

**ASSESSMENT, DEVELOPMENT AND DEMONSTRATION OF LOW-VOC  
MATERIALS FOR CLEANING ULTRAVIOLET AND ELECTRON BEAM  
CURABLE COATINGS AND ADHESIVES**

Prepared for:  
South Coast Air Quality Management District  
Under Contract # 03133

Prepared by:  
Mike Morris and Katy Wolf  
Institute for Research and Technical Assistance

May 2006

## TABLE OF CONTENTS

Disclaimer.....	i
Acknowledgements .....	ii
Executive Summary .....	iii
Table of Contents .....	v
List of Figures .....	vi
List of Tables.....	vii
I. Introduction and Background .....	1
Tests of Alternative and Low-VOC Cleaners .....	1
Cost Analysis.....	2
Report Structure .....	2
II. Analysis of the Alternative Cleaning Agents .....	3
Sandberg Furniture Mfg. Co., Inc.....	3
Medtronic Diabetes .....	5
DRS Sensors & Targeting Systems, Inc.....	6
Huhtamaki .....	8
III. Summary and Conclusions.....	10
Appendix A	
Material Safety Data Sheets for High VOC and Low-VOC Cleaners .....	12
Appendix B	
UV Coating Used at DRS Sensors & Targeting Systems.....	44

**LIST OF FIGURES**

Figure 2-1: Flat Line at Sandburg Furniture ..... 4

Figure 2-2: Press at Huhtamaki ..... 8

## LIST OF TABLES

Table E-1:	Results of Low-VOC Alternatives Testing.....	iii
Table 2-1:	Facilities Participating in the Project.....	3
Table 2-2:	Annualized Cost Comparison for Medtronic Diabetes .....	6
Table 2-3:	Annualized Cost Comparison for DRS Sensors & Targeting Systems .....	8
Table 2-4:	Annualized Cost Comparison for Huhtamaki.....	9
Table 3-1:	Results of Low-VOC Alternatives Testing.....	10