



Creating a Green and Profitable Work Environment

Guide by
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Introduction

- An informative guide to “green” cleaning and maintenance practices which provide efficient, productive and healthy operation of commercial buildings in Florida.
- Collaboration among DEP P2 Program, FSEC, green cleaning industry, and pilot facilities.





Scope of Guide

- Routine cleaning and maintenance activities occur in new and old buildings alike, and have a profound effect on the environmental and economic performance of a building.
- Assembly of BMP's that deal with improving performance of these routine actions.
- LEED® Standards more comprehensive, and better suited to new construction or renovation.
- Guide designed for commercial buildings in general, but "office" most applicable.



Benefits for Business Occupant Health

- Occupants spend a great deal of their time within the building.
- Dust, gases (VOCs), and biologicals impact different individuals in different ways.





Benefits for Business

Financial Benefits: Worker Productivity

- Salaries/benefits largest recurring cost.
- Small increases in productivity lead to large increases in profits.
- US EPA and US DOE estimate IAQ problems account for 3-20% losses in worker productivity (\$ billions lost annually).
- Absenteeism due to illness & degraded performance from allergies, headaches, fatigue, odors, etc.




Benefits of Green for Business

Financial Benefits: Other recurring costs



- 15% - 30% savings in cleaning costs.
 - Through effective cleaning.
- Up to 35% savings in energy costs.
- 20% - 60% savings in water costs.





Benefits of Green for Business Building Durability


- Green maintenance minimizes frequency of performing upgrades and equipment replacement.
- Selection of equipment partially based on longevity.
- Protection of existing equipment and structure through preventative maintenance.

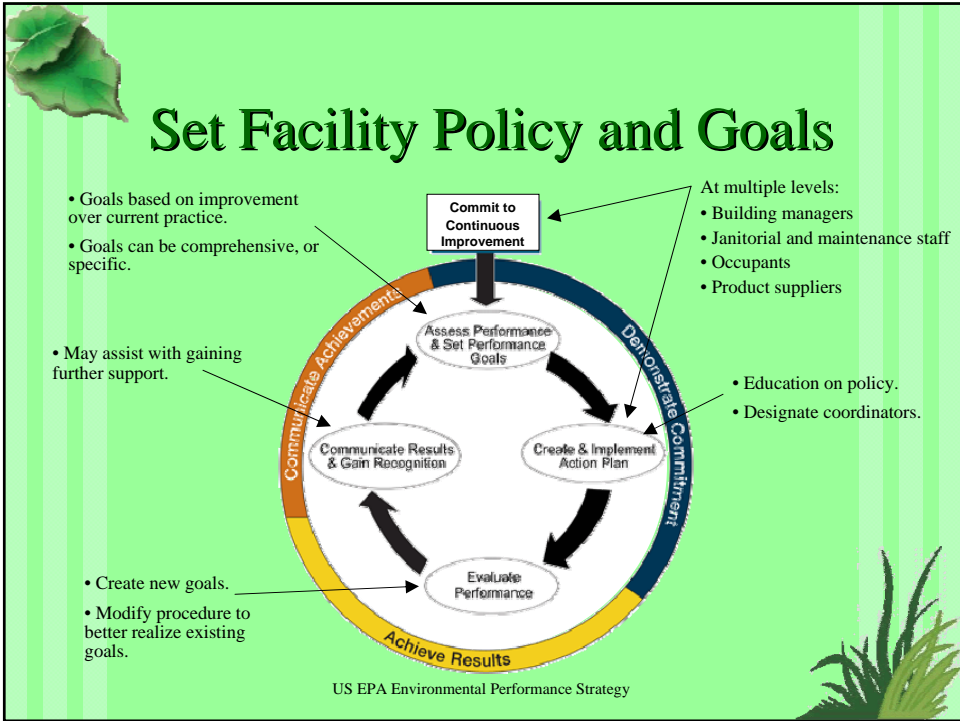



Organization of Guide

• Set Facility Policy and Goals	• Identify Opportunities II – Energy Use
• Conduct a Baseline Study	• Identify Opportunities III – Water Use
• Identify Opportunities I - IAQ	

Appendix A – Opportunities when Renovating
Appendix B – Cleaning Product Considerations





Conduct a Baseline Study

3.0 Green and Profitable Work Environment Baseline Checklist

This checklist is designed to help the building manager determine current maintenance and cleaning activities taking place in the building that are within the scope of this guide, and the potential to modify activities based on the guide's recommendations. Whether the activity is carried out by in-house staff, or outside contractors, it is important to review the details of the activities with the persons responsible to determine if improvements are possible. If any of the items do not apply to your facility, write "N/A".

