

100% Sustainable Cleaning Program

A VISION for SUSTAINABLE BUILDINGS at BOSTON UNIVERSITY



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Overview

The Sustainable Cleaning Program for this building incorporates sustainable cleaning products and materials that are certified sustainable cleaning products – 100% of them.

Building environments have a significant impact on human and environmental health, learning outcomes, productivity and overall sustainability. Based on extensive industry research focused on building maintenance and operations, technology and cleaning science, Boston University has identified the best tools, products and practices for maintaining sustainable buildings that protect human health and the environment. This policy adheres to the LEED v3 2009 for Existing Buildings: Operations & Maintenance standard.

The University began its sustainable cleaning program in the 1990's to address concerns for personal safety and the desire to increase efficiencies. A major step was the installation of cleaning command centers to control chemical use, minimize packaging waste, reduce the University's carbon footprint, and lower the chances of chemical related injuries. The program has developed over the years by following best business practices to protect the campus community, reduce waste, and meet the cleanliness goals of the University. Concentrated ongoing efforts have resulted in better means and methods resulting in a more efficient custodial operation. The origins of the sustainable cleaning program at Boston University were based on the collective concerns of Facilities Management & Planning, faculty, staff, and students, combined with information from vendors as technology in the industry changed.

The campus wide program gained momentum when President Brown launched the University's sustainability program in September 2008.

In 2006 the University conducted its first waste audit and determined its recycling rate was 3%. In 2011 the University's recycling rate increased to 31%, but more importantly its total waste reduced by 10% from its 2006 levels.

The following sustainable cleaning procedures contributed to this waste reduction:

- Greater than 60% source reduction from folded to rolled paper
- Greater than 54% source reduction from small toilet paper rolls to large coreless rolls
- Greater than 30% source reduction from efforts to right size its waste liners
- Preventative maintenance program to extend lifecycle of equipment by over 20%
Cradle-to-cradle approach used for cleaning equipment where suppliers take back equipment at the end of its useful life to the University.
- Greater than 70% chemical and packaging source reduction through concentrated chemical command centers.

Purpose

Formal guidance is necessary to maintain and increase Boston University's commitment to purchasing environmentally and socially responsible cleaning products and equipment. The purpose of this Sustainable GS-53 Program is to coordinate efforts to

achieve Boston University's Sustainability Vision by focusing attention and resources on high priority environmental, health, and cost factors.

Using sustainable products will reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems and the environment.¹ We will minimize waste and help reduce the environmental and carbon footprint of the University by increasing purchasing of cleaning materials, products, and services from manufacturers and suppliers who share our commitment to the environment and human health.

Benefits

There are four principal benefits to Boston University's Sustainable Cleaning Program:

- Reduced operating costs and increased water and energy savings through reduced material consumption and packaging waste
- Reduced waterborne and solid waste through reduced amounts of hazardous waste entering the waste stream (lead, mercury, chromium, cadmium, beryllium)
- Improved regional air quality and human health
- Increased market support for recycled materials

Successful supplier partnerships will allow BU to implement additional policies like sustainable cleaning, throughout all facets of the University. Increased environmental awareness of faculty, staff and students on purchasing and supply chain management as a key driver toward BU sustainability, and continued education and management will help implement strategies to effectively utilize sustainable products, practices, and procedures.

Program Statement

This Sustainable Cleaning Program considers economic, social, and environmental impacts of the cleaning materials used on campus. Boston University encourages dialog on global environmental sustainability, considers environmental factors when purchasing cleaning products, and facilitates continuous improvement in environmental performance through sustainable janitorial and sanitation activities. Cleaning products and equipment will also be evaluated for energy use and potential for safe, non-hazardous disposal.

Scope

This Program identifies the purchasing of "sustainable" cleaning products and equipment that meet or exceed LEED EB-O+M² purchasing standards and Green Seal GS-42. The GS-42 standard establishes requirements for cleaning service providers,

¹ LEED EB O&M: <https://www.usgbc.org/ShowFile.aspx?DocumentID=3617>

² LEED EB O+M <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=221>

including in-house and external cleaning services. Sustainable cleaning encompasses all indoor activities typically required to clean commercial, public, and industrial buildings.

This Program provides the environmental and operational framework within which all interior cleaning at Boston University will be conducted through the use of environmentally preferable products to improve indoor environmental quality and reduce waste.

This program includes:

- Sustainable Purchasing (LEED MRp1)
- High-performance Cleaning Program (LEED IEQc3.1)
- Custodial Effectiveness Assessment (LEED IEQc3.2)
- Sustainable Cleaning Products and Materials (LEED IEQc3.3, STARS OPc11)
- Sustainable Cleaning Equipment (LEED IEQc3.4)
- Indoor Chemical Pollutant and Source Control (LEED IEQc3.5, BD+C IEQc5)
- Hand Hygiene (LEED IEQp3)
- Staff Training (LEED IEQp3)
- Continuous Improvement (LEED IEQp3)

Policies

Purchasing Guidelines

Comprehensive and accurate information about the environmental performance of products or services is necessary in order to determine environmental preference. The purchase of the Carpet and Rug Institute Sustainable Label, Green Seal™ and EcoLogo™-certified cleaning products and Forrest Stewardship Council (FSC) certified paper products will help ensure superior performance. The US Green Building Council for LEED Certification program recognizes Green Seal™ and EcoLogo™- guidelines.



In general, cleaning materials, products and services are to be considered “sustainable” if they are:

- Durable as opposed to single-use or disposable
- Concentrated liquids compared to single-use containers
- Made of recycled materials, maximizing post-consumer content
- Non-toxic or minimally toxic, preferably biodegradable
- Highly energy efficient in production and use
- Recyclable, but if not, may be disposed of safely

- Produced from raw materials obtained in an environmentally sound and sustainable manner
- Manufactured in an environmentally sound, sustainable manner by companies with good environmental and social track records
- Cause minimal or no environmental damage during normal use or maintenance
- Shipped with minimal packaging (consistent with care of the product preferably made of recycled and/or recyclable materials)
- Produced locally or regionally (to minimize the environmental costs associated with shipping)

Documentation Guidelines

Through proper documentation from vendors and management, Boston University will ensure a high level of compliance to the Sustainable Cleaning Program. Documentation will follow LEED for Existing Building Operations & Maintenance³ documentation guidelines to:

- Track all sustainable cleaning purchases made for the facility, including sustainable cleaning products, janitorial paper products, and janitorial trash liners. Tracked on a building by building basis through purchasing.
- Maintain a binder or electronic folder of the material safety data sheets (MSDS) or other products information of the cleaning product and materials used in the building. Binders are kept in each Area Manager's office.
- Retain maintenance and repair log for all equipment throughout each building. Repair logs provided electronically through the CAMMS system.
- Maintain inventory for all products and equipment. Inventory provided in CAMMS.

