



D7 -vs- Formaldehyde:

Formaldehyde is a potent disinfectant and in some cases sterilants that is readily available, inexpensive, effective and broad acting in its efficacy. It is available either as a gas or a liquid known as formalin. The most significant drawback is its toxicity. It is classified as a carcinogen. To some this may not mean much as there is carcinogenic potential in so many things. In this case however the potential is real and should be taken with a high degree of precaution. If applied as a gas, formaldehyde is at its most potent and aggressive. Gases permeate, penetrate and disseminate into every available cavity. The occupational exposure limits for formaldehyde are 0.75 ppm time weighted average over an 8 hour period and a 2 ppm maximum exposure limit over 15 minutes. With all of this in mind, deployment of environmental controls and monitoring are highly recommended for its use. Management of risk may necessitate this. If a plaintiff can win a 55-million-dollar lawsuit claiming talcum powder caused her cancer, then a much stronger case is possible with formaldehyde exposure.

There are reasons formaldehyde might be used. D7 does represent a significantly safer alternative that reduces occupational risks and delivers abundant efficacy. D7 does not possess any of the occupational risks associated with Formaldehyde. This may be an important productivity consideration. Applying D7 electrostatically can “knock down” aerosolized particles that may be hazardous.

D7 based decontamination formulations are totally unique. They don’t specifically behave like quaternary amines or peroxide based disinfectants.

1. The solution characteristics of D7 based systems render them more effective than bleach because they are able to chemically cut through biofilms. This is perhaps the most valuable element to the use of D7. Think Legionnaires Disease and other persistent pathogenic vectors. Bacteria do not exist as unprotected colonies in nature. Biofilms are their protective armor consisting of complex polysaccharides and proteins. One possible surrogate for the evaluation of D7 efficacy against biofilms is the wettability potential on polytetrafluoroethylene.
2. D7 is based on the universal solvency power of WATER. The surfactant system modifies the solvency range of water but at its core, the formula is based on water. Thus, the resulting environmental burden when the product is used is tremendously diminished relative to other treatments.
3. Micellar Catalysis. There are very few if any other disinfectants that can make this claim. This property may enhance the autolysis efficacy for D7.
4. Surfactancy. The presence and type of surfactants embodied in D7 are useful in the detergency, disinfection efficacy and agents for the promotion of Micellar catalysis.
5. D7 is not just another Quat disinfectant. This is a chemical treatment system.



6. Residual efficacy. One of the anecdotal hallmarks of D7 is the observation that mold does not come back. This may also have residual sanitization implications.
7. When applied to a surface contaminated with blood, D7 vigorously effervesces upon contact. This provides the user with an easily visualized map of blood contaminated surfaces.
8. Multimodal efficacy performance. Most products rely upon one mechanism to defeat pathogenic targets. D7 uses several different mechanisms;
 - a. Oxidation via hydrogen peroxide, Percarbonates and peracetic acid
 - b. Membrane disruption and subsequent lysis using quaternary amines
 - c. Protein denaturation using safe solvents
 - d. Chemical attack using strong nucleophiles promoted by micellar catalysis
 - e. Vigorously attacks biofilms
 - f. Residual sanitization is postulated
 - g. It's detergency action softens up hard to remove water resistant films
9. Disinfection efficacy against Bacteria, Viruses, Fungus and Mildew along with chemical decontamination.
10. While data is forthcoming, there is a high degree of probability that D7 maintains its efficacy at dilutions of up to 1 to 1000 for certain organisms.
11. The fact that D7 incorporates Quaternary Amines as part of its active chemical package should not be viewed as a negative. Disinfectants are designed to be toxic to pathogens. This is one of the reasons the EPA does not embrace the idea of "Green" in relation to disinfectant labeling.
12. In an absolute emergency, I for one would not have a moment's hesitation jumping into a vat of D7 to decontaminate myself. The human contact toxicity risk is very low and residues easily removed with water.
13. Efficacy of D7 is not entirely dependent upon pH conditions or soil load.
14. Sandia National Laboratories has demonstrated that D7 is capable of defeating aerosolized toxins using an electrostatic fogging system. It is highly probable that D7 could "knock down" aerosolized pathogens in a large scale animal husbandry operation.
15. The quaternary amines in the formula can act as a corrosion inhibitor. Quaternary amines are commonly used in oil drilling as corrosion inhibitors. D7 can be modified to enable this mechanism.