

FORMALDEHYDE EXPOSURES IN EMBALMING: FOR WHOM THE TOXIC BELL TOLLS.

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The toxic bell tolls for thee, formaldehyde. In this article we examine the ever-increasing mountain of bad news concerning formaldehyde and its serious exposure dangers as it relates to embalmers and embalming. From the elevation to an IARC Group 1 carcinogen, to the probable ban in all of the EU, to the never-ending chain of research articles documenting more and more evidence of serious health effects from exposures, to the “pretend there is no problem” mentality of the funeral industry. All this and more is exhaustively covered in our current article. Be warned — brutal honesty, my unabashed opinions and some sardonic humor is contained within this article. The brutal facts are the facts, and my opinions, are, well, my opinions, but I have a bad feeling that I am right. With these considerations taken, I invite you to read on.

*I took my 'balmin troubles down to Madame Rue
You know that gypsy undertaker with them toxic bathtub brews
She's got a funeral parlor down on 34th and Vine
Sellin' little bottles of
FORM-ALDA-NUMBER 9*

*I told her I was a flop in mortuary school
ain't done a good embalmin' since 1982
She waved her magic trocar and then she made a sign
She said, "What you need is FORM-ALDA-NUMBER 9"*

*She said, "Sit down and turn around 'cause this is gonna stink",
"I'm gonna mix it up right here in my slopsink"
It burnt my eyes and nose and looked like some cheap purple ink
My lungs collapsed, my eyes swelled shut and then she gave me a wink*

*I couldn't tell if it was day or night
I started embalmin' everything in sight
But when I failed my monitors for the hundreth time
OSHA took my little bottle of
FORM-ALDA-NUMBER 9*

Sung to the tune of — Love Potion Number 9

The news just keeps getting worse and worse for formaldehyde, as the research and medical studies just continue to implicate and indict formaldehyde as a serious occupational exposure hazard that needs to be

avoided or severely controlled. Yes, the toxic bell is tolling for formaldehyde and there appears no end in sight. The most glaring example is the recent decision by the IARC (International Agency for Research on Cancer) to elevate the cancer rating of formaldehyde to a GROUP 1 CARCINOGEN, a proven and documented cancer-causing agent in humans. Group 1 is the highest group level, that can be issued to any chemical by the IARC and formaldehyde now joins this elite and notorious group that includes the worst of the worst in cancer-causing potential. Formaldehyde can no longer hide behind a “suspected or probable” label of carcinogenicity and the embalming industry needs to face this fact. Continuing to pretend that this problem does not exist is a fasttrack to an extinction of the embalming industry , that is already well underway. So, therefore, in no particular order, let’s dissect this sorry state of affairs and offer solutions.

I personally believe the root cause of the problem can be traced to the mythology perpetrated on the embalming industry by the embalming industry itself. That mythology being, of course, that formaldehyde is essentially the only chemical on the face of the earth that is capable of successfully embalming human corpses and its “really” not as dangerous as all those silly researchers say it is. Consequently, the embalming industry should embrace and worship formaldehyde, for to do otherwise is to stare into the abyss and face annihilation. There’s only one problem with this — it is flat out not true — in fact it’s mostly just smoke and mirrors.

There are alternatives and some very seriously reduced exposure alternatives to formaldehyde in embalming that function reasonably well in replicating old-fashioned formalin injection. To pretend otherwise is right up there with membership in The Flat Earth Society and the Moon Landing Conspiracy theorists (it never happened - it was all filmed at a secret government location in Hollywood). I think you get the idea here. At any rate, due to misplaced traditionalism, fear of change, generalized lethargy and laziness of the embalming industry, the care less attitude of embalmers in general, and the sheer economics of not being able to formulate quick, cheap and dirty with ancient bathtub formalin recipes, this self-defeating mythology will be embraced, probably forever. So be it. We are the lesser for it.