Centralized sustainability reporting consistent with AASHE STARS and USGBC LEED systems will be used to track and report progress in this area. These metrics will be reported by *sustainability@BU*.

Roles & Responsibilities

The Director of Custodial Services has the primary responsibility for implementation of this Sustainable Cleaning Program. Other responsible parties under this Sustainable Cleaning Program include the Assistant Vice President, Operations and Services, Assistant Directors, Area Managers, and the Senior Buyer within Facilities Management & Planning.

Time Period

This program has been in practice since July 1, 2012, officially posted with Area Managers on August 15, 2012, and will remain so until it is updated and posted.

³ LEED EB O&M <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=221>

Objectives

- Implement and follow practices that promote sustainability, including steps to reduce buildings' impact on human health and the environment, increase efficiency, and reduce waste, both in Boston University's operations and those of its suppliers.
- Promote health, safety and productivity throughout campus through quality maintenance and operations of Boston University's buildings.
- Record and measure all sustainability practices for reporting, monitoring and continuous improvement purposes.

Standards & Procedures

Boston University will follow sustainable cleaning procedures to reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems and the environment.

Sustainable Purchasing

(LEED MRp1)

Boston University will follow a sustainable purchasing policy that is aligned with the U.S. Environmental Protection Agency's Environmentally Preferable Purchasing Policy to protect human health and reduce the environmental impact of materials used in the operations and maintenance of buildings. The purchasing policy will identify and outline acceptable products, tools, equipment and materials based on product ingredients and packaging.

Boston University will evaluate the items that are purchased for the building, identify more environmentally friendly alternatives and establish a policy to purchase these alternatives when economically feasible. The organization will work with suppliers to identify environmentally preferable products that meet the needs of the University

Performance Metrics

See Sustainable Cleaning Products and Materials

High-performance Cleaning Program

(LEED IEQc3.1)

A "High-performance Cleaning Program", as defined under the LEED EB O+M, establishes a sustainable cleaning program that:

- Provides an appropriate staffing plan with workload managed through CAMMS software.
- Implements training of maintenance personnel in the hazards, use, maintenance, disposal and recycling of cleaning chemicals, dispensing equipment and packaging.
- Mandates the use of sustainable cleaning products, equipment, and materials, as well as chemical concentrates with appropriate dilution systems to minimize chemical use wherever possible.
- Microfiber cleaning textiles extend the life of traditional cleaning cleaning rags by a factor of three or more and reduce the need for paper cleaning products.

Custodial Effectiveness Assessment

(LEED IEQc3.2)

Implement, manage, and audit in accordance with APPA Leadership in Educational Facilities' (APPA) "Custodial Staffing Guidelines" to determine appearance level of the facility.

Workload is managed through the CAMMS management software.

Performance Metrics

Facilities must meet a score of 3 or less (restrooms are always at a 2 or less) on audits in accordance with the APPA Leadership in Educational Facilities' "Custodial Staffing Guidelines". Audits will include the following criteria:

- APPA Space Category
- APPA Space Area
- Number of rooms in APPA Space Category
- Number of rooms audited
- Area audited
- Average APPA Score for each space type

Per APPA recommendations, at least 10% of each space type AND 10% of total floor area cleaned should be audited. Also, at least 5 rooms should be audited for each space type (unless there are fewer than 5 rooms, in which case all rooms should be audited.)

If areas are identified as falling below the expected standard the Custodial Staff will make improvements to the cleaning program accordingly.

Sustainable Cleaning Products and Materials

(LEED IEQc3.3, STARS OPc11)

"Green Cleaning Products", as defined under the LEED EB O+M, are products that meet one or more of the following specifications:

- Green Seal GS-37 Certified
- EcoLogo Environmental Choice CCD-110, for cleaning and degreasing compounds
- EcoLogo Environmental Choice CCD-146, for hard surface cleaners
- EcoLogo Environmental Choice CCD-148, for carpet and upholstery care.

Disinfectants, metal polish, floor finishes, strippers or other products not addressed above meet 1 or more of the following standards:

- Green Seal GS-40, for industrial and institutional floor care products.
- EcoLogo Environmental Choice CCD-112, for digestion additives for cleaning and odor control.
- EcoLogo Environmental Choice CCD-113, for drain or grease trap additives.
- EcoLogo Environmental Choice CCD-115, for odor control additives.
- EcoLogo Environmental Choice CCD-147, for hard floor care.
- California code of regulations⁴ maximum allowable VOC levels for the specific product category.

⁴ California Code of Regulations <http://www.green.ca.gov/EPP/building/cleaning.htm>



Hand Soaps meet one or more of the following:

- No antimicrobial agents (other than as a preservative) except where required by health codes and other regulations (e.g., food service and health care requirements).
- Green Seal GS-41, for industrial and institutional hand cleaners.
- Environmental Choice CCD-104, for hand cleaners and hand soaps.

“Green Paper Products”, as defined under the LEED EB O+M, are products that meet one or more of the following specifications:

- Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.
- Green Seal GS-01, for paper products.
- EcoLogo Environmental Choice CCD-082, for toilet tissue.
- EcoLogo Environmental Choice CCD-086, for hand towels.
- Janitorial paper products derived from rapidly renewable resources or made from tree-free fibers.

Performance Metrics

Performance will be measured based on the percent of annual spend on products Green Seal™ and EcoLogo™ certified for products where such certifications are available on the market.

