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Implementing green solvent solutions in production activities

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Chemical characteristics dictate that any solvent that will have a more benign environmental and toxicological characteristic will have different behavioral characteristics. It becomes necessary to adopt systematic implementation guidelines for the required substitution. This paper will present specific guidelines for successfully implementing the adoption of alternate green chemistry in a given process related to industrial production, manufacturing and service related big box facilities. It will present a tested and easily utilized method for identifying the sources of hazardous waste, hazardous air emission, and worker-safety issues associated with the use of conventional solvents in most chemical use processes. Manufacturing processes, such as assembly, inspection and coating applications often involve the use of toxic solvents and degreasing chemicals throughout. The potential for worker exposure concerns, along with the highly regulated air emissions, as VOCs or HAPs, and disposal of these materials make them a high source for impact associated with regulatory burdens and can be low hanging fruit for replacement opportunities. Employing these guidelines will help assure a successful implementation. Solvent substitution guidelines include: Identification of suitable candidates, Process mapping, Group theory based analysis, Hybrid-Chemistry approaches, Engineering and QA analysis, Off-line testing, Orientation of technicians and supervisors, Training employees, Implementation, Process changes. Ongoing Support, Evaluation and of course Trouble shooting. This paper provides examples of successful solvent substitution projects that have been undertaken, the processes involved in assessment and implementation, as well as considerable detail on organizing process changes in production to accommodate the new materials and thereby gaining the environmental and health benefit without negatively affecting operational needs. These projects will showcase the tools needed, as regulations drive industry towards alternative chemicals, to ensure successful implementation of green, non-hazardous solvents in some processes. It will outline how they have successfully reduced hazardous emissions, hazardous waste generation and reduced the carbon footprint along with significant cost savings and improved worker exposure liability concerns for any organization that chooses to go green. It will do so with a thorough presentation of procedures that ensure a higher potential for success, and thereby less dependency on industrial habit and conventional chemicals that burden production by their ever increasing regulatory requirements.

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