	Current Practice	Needs Attention
SET FACILITY POLICY AND GOALS		
Written environmental policy in place.		
Performance goals are set.		
Periodic training of staff and occupants.		
CLEANING AND MAINTENANCE AND INDOOR AIR QUALITY		
<i>Products</i>		
Use of biobased products encouraged.		
Staff familiar with format and location of MSDS sheets.		
Staff familiar with desirable/non-desirable product ingredients/properties and products in use have been screened accordingly for:		
health hazards		
environmental hazards, biodegradability, and recycled content		
availability of concentrate		
Staff follows instructions for product use including dilution, safety, and storage.		
Proper disposal determined and appropriate training given to staff.		
<i>Techniques and Equipment - General</i>		
Major cleaning activities scheduled when building is unoccupied and adequate ventilation used. Occupants informed of operations.		
Concise records of cleaning operations kept.		
Procedures in place to report and correct accidents, spills, emergencies, and general complaints.		
Chemical portion control equipment in use.		



Identify Opportunities I: Cleaning and Maintenance and IAQ

➤ Cleaning Products

- Important to be safe, as well as effective
- Properties
 - Low Toxicity (humans and aquatic life)
 - Biodegradable
 - Not Corrosive
 - Low VOC content
 - Multi-purpose
 - Concentrated
 - Reduced/Reusable/Recyclable Packaging



Identify Opportunities I: Cleaning and Maintenance and IAQ

➤ Where to find product data?

- Product label
- MSDS
 - Protective equipment, first aid, disposal
- Appendix B of guide
 - Green Seal Standard GS-37 and PA Green Building Operations and Maintenance Manual
- Manufacturer representative

General Purpose Cleaner

Material Safety Data Sheet

MANUFACTURER'S NAME: THE SHERWIN-WILLIAMS CO.
135 Prospect Avenue N.W.
Clemson, South Carolina 29634

EMERGENCY TELEPHONE NO.: (800) 368-7378
INDUSTRY TELEPHONE NO.: (803) 646-2000
DATE OF PREPARATION: September 01, 1999

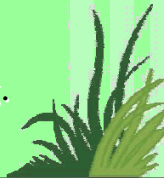
Section 1 — Product Identification
143-0412 General Purpose Cleaner

Section 2 — Hazardous Ingredients

CAS No.	Ingredient	% by Weight	ACRIDITY	OSHA PEL	UNIT	Upper Extremities
78-08-4	Ethylene Glycol	1	2000	1000	ppm	Yes, 0
100-97-9	Borax	6	100	100	ppm	Yes, 0
111-76-2	2-Methoxyethanol	6	25	25	ppm (skin)	Yes, 0

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➤ Important to conduct product safety training.





Identify Opportunities I: Cleaning and Maintenance and IAQ

➤ Other product considerations:

- Should be used as intended.
- Includes proper dilution.
- Portion Control Equipment
 - Prevent misuse through labeling.
 - Enhance safety by minimizing contact.
 - Control spillage.
 - Reduce product use and packaging by 30-65%.
 - Improve inventory control and space utilization.



Identify Opportunities I: Cleaning and Maintenance and IAQ

➤ Techniques & Equipment

- The cleaning industry estimates that approximately 85% of all soils and particles that staff remove from a building have been tracked in from the outside through entryways.





Identify Opportunities I: Cleaning and Maintenance and IAQ

- Soil Control
 - Maintain areas outside of building.
 - Utilize devices to collect soils.



Identify Opportunities I: Cleaning and Maintenance and IAQ

- Soil Removal
 - Frequency and degree should be scheduled according to amount of foot traffic/occupancy in a particular area.
 - Use proper techniques for floors and elevated surfaces so particles are removed, and not just stirred up.





Identify Opportunities I: Cleaning and Maintenance and IAQ

➤ Biological Control

- Key to mold control is moisture control.
 - Maintenance of building exterior and irrigation systems important.
 - Indoor humidity control is important – attend to HVAC maintenance and minimize uncontrolled airflow.
- Know what areas require sanitization / disinfection and conduct accordingly.