There is one primary metric, the “Sustainable Compliant Spend” that will be used to measure implementation of this program and report it in the annual Sustainability Report:

$$\text{Sustainable Compliant Spend Proportion} = \frac{\text{Spend on cleaning products that meet LEED EB-O\&M standards}}{\text{Total spend on cleaning products}}$$

Sustainable Compliant Spend Proportion (percentage) = 100%

This Sustainable Cleaning Program focuses on utilizing products that eliminate unnecessary/duplicate cleaning products as well as replacing ready-to-use products with concentrated chemicals including:

Ongoing Consumables	Certification	Product
Hard Floor Care		
All Purpose Cleaner	GS-37/CCD146	Pioneer Eclipse Envirostar Green All Purpose Cleaner
Maintainer	CCD-146	Pioneer Eclipse Envirostar Green Maintainer
Floor Coating	GS-40/CCD-147	Pioneer Eclipse Envirostar Green HS 25 Floor Coating
Floor Stripper	GS-40	Pioneer Eclipse Envirostar Green Low Odor Stripper



Ongoing Consumables	Certification	Product
Carpet Care		
Carpet Prespray & Extraction Cleaner	CRI Certified, Ecologo, CCD148	Simplex Earthmate "Double Play" Carpet Prespray And Extraction Cleaner
Carpet Rinse & Neutralizer	CRI Certified, EcoLogo, CCD148	Simplex Earthmate "Refresh" Carpet Rinse and Neutralizer
Carpet Spotter	CRI Certified, EcoLogo, CCD148	Simplex Earthmate "Purge" Carpet Spotter
Bathroom Cleaners		
All Purpose Cleaner	EcoLogo, CCD146/GS-37/ Bio Preferred	Envirox H202 Hydrogen Peroxide Cleaner/Sanitizer
Disinfectant	disinfectants do not have certifications	Diversey Blue Skies (least environmental impact available)
Hand Hygiene		
Hand Soap	Green Seal Certified GS-41	Gojo Foam Hand Soap
Hair & Body Wash	EcoLogo 104	Gojo Foam Hair & Body Wash
Hand Sanitizer	EcoLogo, CCD-170	Purell Instant Hand Sanitizer
Dilution Control		
Super Concentrated Chemicals with Command Center control are provided in each building.		
All Purpose Cleaner	Green Seal GS-37/ Eco Logo CCD-146	Pioneer Eclipse Green Seal All Purpose Cleaner
Glass Cleaner	Green Seal GS-37/ Eco Logo CCD-146	Envirox Evolve 2 Bio Renewable Utility Cleaner
Disinfectant	N/A	Diversey Blue Skies Disinfectant
Heavy Duty Cleaner	EcoLogo CCD-146E	Simplex Power Mate Ecologo Heavy Duty Cleaner
Trash Liners		
Trash Can Liners	ASTM-D 6400/ DIN Certco/IBAW BPI/USCC	Ecofilm Bioliner (compostable)
Paper Products		
Tissue Paper	EcoLogo CCD-082 FSC Certified	Scott 100% RF JRT Jr. by Kimberly Clark
Hand Towels	EcoLogo CCD-086 FSC Certified	Scott 100% RF Multi-Fold & Scott 100% RF Hard Roll By Kimberly Clark

Sustainable Cleaning Equipment

(LEED IEQc3.4)

Cleaning equipment should limit or eliminate the use of hazardous materials, improve indoor air quality (IAQ), minimize environmental impact and allow for the healthy reuse of space and materials.

“Green Cleaning Equipment”, as defined under the LEED EB O+M, is equipment that meets one or more of the following specifications:

- Vacuum cleaners are certified by the Carpet and Rug Institute “Green Label” Testing Program for vacuum cleaners and operate with a sound level of less than 70dBA.
- Carpet extraction equipment used for restorative deep cleaning is certified by the Carpet and Rug Institute’s “Seal of Approval” Testing Program for deep-cleaning extractors.
- Powered floor maintenance equipment, including electric and battery-powered floor buffers and burnishers, is equipped with vacuums, guards and/or other devices for capturing fine particulates and operates with a sound level of less than 70dBA. Passive vacuum system reduces airborne dust by 50%.
- Propane-powered floor equipment has high-efficiency, low-emissions engines with catalytic converters and mufflers that meet the California Air Resources Board (CARB) or Environmental Protection Agency (EPA) standards for the specific engine size and operate with a sound level of less than 90dBA.
- Automated scrubbing machines are equipped with variable-speed feed pumps and on-board chemical metering to optimize the use of cleaning fluids. Alternatively, the scrubbing machines use only tap water with no added cleaning products.
- Battery-powered equipment is equipped with environmentally preferable batteries (gel, absorbent glass mat, and lithium-ion).
- Powered equipment is ergonomically designed to minimize vibration, noise and user fatigue.
- Equipment is designed with safeguards, such as rollers or rubber bumpers, to reduce potential damage to building surfaces.

Performance Metrics

There is one primary metric, the “Sustainable Compliant Equipment Proportion” that will be used to measure implementation of this program and report it in the annual Sustainability Report:

$$\text{Sustainable Compliant Equipment Proportion} = \frac{\text{Cleaning equipment in use that meet LEED EB-O\&M standards}}{\text{Total quantity of cleaning equipment in use}}$$

Sustainable Compliant Equipment Proportion (percentage) = 100%

All of the janitorial equipment will meet one or more of the sustainable criteria below. This program covers all “cleaning equipment” used at Boston University including:



Equipment	Certification	Product
Vacuums		
Vacuum	CRI Green Label Certified	Clarke Euro Clean Hepa Vac
Vacuum	CRI Green Label Certified	Proteam Hepa Back Pack
Carpet Extraction Machines		
Self Contained Extractor	Sustainable characteristics: Low Moisture, Low Decibel	Nacecare Self Contained Extractor
High Pressure Extractor	Sustainable characteristics: Low Moisture, Low Decibel	Xaact High Pressure Extractor
Floor Burnishing Equipment		
Electric Burnisher	Sustainable characteristics: Passive Dust Control System Low Decibel (<70dB) (no 3 rd party certification available)	Clarke 2000RPM Electric Burnisher, with Dust Control
Battery Burnisher	Sustainable characteristics: Active Vacuum System Low Decibel (<70dB) (no 3 rd party certification available)	Tomcat Burnisher, Hepa Filter
Auto Scrubbers		
Auto Scrubber	Sustainable characteristics: Up to 70% Water Savings Chemical-free stripping Low Decibel (<70dB) (no 3 rd party certification available)	Clarke Boost Auto Scrubber
Auto Scrubber	Sustainable characteristics: Up to 70% Water Savings Chemical-free stripping Low Decibel (<70dB) (no 3 rd party certification available)	Tomcat Auto Scrubber
Auto Scrubber	Sustainable characteristics: Up to 70% Water Savings Chemical-free stripping Low Decibel (<70dB) (no 3 rd party certification available)	Windsor Chariot

Micro-fiber/High Performance Cleaning Products

Microfiber cleaning textiles extend the life of cleaning rags over traditional cleaning rags by a factor of more than three and reduce the need for paper cleaning products. Boston University uses a color-coded cleaning system to reduce cross contamination. See "Staff Training" below.



