



## Project Summary

# SAGE 2.0, Solvent Alternatives Guide, User's Guide

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This guide provides instruction for the use of the SAGE (Solvent Alternatives Guide) software system, version 2.0. SAGE recommends solvent replacements in cleaning and degreasing operations. The system leads the user through a question-and-answer session. The user's responses allow the system to develop a list of alternative chemistries and processes. The user may then review brief descriptions of the alternatives on the computer screen. If any of the alternatives are of interest, the user may request SAGE to generate a detailed report for each. The report includes general information, safety/environmental concerns, industrial case studies for the selected alternative, and information on state technical assistance programs in the user's geographical location that can provide additional information.

*This Project Summary was developed by EPA's Air and Energy Engineering Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).*

### Background

In 1992, EPA initiated a program to assist in the selection of low-polluting industrial surface cleaning alternatives. The objective of the program was to make the identification of cleaning options simple, yet based on the latest technical and economic feasibility information. This objective could be most easily accomplished, using of a computer-based logic tree for-

mat. The resulting system, called SAGE (Solvent Alternatives Guide), uses the speed and capability of the computer to evaluate a large number of operating parameters and conditions to identify the most viable surface cleaning option for many situations.

The first BETA test version (1.0) of SAGE was released in May 1993 and placed on EPA's Control Technology Center (CTC) Bulletin Board, (919) 541-0800, for downloading and review. Since its release, there have been over 1000 downloadings of SAGE from the Bulletin Board and, in addition, 500 copies of the system disk have been mailed to requestors. Many of the responses from users of the BETA test version indicate that, in a few minutes, the system confirmed their own conclusions, which had been derived from many hours of study and analysis.

### The System

SAGE is not a data base; it is a personal computer (PC)-based logic tree system that evaluates the user's operating scenario, then identifies alternative solvent chemistries and processes that best suit the defined operating and material requirements. The system asks a series of questions concerning the user's operation, (e.g., part size, present processing chemistry, part cost, production rate, and contaminants or soils). Based on the answers provided, a limited number of recommended options are shown that represent the most probable alternate cleaning chemistries and/or processes. A report is then generated by SAGE, presenting the recommended options and important technical parameters for implementing the op-



tions. The report provides information on environmental considerations to be taken into account, regulations that must be addressed when using each alternative, safety requirements, economic considerations, equipment requirements, and other information that must be considered before implementing the recommended alternatives. Finally, the report includes examples of case studies with a similar operating scenario and requirements.

SAGE is designed for use by both technical and nontechnical individuals ranging from shop foremen to government regulatory agency personnel. It requires only a 286-level machine and, if a hard-copy report is required, a printer. The SAGE system is scheduled for continued upgrade through FY 95, with semi-annual release of new versions during this period. Subsequent versions will incorporate additional substrate cleaning requirements and additional technical data. Further, a process

and facility design capability, an economic and cost projection capability, and a summary of regulations by state will be incorporated and continually improved as data are acquired.

While the final selection of a process alternative must ultimately be made by the user, SAGE will provide the user with the information needed to make that choice. For more information on SAGE, call the EPA Control Technology Center at (919) 541-0800.

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*The complete report, entitled "SAGE 2.0, Solvent Alternatives Guide, User's Guide," including manual and diskette, (Order No. PB94-501764; Cost: \$90.00, subject to change) will be available only from:*

*National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161  
Telephone: 703-487-4650*

*The EPA Project Officer can be contacted at:  
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