One chemical manufacturer, however, never bought into this mythology, that, of course, being The Champion Company. I never believed that the Wizard was in Oz or that the yellowbrick road was paved with formaldehyde. From the beginning of my tenure at The Champion Company, top priority always was and still is elimination or reduction of hazardous chemical exposures and implementation of modern alternative chemical embalming formulations that drastically reduce or eliminate the total chemical exposures in embalming. To this end, we have made great strides. Chemical exposures have not been completely eliminated, but they have been drastically reduced with minimal loss of embalming chemical functionality. The path to the future has been, illuminated, it is safer and saner, and one need only choose it.

The shock reaction of the embalming traditionalists to these new realities was — ATTACK. Which brings us to the next part of the story — the various disinformation/mythinformation campaigns that exist throughout embalming land. I will quickly summarize them and, sadly, expose their glaring weaknesses and untruths. The attacks on glutaraldehyde, as numero uno replacement for good old formaldehyde, were swift and vicious. I have exhaustively delineated the differences between glutaraldehyde and formaldehyde and discussed in detail the false arguments against glutaraldehyde as a superior replacement for formaldehyde in embalming in several Champion Expanding Encyclopedia articles. I invite you to read these previous articles, as they very glaringly and tellingly dismantle and disembowel the supposed arguments against glutaraldehyde in

embalming usage. Everybody from self-proclaimed OSHA consultants to used-car salesmen have weighed in on this and the print verbage (rhymes with garbage) is worthy of lining the most gilded of birdcages. Because I have refused to trot the formaldehyde pony around the showtrack and pretend everything is 'just alright', I have been accused of being an alarmist and a troublemaker and destroying the pastoral tranquility of the land of Oz by ripping back the curtain and putting down the Wizard. So be it — but the bells are tolling and they are tolling all around the world. The dinosaurs didn't know what hit them and I guess we won't either.

Quickly then, and for the record, the arguments are essentially, that glutaraldehyde is the gold-standard sterilant/disinfectant and a high level aldehyde protein crosslinker, an excellent tanning agent and laboratory preservative, but it just don't embalm — go figure. Additionally, even though glutaraldehyde is non-carcinogenic, has an extremely low vapor pressure and monitors extremely low in embalming while formaldehyde is a cancer-causing toxic chemical gas that has an explosively high vapor pressure in embalming and exceeds safe exposure levels 2/3 or more of the time, glutaraldehyde should be banned from embalming and formaldehyde extolled as eminently safe and practical. We have seen the enemy and he is us! To even present these arguments borders on the ludicrous. A methodical and scientific examination of the evidence surrounding glutaraldehyde confirms that it works and it is a lowered exposure risk in embalming. Sorry, go ahead and enjoy the formaldehyde parade, but the Emperor is bucknaked. Which brings us to our next embalming sideshow, Europe and the BIE, or FormaldaDumpty takes the big fall.

The Legend of FormaldaDumpty —

FormaldaDumpty sat on a morgue wall

FormaldaDumpty had a nasty and toxic fall

All the Queens men and all the Institutes horsing around

Couldn't make poor FormaldaDumpty safer, less toxic, or even round

And a sideshow it is, indeed. The British Institute of Embalmers is launching a massive dis/mythinformation campaign in the EU to try and stop the essential banning of formaldehyde embalming fluids in Europe. This is orchestrated by a formaldehyde embalming fluid maker, which shall remain nameless, with the BIE in gleeful lockstep complicity. The new EU Biocide Directives require extensive documentation and testing to verify efficacy and safety of use for any preservatives, disinfectants, etc.. The sorry state of embalming in Britain is such that compliance is improbable, if not impossible. The British MEL's (maximum exposure levels) for formaldehyde, for example, are so lax and archaic as to be ridiculous compared to the rest of Europe. Not only are British limits for formaldehyde exposures 2X-7X higher than any where else, their justification for the levels are based on exposure studies that are a quarter of a century old and ignore most all modern research. The UK has always been out-of-step with the rest of the EU and they don't like the currency either.