Restroom Cleaning-Tile & Grout Cleaning

Tile & Grout Cleaning Machine	Sustainable characteristics: Low Decibel (<70dB) Chemical-free (no 3 rd party certification available)	Xaact Restroom Cleaning Machine & Grout Cleaning
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Tile & Grout Cleaning Machine	Sustainable characteristics Low Decibel (<70dB) Chemical-free (no 3 rd party certification available)	US Products Restroom Cleaning Machine
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Indoor Chemical and Pollutant Source Control

(LEED IEQc3.5, BD+C IEQc5)

“Indoor Chemical and Pollutant Source Control”, as defined under the LEED EB O+M:

- Employs permanent entryway systems (grilles, grates, mats) at least 10 feet long in the primary direction of travel to capture dirt and particulates entering the building at all public entry points.
- Develops the associated cleaning strategies to maintain those entryway systems as well as exterior walkways (excluding public entryways not in use or that serve only as emergency exits)
- Provides containment drains plumbed for appropriate disposal of hazardous liquid wastes in places where water and chemical concentrate mixing occurs for laboratory purposes.

Performance Metrics

- Vacuum entry mats daily
- Clean and extract four times a year

Hand Hygiene

(LEED IEQp3)

Boston University promotes hand washing for all building occupants and provides alcohol-based waterless hand sanitizers in public areas. Over 500 free-standing hand sanitizing stations are located at building and dining entries, lobbies, and other high traffic locations. Over 4,000 foam handwash dispensers are located in restrooms throughout campus. The University communicates with building occupants proper hand washing techniques.

Staff Training

(LEED IEQp3)

Provide hands on training for maintenance personnel appropriate to the needs of each facility. Address the training in the hazards of use, disposal and recycling of cleaning chemicals, dispensing equipment and packaging.

Staff training and evaluation is conducted three times for new employees for each product and procedure used in the building. Refresher training is also provided twice annually.

Communications

Communications to the custodial staff and building occupants is a critical component of this program. In addition to the training program, signage is provided in the University's custodial rooms to remind the staff of the sustainable cleaning procedures. The University's progress and benefits of our Sustainable Cleaning Program are communicated through sustainability@BU newsletter and website in addition to the Facilities Management & Planning website.



Sustainable cleaning Program Signage illustrates the proper use of microfiber products for use by location type on campus. Microfiber wash cloths and trowels are color coded to prevent cross contamination between cleaning areas.



Sustainable Cleaning Program Signage illustrates the proper use of cleaning equipment and use with specific sustainable cleaning chemical products for use on campus.

Continuous Improvement

(LEED IEQp3)

Maintain ability for building occupants to provide feedback on maintenance effectiveness and ability to assess new sustainable cleaning technologies, procedures, and processes to assure continuous improvement.

Occupant feedback:

A communications program in the building describes the Sustainable Cleaning Program so occupants are familiar with the program and can communicate building related issues. Feedback is provided directly to the facilities manager for the building who shall work with the custodial staff to insure the issue is properly addressed. Issues are recorded and tracked through the CAMMS online database on a daily basis. Accommodations are made for those occupants who are vulnerable or chemically sensitive by adjusting cleaning schedules when necessary.

Evaluation of new technologies, procedures, and processes:

University Area Managers for Custodial Services meet bi-weekly to review issues, best practices, and new technologies, procedures, and processes. Working closely with the University's vendors new systems are demonstrated, tested, and vetted by the managers. They are then tested in one or more locations, then when determined effective, shared for managers of other buildings to use.

Occupational Development

Custodial staff is trained and evaluated on their ability to perform the following tasks:

Technical:

- Carpet cleaning
- Resilient floor cleaning and refinishing
- Restroom cleaning
- Office cleaning
- Classroom cleaning
- Equipment use and safety

Non-technical training: safety and compliance

- Worker safety – by Environmental Health & Safety (EH&S)
- Hazardous Compliance – by (EH&S)
- Blood-borne pathogens – by (EH&S)
- Supervision
- Communication

Third party training is provided by Simplex using CIMS Certified trainers. Custodial staff is trained bi-monthly through comprehensive training for the staff in each area. This training is provided by area managers and subject matter experts from leading manufacturers. Training is provided at three levels:

- Management

- Supervisor
- Front-line working training

All participant training modules are completed, signed, and documented. Records maintained in CAMMS.

Technical training modules are 3rd party reviewed by American Institute of Cleaning Sciences www.AICS.com.

Cleaning Chemical Safety

The cleaning products selected provide for the safest working environment possible for custodial staff and building occupants. All custodial staff members must attend multiple training sessions every year to keep them informed of the programs, information and resources available to keep them safe. For the safe use and management of cleaning chemicals, three of the annual sessions most relevant include:

- Hazard Communication Training: instructs staff on how to identify hazardous materials, where to get specific information about hazardous materials (including MSDS sheets), and how to respond to spills.
- Laboratory Safety Training: covers the types hazards associated with laboratory materials including chemicals, potential routes of exposure and PPE, and emergency contact information.
- Oil and Hazardous Waste Management: explains to staff how to identify regulated waste chemicals and products, and how to safely manage and store them.

All custodial staff members are provided information about the chemicals they work with (MSDS sheets at a minimum) and PPE sufficient to protect them from harmful exposures.

The cleaning and custodial chemicals used have been evaluated for hazardous characteristics and ingredients. Only the Purell Instant Hand Sanitizer, in its pure form, would be considered a hazardous waste (due its high alcohol content). Custodial staff members are trained on hazardous waste management, including how to recognize and manage an 'empty' container. In the course of normal use, Purell is only disposed of as empty containers.

In the event of spills or releases involving cleaning chemicals or any other type of chemical, custodial staff members are trained to recognize spills outside their ability to contain, and to rely on the University's Environmental Health & Safety team. One phone call can elicit an emergency response from 40-hour trained personnel 24-hours per day, 7-days per week.

