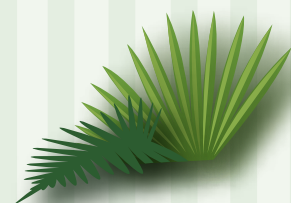


Creating a Green and Profitable Work Environment



An informative guide to "green" cleaning and maintenance practices which provide efficient, productive and healthy operation of commercial buildings in Florida.

2003



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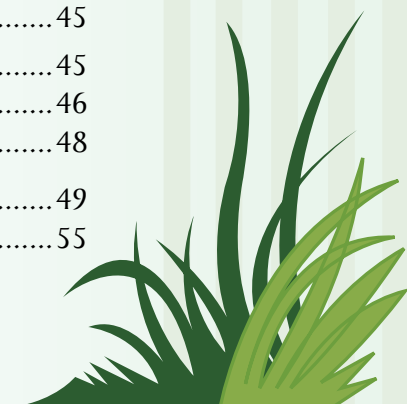
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1.0 Introduction to Guide

An important aspect of what separates the newly constructed buildings of today from older buildings is their environmental performance. Due to dwindling resources, rising energy and water costs, and awareness of the effects of air quality both inside and outside of the building, new buildings are constructed to not only fulfill their function, but also with conservation and health in mind. However, although the focus on construction, specification, and commissioning has changed, there is a commonality that links new buildings with those of the past. Often overlooked with regards to impacting the building's durability, energy and water use, and indoor air quality are recurring cleaning and maintenance activities. Such activities, including routine and scheduled actions, as well as emergency and other unplanned actions, have a profound effect on the environmental performance of a building, especially considering the fact that they continue over the entire life of the building, which can span 25-50 years.

Improving and/or maintaining the environmental performance of a building through cleaning and maintenance is an important consideration for many reasons. First and foremost, it can have direct positive impacts on the health of the occupants, who in many cases spend a significant amount

of time within the building. Particles such as dust, gases such as volatile organic compounds (VOCs), and biological materials such as mold can impact the health of occupants on a variety of levels, from simple annoyances such as itchy eyes, to more severe conditions such as asthma triggers. Poor

indoor air quality can result from improper or infrequent cleaning and maintenance practices, but it can also result from various cleaning agents and other supplies used. Therefore,

most susceptible are the individuals who are performing the cleaning and maintenance. Employees and visitors are also susceptible, especially children, the elderly, and those with pre-existing health conditions such as allergies and asthma. Poor indoor air quality can also result from improper maintenance and operation of the buildings heating, ventilation,

and air conditioning (HVAC) systems. Such problems may be difficult to uncover without thorough investigation, and can result in short-term effects such as comfort complaints, as well as

long-term effects on the quality of the indoor environment and the health of occupants.

Improving the environmental performance of a building through cleaning and maintenance practices can also lead to significant financial benefits. The health and overall well-being of employees is directly related to their productivity, morale, and absenteeism.

Financial benefits of green cleaning and maintenance include:

- *15-30% savings on cleaning costs*
- *35% energy savings*
- *20-60% water savings*

Streamlining cleaning and maintenance can lead to:

- *Improved occupant health*
- *Financial benefits*
- *Better building durability*



Considering that generally the largest recurring cost in a business environment is the salaries and benefits of employees, very small increases in productivity can lead to large increases in profits. Improving environmental

The term “green” has come to be defined as a holistic approach to improving environmental aspects of the built environment through energy and water conservation, healthy indoor environments, and the use of recycled and recyclable materials.

performance of cleaning activities focuses on streamlining operations to reduce the wasting of supplies, and improve the effectiveness of cleaning practices

thereby decreasing overall cleaning costs. It is estimated that the costs associated with cleaning the average urban office building are \$1.38 per square foot, and can run as high as \$2.32 per square foot. Savings of 15%-30% from implementing improved measures have been reported. Also affecting the bottom line of a business operating within the building is the amount of money spent on recurring energy and water use. Energy savings of up to 35% are possible through modifications in operational and management practices alone, and water savings of 20%-60% are possible simply by modifying landscaping and irrigation practices. Of extreme importance to the building owner is the durability of the building's structure and systems, and the frequency of performing upgrades and equipment replacement. Improving the environmental performance of cleaning and maintenance activities involves selection of products and

equipment partially based on longevity, as well as protecting the existing equipment and structure through preventive maintenance such that its full lifetime can be realized.