There is no way the formaldehyde mixer/sellers will pony up and pay the piper in Europe. Instead, they want some kind of far-fetched cultural exemption to keep on embalming Stone Age Style with high-exposure/high index formaldehyde, because they fear that the toxicity and exposure hazards of formaldehyde will never allow it to pass the safety, and fitness-of-use testing, and they are probably right. From all indications,

it seems this section of my article should more appropriately be titled: FORMALDEHYDE EMBALMING IN THE EU — DEAD ON ARRIVAL.

Embalming is viewed throughout most of the EU as unnecessary and needlessly toxic and dangerous. In several countries, embalming is technically illegal and operations cannot even be called embalming. Euphemisms, such as thanatopraxy, are the norm in most of the EU, for what little chemical postmortem preparation is done. The Italians, for example, translate embalmer as taxidermist, as no other word or concept even exists in that language. Even in parts of Britain, itself, embalming is seen as a rather barbaric “tarting up” of the corpse and completely ridiculous. The EU sees formaldehyde for what it is, a nasty and toxic chemical, and numerous European countries have already banned formaldehyde in most all consumer products and it won't stop there.

In fact, the EU just passed the Registration, Evaluation and Authorization of Chemicals (REACH) law that goes into effect in the summer of 2007. After a bitter lobbying/counter-lobbying campaign pitting environmental groups/greens/etc. versus chemical distributors/importers and manufacturers, this law fundamentally changes the way the EU looks at and justifies chemical usage in Europe. 30,000 chemicals are ultimately covered by this act, with the most dangerous and toxic acted upon first. All chemicals must be registered by manufacturers over a certain tonnage use and a dossier submitted to verify properties, usages, and handling protocols with carcinogens, mutagens, toxics, and environmental bioaccumulators or biopersistents requiring special authorizations and plan submissions for elimination with safer chemical replacements. Formaldehyde qualifies under essentially all the ramifications of the law being over tonnage, a documented carcinogen/mutagen and generally considered a toxic chemical in end use.

In shock response and to save a dying (no pun intended) niche industry, the BIE has drudged out all the old anecdotal and childish justifications for formaldehyde in embalming: nothing else on the face of the earth works, it must be safe or the English countryside would be littered with the corpses of embalmers, banning formaldehyde would cause the destruction of society as we know it, it's an EU plot to subjugate the Empire, formaldehyde embalming is the only thing standing between Asian Bird Flu and the destruction of Europe, the Irish couldn't have their wakes and consequently their Republic would crumble into dust and of course, the research regarding formaldehyde is all false, faked and politically motivated. Whew — did you get all of that? Mind-boggling isn't it! The Bard, himself, couldn't have woven a more intricate and convoluted tale. This, of course, is just my opinion, but I have a bad feeling that I am right. Oh, look, over there, is that the sun setting? Oh well, anyone fancy a fox hunt? There is much more to this story than just this, having been the unfortunate recipient of the Institutes jackboot diplomacy some time ago, as I am well aware. Much is afoot in Europe these days and the times they are dark indeed. Perhaps, the Institutes name should be changed to the BIEE — British Institute of Extinguished Embalmers — to better address these realities.

The most bizarre spin to this Euro-sideshow is the Irish angle. The British are actually headlining the Irish wake as the lead cultural argument to get Neanderthal-style formaldehyde embalming a free pass in the EU and professing empathy for the plight of the Irish Republic. Hypocrisy reaches a new high with this one. Apparently, the BIE couldn't find anything “cultural” on hometurf so, instead, they took up the banner of the Irish wake. Not only has a significant percentage of Irish embalmers advanced far beyond the British model of high-exposure, high index formaldehyde and, instead, are utilizing modern, sophisticated lowered-exposure blends of glutaraldehyde/formaldehyde supplied by the Champion Company, in addition, they are abandoning the lethargic, despotic and unwelcoming BIE in favor of the more progressive and forward

thinking European Embalmers Associations. A wise choice indeed. The only recommendation that the British Empire had for the Irish in the last three hundred years, at least to my knowledge, was that they should evaporate into nothingness, and now they choose to lead the parade to save the Republic of Ireland? — go, figure — I don't think this pig will fly, I am positive that Ireland will survive just fine without the Brits, and as one very influential Irish embalmer has remarked — we had wakes before, we have wakes now, and we will have wakes in the future. Perhaps, it is best we should just move on.