Glossary of Terms

A

ABRASIVE CLEANERS

Products that clean through abrasive or scouring action.

ABSORPTION

The process of one substance entering into the inner structure of another.

ACCEPTABLE INDOOR AIR QUALITY

Air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and with which a substantial majority (80% or more) of the people exposed do not express dissatisfaction.

ACUTE TOXICITY

The ability of a substance to cause poisonous effects resulting in severe biological harm or death soon after a single exposure or dose. Any severe poisonous effect resulting from a short-term exposure results from exposure to that stimulus.

AEROSOL

Suspended droplets of liquid or liquid dispersions in air.

AFFIRMATIVE PROCUREMENT PROGRAM

RCRA Section 6002 requires each procuring agency to establish an affirmative procurement program for maximizing its purchases of EPA-designated items. The program should be developed in a manner that ensures that items composed of recovered materials are purchased to the maximum extent practicable consistent with Federal procurement law

AIRBORNE PARTICULATES

Total suspended particulate matter found in the atmosphere as solid particles or liquid droplets. Chemical composition of particulates varies widely, depending on location and time of year. Sources of airborne particulates include dust, emissions from industrial processes, combustion products from the burning of wood and coal, combustion products associated with motor vehicles or non-road engine exhausts, and reactions to gases in the atmosphere.

AIR POLLUTANT

Any substance in air that could, in high enough concentration, harm man, other animals, vegetation or material. Pollutants may include almost any natural or artificial composition of matter capable of being airborne. They may be in the form of solid particles, liquid droplets, gases or any combination thereof.

ALCOHOL ETHOXYLATE

A type of nonionic surfactant in widespread use. Considered a good candidate for replacing alkylphenol ethoxylates (APEs) in many applications.

ALKYLPHENOL ETHOXYLATES (APE)

A class of nonionic surfactants produced by reacting an alkylphenol with ethylene oxide. Examples include nonylphenol ethoxylates and octylphenol ethoxylates. APEs are widely used in industrial detergents, pesticide formulations and some consumer products.

ALLERGEN

A chemical or biological substance (e.g., pollen, animal dander, or house dust mite proteins) that induces an allergic state or reaction, characterized by hypersensitivity.

ALTERNATIVES ASSESSMENT

Chemicals of concern in products should be identified, promptly evaluated and then replaced, redesigned, restricted, or banned using lifecycle thinking principles. While toxicological and hazard trait data (or its absence) informs this process, alternatives analysis does not depend solely on complete toxicological data—rather it combines and synthesizes thinking on cleaner production, risk assessment and risk management, green chemistry, sustainable materials and product design. An alternatives analysis, which is a comparative tool and considers many factors, can begin when a specific concern arises.

ALTERNATIVE ENERGY

Energy from a source other than the conventional fossil-fuel sources of oil, natural gas and coal (i.e. wind, running water, and the sun).

AMBIENT AIR

The air surrounding an object.

ANIONIC

Forming negatively charged ions in solution. Anionic surfactants include alkylbenzene sulfonates and alcohol sulfates

ANTIMICROBIAL

Agent that kills microbial growth.

B

BACTERIA

Microscopic living organism.

BIOBASED PRODUCT

as "a commercial or industrial product (other than food or feed) that utilizes biological products or renewable, domestic agricultural (plant, animal, or marine) or forestry materials."

BIODEGRADABLE

Capable of being reduced to water and carbon dioxide by the action of microorganisms.

BIODEGRADABILITY READILY

the ability of a compound to be broken down immediately upon exposure to bacterial derived from the environment, as measured by a readily biodegradability test.

BIOLOGICAL CONTAMINANTS

Agents derived from or that are living organisms (e.g., viruses, bacteria, fungi, and mammal and bird antigens) that can be inhaled and can cause many types of health effects including allergic reactions, respiratory disorders, hypersensitivity diseases, and infectious diseases. Also referred to as "microbiologicals" or "microbials."

C

CAMMS

Boston University's Computer Aided Maintenance Management System for Facilities Management & Planning.

CAS

Chemical Abstract Service number assigned to specific chemicals, for example: 2-butoxyethanol {CAS 111-76-2}

CFM

Cubic feet per minute. The amount of air, in cubic feet, that flows through a given space in one minute.

CHEMICAL

means any naturally occurring or synthetic chemical, compound, by-product, substance, agent, or formulation that is found in any product or can result from the use or disposal of any product.

CRI

The Carpet and Rug Institute, headquartered in Dalton, Georgia, is the national trade association for the carpet and rug industry. Its members are manufacturers, suppliers, and service providers, representing over 90% of all carpet produced in the United States. CRI is the source for science-based information and insight into how carpet and rugs can create a better environment - for living, working, learning and healing. For more information visit, www.carpet-rug.org.

CPG

Through the Comprehensive Procurement Guideline (CPG), EPA designates items that must contain recycled content when purchased by federal, state, and local agencies, or by government contractors using appropriated federal funds. Under E.O. 13101 EPA is required to update the CPG every 2 years

CARCINOGEN

A substance that can cause or contribute to cancer.

CAUSTIC

Able to burn, corrode, dissolve, or eat away other substances.

CAUSTIC SODA

Sodium hydroxide, a strong alkaline substance used as the cleaning agent in some detergents.

CEPA

the Canadian Environmental Protection Act, enacted in 1999, used available existing information to categorize chemicals in its national inventory, identifying more than 4,000 chemicals that possessed hazard or exposure characteristics of potential concern. Canada has conducted further assessments of these chemicals, focused on about 200 high priority chemicals. Canada is currently collecting data from manufacturers and importers for the high priority chemicals.

CHEMICAL CLEANING

Cleaning by using a chemical instead of mechanical or abrasive cleaning.

CHEMICAL DISINFECTION

Disinfection by using chemicals instead of heat and other physical, electrical, or radioactive methods.

CHEMICAL MIXTURE

Any combination of two or more substances.

CHLORINATED SOLVENTS

An organic solvent containing chlorine atoms. Examples include methylene chloride, perchloroethylene and 1,1,1 trichloroethylene used as cleaning agents.

CHLOROFLOUROCARBONS (CFCs)

Stable, artificially created chemical compounds containing carbon, chlorine, fluorine and sometimes hydrogen. Chlorofluorocarbons, used primarily to facilitate cooling in refrigerators and air conditioners, have been found to deplete the stratospheric ozone layer, which protects the earth and its inhabitants from excessive ultraviolet exposure.