Identify Opportunities I: Cleaning and Maintenance and IAQ

➤ Integrated Pest Management



- Process for achieving long term, environmentally sound pest suppression.
- Control strategies extend beyond pesticides to include techniques that reduce the food, harborage, and access of pests.
- IPM does not eliminate pesticides, nor solely substitute “good” pesticides for “bad” pesticides.






Identify Opportunities I: Cleaning and Maintenance and IAQ

- 5 principles of IPM
 - Monitoring and prevention of pest populations.
 - Application of pesticides only “as needed” after physical controls have been implemented.
 - Selecting the least hazardous pesticides for control of target pests.
 - Precision targeting of pesticides to areas not contacted or accessible by occupants.
 - Notification of occupants as to when and where pesticide application is to take place.
- Requires involvement and coordination of maintenance staff, pest control contractors, and occupants.



Identify Opportunities I: Cleaning and Maintenance and IAQ

- Recycling
 - Training and ongoing education is key to a successful program.
 - Procedures may vary according to the local recycling infrastructure.
 - Policies, goals, and procedures should be put in place by management for individuals to follow.





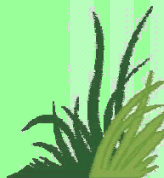
Identify Opportunities II: Cleaning and Maintenance and Energy Use

- Energy is typically a property's single largest operating expense (30%).
- Savings of up to 35% are possible through operations and maintenance alone.
- Other benefits include improving occupant comfort, IAQ, and building durability.



Identify Opportunities II: Cleaning and Maintenance and Energy Use

- Energy efficient indoor and outdoor lighting.
- Policy that targets reduction in supplemental loads.
- Building envelope maintenance.
- Effective control of building systems.
- Testing, adjusting, and balancing of building systems and controls.
- Heating and cooling system maintenance.
- Financing energy improvements.





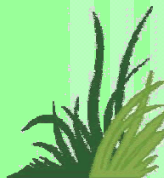
Identify Opportunities III: Cleaning and Maintenance and Water Use

- Indoor water use
 - Retrofit older faucets with EPACT compliant models or use conservation devices.
 - Consider automatically controlled water fixtures.
 - Monitor all water fixtures and piping for leaks.



Identify Opportunities III: Cleaning and Maintenance and Water Use

- Outdoor water use
 - Practice “Florida Friendly” landscape and irrigation practices as encouraged by UF Florida Yards & Neighborhoods program.
 - Proper plant selection and placement.
 - Proper fertilization techniques.





Pilot Facility Involvement

- Museum of Fine Arts, St. Petersburg.
- Sarasota County Government
 - Environmental Services Bldg. and Administration Bldg.
- Damion Maintenance Services, Melbourne
 - Ensco, Inc. Office Bldg.
- Brevard County Schools, Viera
 - Educational Services Facility
- FL DEP Office, Ft. Myers



Museum of Fine Arts

- Showed a dedicated interest to all aspects of the guide and examined all areas for potential.
 - Many concepts were new to them, and previously not thought of.
- Conducted a comprehensive lighting retrofit and expect immediate benefits.
- Plans underway to construct a new facility that incorporates several green features.





Sarasota County

- Many of the guide's recommendations already part of standard practice.
- County had already begun a green janitorial products pilot of their own.



Brevard County Schools

- Also focused on the cleaning aspects of guide.
- Currently have detailed custodial standards in place similar to guide's recommendations.
 - 90% of cleaning products comply
- Plans to incorporate aspects of the guide into training programs.
 - Especially benefits of green cleaning products such that staff can make informed decisions about what to use.





Conclusions

- Overall, guide has proven to be useful in a variety of situations.
- All aspects of guide do not apply universally.
 - Level and degree of awareness differed.
 - Aspects already considered differed.
 - Aspects chosen for investigation differed.
- Points towards importance of managerial involvement and commitment up front.
 - Act as both a filter, and a distributor for the guide's recommendations.



For More Information

- Florida Department of Environmental Protection
Pollution Prevention Program

www.dep.state.fl.us/waste/categories/p2/pages/greenbuilding.htm

- Florida Solar Energy Center

www.fsec.ucf.edu/en/consumer/buildings/commercial/cleaning.htm





Guidance on Implementation

- Who to approach
- Motivational strategies
- Importance of written commitments
- Anticipating “barriers”
- Success story examples
- Tips to get started
- Tips to ensure continued success



Acknowledgements

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Green Seal

The Center for a New American Dream





Thank You

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