Ironically and poetically, the very demise that was wished on glutaraldehyde, or any other acceptable substitute for formaldehyde in embalming, will, in all probability, be visited first upon formaldehyde itself. In fact, alternatives to formaldehyde are currently in the Biocides testing protocol and, in all likelihood, will pass muster and receive registration and use approval. Gee, who would have guessed that one? Safer, saner and effective alternatives to toxic formaldehyde embalming have and will appear in the EU. No cultures or traditions will be affected or harmed in anyway if formaldehyde disappeared tomorrow. And, perhaps, I think, that is a good thing. Which brings us to another tact used in the embalming industry — diversionary tactics, or the — hey, look over there syndrome.

Ever seen those posters that they hand out for free telling you to be sure and be careful with your dangerous chlorinated solvents and that saturated cotton and avoid at all costs the dreaded phenols, but go ahead and embalm all day with formaldehyde? The Champion Company has nothing to do with these posters, because, in my opinion, they only tell a skewed and partial story about exposure, disposal and safety in embalming rooms. They hardly say anything about anything and only mention that you should be sure to ventilate and monitor for formaldehyde. I feel this situation is akin to calling the fire department to report a small leafpile smouldering at your neighbors while you are burning used tires in your backyard. For the record, there is nothing technically incorrect to be found in these posters and that is not my point. I stress again, there is no incorrect information on these posters. What is missing, I feel, is a failure to evaluate and grade exposures and overall risk factors, and consequently, offer real world solutions to total overall exposure reduction in embalming.

By singling out phenol and others as examples of chemicals to avoid while just offering tips on how to use formaldehyde is misleading and intellectually dishonest, in my opinion. I have extensively researched and cataloged in an earlier Champion Expanding Encyclopedia, what I consider to be, this diversionary subterfuge that, on the surface, leads one to believe that other embalming chemicals are somehow worse exposure problems than good old formaldehyde. When the brutal facts are assessed, phenol — for better or for worse, and whether you like it or not, appears to be less of an overall exposure hazard than formaldehyde in embalming. Glutaraldehyde is definitely a significantly lower overall exposure risk chemical and sorry, but formaldehyde presents the absolute worst exposure risk of any chemicals we use in embalming. Go figure — nowhere in any posters will you ever find that fact. Formaldehyde must be defended, by the industry, at all costs and to the bitter end — period. That's pretty sad. And the sooner this mindset changes the better.

So, let's just take a look at formaldehyde and see how it holds up against the other supposed "more dangerous" chemicals. All chemicals that successfully embalm are hazardous and require safety measures and demand our cautious respect. However, the brutal truth is — formaldehyde is the most unmanageable, dangerous and difficult of all the embalming chemicals. If you want cancer, then choose a chemical to embalm with that is classified as a known, confirmed carcinogen — your logical choice would be formaldehyde. Glutaraldehyde and phenol aren't even on the radar screen. Bottom line, the carcinogen in the embalming room is formaldehyde, always has been, always will be. Want to blow your monitors — your best shot is

with formaldehyde — it's a toxic gas, what more do we need to know here? Bottom line, glutaraldehyde and phenol hardly show up on the monitors most of the time, while good old formaldehyde is nearly impossible to use roughly 2/3 of the time in most embalming rooms without exceeding ACGIH or even OSHA limits for safe exposure. If you can smell formaldehyde you are overexposed — when was the last time you were in an embalming room and didn't smell formaldehyde? Sorry, formaldehyde stinks, literally, and that's just the reality of the situation.