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CLEANING PRODUCTS

Cleaning products as defined in this document refer to products that are used for the routine cleaning of the indoor built environment. They include but are not limited to: glass cleaners, general-purpose cleaners, floor cleaners, laundry detergents, dishwashing detergents, deodorizers, hand soaps, and wax strippers.

CLOSED-LOOP PROCESS

Part of an industrial production process; not part of a waste management process. Materials reclaimed and returned in a closed-loop process are neither classified as, defined as, nor operate as, a waste, i.e., any discarded material. Materials in a closed-loop process are treated as commodities in a manner designed to avoid loss or release to the environment (Electronic Code of Federal Regulations (e-CFR), 40 C.F.R. § 261.4(a)(8)).

CLOSED-LOOP RECYCLING

A recycling system that uses a "closed-loop process." See "closed-loop process" Not to be confused with "horizontal recycling." See "horizontal recycling."

CONSERVATION

Preserving and renewing, when possible, human and natural resources. The use, protection and improvement of natural resources according to principles that will ensure their highest economic or social benefits.

CONTAMINANT

Any physical, chemical, biological, or radioactive substance that can adversely affect air, water or soil.

CORROSION

Action or effect of eating away gradually. This can occur through oxidation, the action of strong acids, or caustic alkali.

CORROSIVE

"A liquid or solid that causes full thickness destruction of human skin at the site of contact within four hours, or a liquid that has a severe corrosion rate on steel or aluminum" (U.S. Department of Transportation, Performance Oriented Packaging Standard, HM-181)..

CRADLE-TO-CRADLE

A term used in life-cycle analysis to describe a material or product that is recycled into a new product at the end of its defined life.

CRADLE-TO-CRADLE DESIGN

A process encouraging and implementing improved environmental product design including use of technical nutrients and/or biological nutrients. Sustainable materials derived from cradle to cradle design are reused by industrial and natural systems and protect public health and environment and future generations. Cradle-to-Cradle design results in products whose materials are perpetually circulated in closed loops with few environmental and health burdens over all stages. Cradle to cradle design is defined in a book authored by William McDonough and Michael Braungart titled, Cradle-to-Cradle.

CRADLE-TO-GRAVE

A term used in life-cycle analysis to describe the entire life of a material or product up to the point of disposal. Also refers to a system that handles a product from creation through disposal assumes waste and pollution comes at the end of a product's lifecycle and is a byproduct of its production. Many environmental laws are based on this industrial production model. For example, the Resource Conservation and Recovery Act (RCRA) enacted in 1976 established a complex set of regulations governing the management of hazardous waste from "cradle-to-grave."

CUBIC FEET PER MINUTE (CFM)

A measure of the volume of a substance flowing through air within a fixed period of time. Indoors, it is the amount of air measured in cubic feet that is delivered and exchanged in one minute.

D

DECIBEL (dB)

A unit of sound measurement. Sound doubles in loudness for every 10 decibels.

DECOMPOSITION

The breakdown of matter by bacteria and fungi.

DEGREASER

A chemical such as soap, solvents, alkali, or detergent that dissolves and helps remove greases and oils.

DELAYED EFFECTS

are those that occur in days or even longer between exposure and onset of adverse effects. Asbestosis from asbestos and liver damage from carbon tetrachloride are examples of delayed effects.

DERMAL TOXICITY

The ability of a chemical or bio pollutant to poison people by contacting the skin.

DESIGNATED PRODUCTS

Products that are or can be made from recovered materials that have been designated in the CPG through EPA's formal rulemaking process. Also referred to as "designated items."

DETERGENT

1. Synthetic washing agent that helps remove dirt and oil. Some contain compounds that kill bacteria or encourage algae growth. 2. A chemical composition that cleans.

DILUTION

A concentration made less concentrated by adding gas or liquid.

DISINFECTANTS

One of three groups of antimicrobials registered by EPA for public health uses. EPA considers an antimicrobial to be a disinfectant when it destroys or irreversibly inactivates infectious or other undesirable organisms, but not necessarily their spores. EPA registers three types of disinfectant products based upon submitted efficacy data: limited, general or broad spectrum, and hospital disinfectant.

DISINFECTION

A chemical or physical process that kills pathogenic organisms.

DISPOSAL

Final placement or destruction of wastes.

DOSE-RESPONSE RELATIONSHIP

is a fundamental and pervasive concept in toxicology. Dose is the major determinant of toxicity. An understanding of this relationship is essential for an understanding of toxic materials.

DUST

An air suspension of particles (aerosol) of any solid material, usually with particle size less than 100 micrometers.

E

EPA

U.S. Environmental Protection Agency

EPA – DfE

The U.S. Environmental Protection Agency's (EPA's) Design for the Environment (DfE) Program is a voluntary partnership program that works directly with industries to integrate health and environmental considerations into their business decisions. A DfE partnership helps businesses design or redesign products, processes, and management systems that are cleaner, more cost-effective, and safer for workers and the public.

ETS

Environmental tobacco smoke.

ECO-EFFICIENCY

the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the Earth's carrying capacity.

ECOLOGO

The Environmental Choice Program is designed to support a continuing effort to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimizing the impacts of pollution generated by the production, use and disposal of goods and services

ECOLOGY

The relationship of living things to one another and their environment.

ECOSYSTEM

The interacting system of a biological community and its environmental surroundings.

EMULSION

Two or more liquids that do not dissolve in each other but are held in suspension, one in the other.

ENDOTOXIN

Heat-stable toxin present in the cell wall of bacteria (bacilli).

ENDOCRINE DISRUPTORS

These are synthetic chemicals that can create changes in the hormones in humans and animals. These "hormone disruptors" can cause cancer, birth defects, and immune problems. Even very small amounts can interfere with growth and normal development of children, reproduction and can cause permanent mental, learning, and behavioral disabilities.

ENVIRONMENT

The sum of all external conditions affecting the life of an organism.

ENVIRONMENTAL FACTORS

Conditions other than indoor air contaminants that cause stress, comfort, and/or health problems (e.g., humidity extremes, drafts, lack of air circulation, noise, and over-crowding).

