldehyde in the formulations essentially serves no legitimate purpose other than being an embalming agent that all embalmers are familiar and comfortable with. Rubbing alcohol would essentially serve the same purposes that formaldehyde embalming sprays are currently used for. They are dehydrating and contribute to overall increased exposure during the embalming operation. These inhalation hazards come with no offsetting justification (such as disinfectant ability). Modern alternatives, that are used extensively in the medical profession, are readily available to embalmers and the profession. These modern alternatives deliver superior disinfectant action without the drawbacks and disadvantages of formaldehyde embalming sprays. It is time to relegate the formaldehyde embalming sprays to their rightful place in the embalming history book. Where they do not belong is on the modern embalmers shelf.

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Also consulted were old catalogs and newsletters from various embalming companies dating to the 1920's and 1930's, in addition to old issues of the *Champion Expanding Encyclopedia* from the archives of the Champion Company, Springfield, Ohio, USA.

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