Formaldehyde is no safer or less dangerous to splash on you, get in your eyes or pour down the drain than either glutaraldehyde or phenol. All three have genotoxic potential or they wouldn't be protein embalming agents, and formaldehyde is as bad or worse than any of them. As far as allergic sensitization goes, phenol is not implicated and glutaraldehyde has sporadic reports of allergic asthma-like reaction and is a sensitizer (usually contact dermatitis) but with no confirmation of a true IgE immune-mediated hypersensitivity. Sensitization is unwanted in any circumstances, but if you want to be absolutely certain of allergic sensitization, true IgE immune-mediated hypersensitivity, allergic contact dermatitis, confirmed occupational allergy, documented asthma and asthma-like symptoms and a guarantee of ranking as one of the three most allergenic chemicals in standard patch testing — then your logical choice is formaldehyde. Formaldehyde gives you the absolute best shot at serious allergic/asthmatic reactions in embalming. Final verdict?— I think you know what it is.

But Lieutenant Dan, if we can't use formaldehyde, then what are we gonna do, Lieutenant Dan?

—Forrest, Forrest Gumbalmer

So what's the solution? You simply don't need 90% of the formaldehyde you are currently using to achieve good embalming results. That's just the truth. I hardly ever use any formaldehyde when I embalm anymore, because it's just not necessary. A whiff of formaldehyde in arterial for stiffness and skin-tightness, if desired, absolutely none topically and definitely none cavitywise, and that's all you ever need. How much literally? — 3 to 4 ounces, maybe, just a little more — that's it! For edema embalming? — yes, you'll have to bite the bullet and use a small to moderate amount of formaldehyde, but nowhere near what you think you might need. For all other types of cases, the formaldehyde can almost disappear behind the curtain — and nobody will notice. As I have said before, the real goal in embalming chemical choice is total overall reduced exposure of the chemical mix in embalming to the embalmer. By reducing the total overall exposures, you minimize the adverse exposure impacts on embalmers and reduce the long term deleterious health effects that occur from the embalming operation. The choice is simple — we can evolve into the future with modern lower risk alternatives or embOMB ourselves back to the Stone Age. Choose wisely.

The land of embalming Oz is a mystical, misty and dreamy world where reality hides behind the curtain and the residents feel safe and secure knowing that everything will be as it has been since, well, forever. There's only one problem — when you peer through the mist, the ugly realities of embalming chemical exposure become evident. The future is upon us, whether we like it or not. I end by saying this — as always, embalm smart, embalm safe.

My faithful Yorkie Terrier, Bacchus, has insisted that he have the final word. Yorkies are highly intelligent, swift, crafty and capable predators. Just turn one loose in a rodent infested barn overnight and the carnage that awaits you in the morning at the door is a sight to behold. Consequently, Yorkies can smell a rat a mile

away and they know how to remedy the situation. As a faithful follower and disciple of ToTo, he is intimately familiar with the Land of Oz and it's inner workings, and sees the formaldehyde Wizard for what he is — a toxic fraud. Consequently, Bacchus has graciously requested that he sniff this one out for you. Bacchus will now bark, er, speak.

When in the Land of Oz, ignore the thunderous noise and blinding lites, run thru the smoke and jump over the mirrors, find the curtain, jerk it open and drag the Wizard out by his pantleg. Only then will Dorothy see the real truth.

*Bacchus, MMDT
Member, Modern Disciples of ToTo*

References: Exhaustive listings of references appear in numerous of my earlier Champion Expanding Encyclopedia articles and I invite you to peruse them. There is so much scary info regarding formaldehyde exposure and adverse health effects that you need just peer down any dark alley you can find. In previous Champion Encyclopedia articles I have listed literally hundreds of references regarding formaldehyde and its serious health effects. I have listed reference after reference regarding glutaraldehyde, phenol and other commonly found embalming chemicals in several of my authored Champion Expanding Encyclopedia articles that can be found on our website, www.champion-newera.com. Also check out themodernembalmer.com, our sister website, where, thankfully I get to say what I think. There you will find in detail my rationale for the relative grading of risk and exposure from formaldehyde and its preferred alternatives such as glutaraldehyde. If this is all too overwhelming, and you pine for the toxic "good old days" of the Stone Age and prefer to go on pretending, then all I can say is — best of luck to you, you'll need it, you really will.