ENVIRONMENTAL FOOTPRINT

For an industrial setting, this is a company's environmental impact determined by the amount of depletable raw materials and nonrenewable resources it consumes to make its products, and the quantity of wastes and emissions that are generated in the process.

ENVIRONMENTAL IMPACT

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from human activity, industry or natural disasters.

ENVIRONMENTALLY PREFERABLE PRODUCT

A product that has a lesser or reduced effect on human health and the environment when compared with competing products that serve the same purpose. The product comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal.

ENVIRONMENTALLY PREFERABLE PURCHASING

A U.S. federal-wide program (Executive Order 13101) that encourages and assists executive agencies in the purchasing of environmentally preferable products and services.

ENZYMES

Complex proteins produced by living cells. They start up certain biochemical reactions such as the digestion of food.

EPIDEMIC

Widespread outbreak of a disease.

ERGONOMICS

Applied science that investigates the impact of people's physical environment on their health and comfort (e.g. determining the proper chair height for computer operators).

EXECUTIVE ORDER 13101

Entitled Sustainable Government Through Waste Prevention, Recycling, and Federal Acquisition, Executive Order (E.O.) 13101 was signed on September 14, 1998. This Order replaces E.O. 12873 and reinforces the federal government's buy-recycled efforts. E.O. 13101 establishes a process for amending the CPG originally promulgated under E.O. 12873. E.O. 13101 requires EPA to amend the CPG every 2 years, or as appropriate. The Order also requires EPA to issue RMANS concurrent with the CPG amendments, and to update them periodically.

EXPOSURE

is a measure of the contact between a toxicant and a living organism.

F

FDA

Food and Drug Administration

FABRIC FILTER

A cloth that catches dust particles.

FLASH POINT

The lowest temperature at which a combustible liquid or gas gives off a flammable vapor that will burn when exposed to an open flame.

FOGGING

Applying a liquid chemical by rapidly heating it to form fine droplets that resemble smoke or fog.

FUMES

Airborne particles, usually less than 1 micrometer in size, formed by condensation of vapors, sublimation, distillation, calcination or chemical reaction.

FUNGI

A group of organisms that lack chlorophyll, including molds, mildews, yeasts, mushrooms. They receive their nutrition from decomposing organic matter. Some cause disease in humans; others stabilize sewage and digest composted waste.

FUNGICIDE

Biocides used to control, prevent, or kill fungi.

G

GAS

A state of matter in which substances exist in the form of nonaggregated molecules, and which, within acceptable limits of accuracy, satisfies the ideal gas laws; usually a highly superheated vapor.

GRAY WATER

Untreated or partially treated wastewater that is used for such purposes as watering lawns or flushing toilets (rather than using cleaner water of drinkable quality).

GREEN

A practice that works with nature instead of against it.

GREEN ACCOUNTING

An informal term referring to management accounting systems that specifically delineate the environmental costs of business activities rather than including those costs in overhead accounts.

GREEN BUILDINGS

Buildings in which environmental considerations are given to design, construction and operation. The utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture and application of chemical products. - Anastas and Warner Green Chemistry: Theory and Practice (1998)

Green chemistry represents a major paradigm shift that focuses on environmental protection at the design stage of product and manufacturing processes. It is an innovative way to deal with chemicals before they become hazards, with the goal of making chemicals and products "benign by design." Green chemistry is a preemptive strategy that reduces the use of toxic substances before they contaminate the environment and our bodies. It is a marked departure from the past where society managed industrial and municipal wastes by disposal or incineration. Green chemistry seeks to dramatically reduce the toxicity of chemicals in the first place, rather than merely manage their toxic waste after use and disposal.

Green chemistry changes the design of products and industrial processes so they do not threaten human health or the environment.

GREEN DESIGN

A design, usually architectural, conforming to environmentally sound principles of building, material and energy use. A green building, for example, might make use of solar panels, skylights and recycled building materials.

GREEN ENGINEERING

is the design, commercialization and use of processes and products, which are feasible and economical, minimize the generation of pollution and reduce risk to human health and the environment.

GREENGUARD

The GREENGUARD Indoor Air Quality Certified® Program is an industry-independent, third party testing program for low-emitting products and materials. The GREENGUARD Environmental Institute (GEI) was founded to establish a true third-party product certification program to provide specifying and procurement professionals with a resource for low emitting products.

GREEN SEAL™

Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education. Green Seal's mission is to work towards environmental sustainability by identifying and promoting environmentally responsible products, purchasing, and production. Through its standard setting, certification and education programs, Green Seal: The intent of Green Seal's environmental requirements is to reduce, to the extent technologically and economically feasible, the environmental impacts associated with the manufacture, use and disposal of products. Set on a category-by-category basis, Environmental Standards focus on significant opportunities to reduce a product's environmental impact.

H

HAZARD

is the likelihood that injury will occur in a given situation.

HDPE

High-density polyethylene. A plastic resin used in products and packaging such as milk jugs, detergent bottles, margarine tubs, and garbage containers.

HEPA

HEPA (High Efficiency Particulate Air) is a filtering efficiency specification for filters developed by the Atomic Energy Commission during World War II to effectively remove radioactive dust from plant exhausts without redistribution. A HEPA filter must be capable of capturing 99.97% of all particles as small as 0.3µm (micrometers - formerly microns) in size from the air, which flows through it. The phrase "as small as" means that if all particles were that small, it would still have that efficiency. This should not be confused with the phrase "down to" which may mean a mixture of particle sizes for the stated efficiency.

HVAC

Heating, ventilation, and air conditioning system.

HARD WATER

Alkaline water containing dissolved salts that interfere with some industrial processes and prevent soap from lathering.

HAZARD

Risk, peril, jeopardy to which an individual is subjected.

HAZARDOUS WASTE

By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. They have at least one of four characteristics: they are ignitable, corrosive, reactive, or toxic.

HEAVY METALS

Metallic elements with high atomic weights such as mercury, chromium, cadmium, arsenic, and lead. They can damage living organisms at low concentrations.

HIGH PERFORMANCE BUILDING

A green or sustainable building often with an emphasis on the use of advanced technology, or "smart infrastructure," and its impact on tenant ability to control key building comfort measures such as temperature and light levels to increase performance.

HORIZONTAL RECYCLING

A recycling system that turns a majority of the original product back into a similar product as the original.

HYDROCARBONS (HC)

Chemical compounds made up entirely of carbon and hydrogen.

