



## Comparison of Health and Environmental Hazards for Alternative Dry Cleaning Technologies<sup>1</sup>



	Technology <sup>2</sup>	Primary Human Health and Environmental Hazards	Other Considerations
	PROFESSIONAL WET CLEANING	<ul style="list-style-type: none"> <li>• None Identified</li> </ul>	<ul style="list-style-type: none"> <li>• California Air Resources Board offers \$10,000 grants for conversion (AB 998)</li> </ul>
	CO <sub>2</sub> cleaning <sup>3</sup>	<ul style="list-style-type: none"> <li>• None Identified</li> </ul>	<ul style="list-style-type: none"> <li>• California Air Resources Board offers \$10,000 grants for conversion (AB 998)</li> <li>• Machine must be maintained to avoid CO<sub>2</sub> leaks</li> </ul>
	Hydrocarbon solvents: •DF-2000™ •EcoSolv® •Shell Sol •PureDry®	<ul style="list-style-type: none"> <li>• Neurotoxicity, eye, skin and respiratory irritation</li> <li>• Potential concerns for persistence and aquatic toxicity</li> <li>• Complex mixtures which may contain other ingredients of concern</li> </ul>	<ul style="list-style-type: none"> <li>• Emits smog forming volatile organic compounds (VOCs)</li> </ul>
	GreenEarth® (D5) solvent	<ul style="list-style-type: none"> <li>• Suspected carcinogen, reproductive toxin</li> <li>• Liver, immune and nervous system effects</li> <li>• Persistent in environment; detected in fish</li> </ul>	---
	CO <sub>2</sub> cleaning <sup>3</sup> with Micell Technologies	<ul style="list-style-type: none"> <li>• Possible use of perfluorooctanoic acid (PFOA) in Micell technology raises concerns for endocrine disruption, reproductive and developmental effects and persistence/bioaccumulation</li> </ul>	<ul style="list-style-type: none"> <li>• Machine must be maintained to avoid CO<sub>2</sub> leaks</li> </ul>
	Rynex™ solvent	<ul style="list-style-type: none"> <li>• Chemical identity withheld as trade secret</li> <li>• Primary ingredient likely to be dipropylene glycol t-butyl ether (DPGTBE)</li> <li>• DPGTBE structurally related to a listed Proposition 65 carcinogen and predicted to be persistent</li> </ul>	<ul style="list-style-type: none"> <li>• Emits smog forming VOCs</li> <li>• Complete assessment not possible without information on identity and hazards of chemical ingredients</li> </ul>
	Hydrocarbon solvent: Stoddard solvent blend	<ul style="list-style-type: none"> <li>• Contains aromatic hydrocarbons (e.g. benzene, a carcinogen)</li> <li>• Neurotoxic, eye, skin and respiratory irritation</li> <li>• Potential concerns for bioaccumulation and aquatic toxicity</li> </ul>	<ul style="list-style-type: none"> <li>• Emits smog forming VOCs</li> </ul>
	Perchloroethylene	<ul style="list-style-type: none"> <li>• Carcinogen (California's Proposition 65 list)</li> <li>• Liver and kidney effects</li> <li>• Neurotoxic, eye, skin and respiratory irritation</li> <li>• Persistent in the environment</li> </ul>	<ul style="list-style-type: none"> <li>• Mandatory phase out in progress (Bay Area Air Quality Management District)</li> </ul>
	1- Propyl bromide	<ul style="list-style-type: none"> <li>• Male and female reproductive toxicant and developmental toxicant (California's Proposition 65 list)</li> <li>• Neurotoxic, eye, skin and respiratory irritation</li> </ul>	<ul style="list-style-type: none"> <li>• ILLEGAL per CA Fire Code 1204.1</li> <li>• Flammable liquid (Class I)<sup>4</sup>, NFPA rating 3</li> <li>• Use without sufficient stabilizer likely to cause corrosion and damage to cleaning equipment<sup>5</sup></li> </ul>

<sup>1</sup>This is a hazards based assessment of alternative garment cleaning technologies

<sup>2</sup>Green Jet refreshing technology can be used to supplement an existing professional wet or dry cleaning machine: [www.drywetcleaning.com](http://www.drywetcleaning.com)

<sup>3</sup>This technology uses reclaimed CO<sub>2</sub> so no new greenhouse gases are generated.

<sup>4</sup>Class determined based on flash point listed in MSDS for each solvent

<sup>5</sup>Wolf, Katy. 2006. n-Propyl Bromide Destroys Equipment in Dry Cleaning Plant. <http://irta.us>