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The Advantages of Ionized Hydrogen Peroxide (iHP®) compared to Vaporized Hydrogen Peroxide (VHP®)

Comparison Criteria	VHP®	iHP®
Mode of Delivery	VHP® is very difficult to maintain as a gas at operating temperatures and conditions, and necessitates extensive process control to maintain optimal conditions. VHP® must be operated under "dry" conditions because it is very difficult to maintain VHP® in the "vapor" phase at relative humidity greater than 30% and also the presence of condensing moisture renders VHP® ineffective upon surfaces. These engineering requirements limit the utility of VHP® to enclosed environments as it is not suitable for large or open area decontamination.	iHP® is a charged aerosol and functions at all normal ambient conditions without special treatment of the environment being decontaminated. iHP® is perfectly suitable for both enclosed and open environments.
Prep Time	VHP® requires time to pre-condition the area to be treated (usually hours) before exposure.	iHP® does not require any pre-conditioning of the area and can be applied immediately.
Decontamination	VHP® requires a minimum of 30 minutes exposure under optimized conditions to decontaminate surfaces.	iHP® decontaminates on contact, with demonstrated high level efficacy (10^6)
HVAC Approach	VHP® is not suitable for fumigating HVAC systems because it corrodes the ducts and has inconsistent activity in the presence of metals.	iHP® has proven suitable for treatment of HVAC systems in a government funded program.
Fumigation Coverage	Due to limited molecule mobility and sensitivity to moisture, VHP® is very limited in the overall area it can practically treat.	iHP® is not limited in the overall area and can treat because it is not sensitive to moisture and the molecular mobility is enhanced by the repulsion of the charged aerosol droplets.
Compatibility	VHP® is a strong, non specific, oxidant that decomposes very slowly. In fact, the efficacy of VHP® is predicated upon it remaining active for long periods of time. It is not compatible with iron and other ferrous metals because of its reactivity and its long exposure time.	iHP® is a powerful oxidant that requires only seconds to decontaminate. Since the exposure time is short, iHP® is safe for use around metals and other materials.
Absorption	Absorbing materials must be completely removed from areas to be treated with VHP® because the residual hydrogen peroxide will continue to oxidize objects that come in contact with the absorbing material, as well as the material itself. All cellulose and fabric materials must be separately decontaminated and replaced including common office furnishings and carpet.	Absorbing materials do not need to be removed because iHP® decomposes quickly into oxygen and water and does not continue to oxidize objects that come in contact with the absorbing material.
Monitor	VHP® requires highly (30%-59%) concentrated hydrogen peroxide solutions, which are dangerous. Concentrated hydrogen peroxide causes irreversible eye damage on exposure and poses an explosive hazard if it becomes contaminated by metals and organics.	iHP® uses a low percentage hydrogen peroxide liquid solution similar to the solutions sold “over the counter” at pharmacies. iHP® solution is safe for normal exposure and does not pose a health or safety hazard.
Chemical Efficacy	VHP® is not effective against chemical warfare agents or toxic chemicals. VHP® must be modified by combination with ammonia gas in order to penetrate into thickened chemical agents or toxic industrial chemicals. Modified VHP® has additional handling restrictions and toxic hazards associated with its use.	In third party tests, iHP® has proven that it decontaminates chemical warfare agents and toxic industrial chemicals. Since iHP® is an aerosol spray it penetrates thickened chemicals just as spray cleaners penetrate greasy dirt.