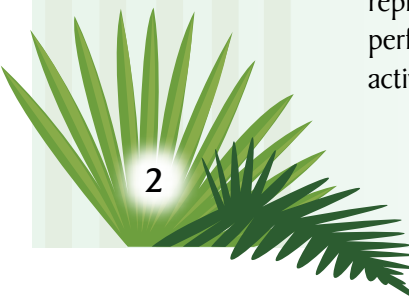
This guide is intended to provide a building owner or manager with suggestions and examples of how the environmental performance of a building can be improved through “green” cleaning and maintenance. The term “green” has come to be defined as a holistic approach to improving environmental aspects of the built environment through energy and water conservation, healthy indoor environments, and the use of recycled and recyclable materials. This guide is not intended for janitorial and maintenance personnel directly, for every building is different, and activities taking place within the building, architectural aspects, and current practices need to be taken into account in order to determine the applicability of the guide to an individual building, and before the recommendations can be put into practice.

This guide has been developed for commercial buildings in general, and does not comment on the applicability of recommendations to different building uses (retail, industrial, office, laboratory, etc.). However, depending on

For information on issues outside the scope of this guide, contact the Florida Department of Environmental Protection P2 Program: www.dep.state.fl.us/waste/categories/p2/default.htm

the presence or absence of certain architectural features, most of the guide's recommendations should apply to an office building type of setting. There

are certainly building activities and types that are beyond the scope of this guide such as hospitals and laboratories where current practice, as well as state and federal regulations will supercede this guide's



recommendations. To pursue additional or industry specific source reduction, waste minimization and recycling goals that go beyond the scope of this guide a building manager or other similar individual can contact the Florida Department of Environmental Protection Pollution Prevention Program. Contact information is provided in the Acknowledgment section of this guide.

The guide's recommendations primarily deal with maintenance and upkeep of an existing building and its associated equipment. Although suggestions are made that may involve the purchase of minor equipment and supplies, detailed design considerations for major renovations and new equipment purchases are considered to be outside the scope of this guide. However, an appendix (Appendix A) is included to present potential opportunities for consideration if a small scale renovation project is planned for the building.

The remainder of the guide is organized as follows:

- **Set Facility Policy and Goals:** This section deals with determining a goal for the effort and setting building policies in order to gain support for efforts in terms of cooperation at multiple levels: from janitorial and maintenance staff, to building managers, to outside contractors, to other workers and employees.
- **Conduct a Baseline Study:** This section will assist the building manager in determining how the individual building features and the current cleaning and maintenance practices fit in the context

of this guide. A simple checklist is included that will help identify areas in need of attention.

- **Identify Opportunities I – Cleaning and Maintenance and Indoor Air Quality:** This section includes information on the selection of cleaning products to maintain a healthy building, including how to read a material safety data sheet in order to use each product safely. Details on effective techniques and equipment are given for control of soils, control of biological pollutants, and control of gaseous pollutants, including pest control activities. Information on facility-wide recycling and trash control is also provided.
- **Identify Opportunities II – Cleaning and Maintenance and Building Energy Use:** This section includes information on how routine and periodic maintenance activities can reduce the energy consumption in a commercial building including lighting maintenance, HVAC maintenance, and building envelope maintenance. A description of available resources for financial assistance is also provided.
- **Identify Opportunities III – Cleaning and Maintenance and Building Water Use:** This section deals with strategies to reduce water consumption both inside the building, as well as outside the building focusing on water use monitoring, water fixture retrofits, and landscape and irrigation practices.