IAQ (INDOOR AIR QUALITY)

ASHRAE defines acceptable indoor air quality as air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and with which 80% or more people exposed do not express dissatisfaction.

IAQ COORDINATOR

An individual at the school and/or school district level who provides leadership and coordination of IAQ activities.

IAQ MANAGEMENT PLAN

A set of flexible and specific steps for preventing and resolving IAQ problems.

IAQ TEAM

People who have a direct impact on IAQ in the schools - including school staff, administrators, school board members, students and parents - and who implement the IAQ Action Packets.

IMMEDIATE EFFECTS

Are those that occur within minutes of the exposure. Chemical burns from hydrochloric acid or Sulfuric Acid or asphyxiation from cyanide are examples of immediate effects.

IMMUNE SYSTEM

All internal structures and processes providing defense against disease-causing organisms such as viruses, bacteria, fungi, and parasites.

INDIVIDUAL RISK

The increased risk for a person exposed to a specific concentration of a toxicant.

INDOOR AIR

The air that people breathe inside a built environment.

INDOOR AIR POLLUTANT

Particles and dust, fibers, mists, bio aerosols, and gases or vapors.

INGREDIENT

Any component or additive of a product intentionally added or know to be a contaminant that comprises at least 0.01% by weight of the product.

INHALABLE

Particles small enough to be inhaled, but large enough so that they are not quickly exhaled.

INTEGRATED WASTE MANAGEMENT

The complementary use of a variety of practices to handle solid waste safely and effectively. Techniques include source reduction, recycling, composting, combustion and landfilling.

IRREVERSIBLE EFFECTS

are those that produce permanent alterations in function, structure, or capacity. Brain lesions from toluene and cirrhosis of the liver from alcohol are examples of irreversible effects.

LEED™ RATING SYSTEM

LEED (Leadership in Energy & Environmental Design) is a self-assessing system designed for rating new and existing commercial, institutional, and high-rise residential buildings. It evaluates environmental performance from a "whole building" perspective over a building's life cycle, providing standards for what constitutes a green building.

LDPE

Low-density polyethylene. A plastic resin used for both rigid containers and plastic film applications such as plastic bags and film wrap.

LLDPE

Linear low-density polyethylene. A plastic that is used predominantly in film applications due to its toughness, flexibility, and relative transparency.

LIFE CYCLE

the stages of a product, process or activity, which encompass raw materials extraction and acquisition, processing, materials manufacture, product fabrication, packaging and distribution, product use/reuse, maintenance, recycling and final disposition.

LIFE-CYCLE ASSESSMENT (LCA)

Review of the full life of a product and its impact on the environment. A LCA review on cleaning products would include: mining the raw material; refining and creating a finished product; transporting the product from the manufacturing point through the distribution channel to the end use point; storage of the product; use of the product; resources used during its life; and its final disposal.

LIFE-CYCLE COST (LCC)

Review of the full life cycle and total cost of the product. A LCC review would include: the purchase price of the product; the cost of using the product; and the cost of disposing of it.

LIFE CYCLE OF A PRODUCT

All stages of a product's development, from extraction of fuel for power to production, marketing, use and disposal. Also called lifecycle approaches or lifecycle management, is the application of lifecycle principles to business practices. Involves examining the environmental sustainability over the product's entire life – from raw materials selection, manufacturing, transportation, use and end of life disposal or reuse and waste management. Tools, metrics and approaches using lifecycle thinking are often used to determine a product's "environmental footprint."

M

MCS

See "Multiple Chemical Sensitivity."

MSDS

a written or printed material concerning a hazardous chemical that contains the information set forth in the OSHA Hazard Communication Standard.

MATERIALS IN SOLID WASTE

Materials found in the various components of the solid waste stream. Generally, solid waste has several components, such as municipal solid waste (MSW), construction and demolition debris (C&D), and nonhazardous industrial waste. Under RCRA Section 6002, EPA considers materials recovered from any component of the solid waste stream when designating items containing recovered materials.

METHANE

A colorless, flammable gas created by anaerobic decomposition of organic compounds.

MICROBES

Microscopic organisms such as algae, insects, viruses, bacteria, fungi, and protozoa, some of which cause diseases.

MICROBIAL GROWTH

The amplification or multiplication of microorganisms such as bacteria, algae, diatoms, plankton and fungi.

MICROBIOLOGICAL ORGANISM

Broad range of living organisms, which typically can be viewed only through a microscope.

MICROBIOLOGICALS

See "Biological Contaminants."

MICRON

A measure of length; one millionth of a meter.

MICROORGANISM

A microscopic organism, especially a bacterium, fungus, or protozoan.

MIST

Liquid particles measuring between 40 and 500 microns. By contrast, particles making up fog are less than 40 microns.

MULTIPLE CHEMICAL SENSITIVITY

A term used by some people to refer to a condition in which a person is considered to be sensitive to a number of chemicals at very low concentrations. There are a number of views about the existence, potential causes, and possible remedial actions regarding this phenomenon.

N

NONIONIC DETERGENT

A detergent that produces electrically neutral colloidal particles in solution.

NUTRIENT

Any substance taken in by living things that promotes growth.

O

OCTYLPHENOL

An important alkylphenol with eight carbon atoms attached to the phenol unit. A breakdown product of octylphenol ethoxylate surfactants that has been found to have estrogenic activity in fish, mammals and birds.

OCTYLPHENOL ETHOXYLATE (OPE)

A type of nonionic surfactant of the alkylphenol ethoxylate type in which the alkyl unit has eight carbon atoms. Less widely used than nonylphenol ethoxylates but a more potent estrogen.

OSHA

Occupational Safety and Health Administration.

ODORANT

A substance that stimulates the olfactory receptors.

OZONE DEPLETION

Destruction of the stratospheric ozone layer, which shield the earth from UV radiation harmful to life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons), which breakdown when they reach the stratosphere and then catalytically destroy ozone molecules.

OZONE-DEPLETING COMPOUNDS

An ozone-depleting compound is any compound with an ozone-depletion potential greater than 0.01 where CFC 11 equals 1.

P

PBT

Persistent, bio accumulative toxic pollutants (PBTs) are highly toxic, long-lasting substances, which can build up in the food chain to levels that are harmful to human health and cause environmental harm. These contaminants can be transported long distances and move readily from land to air and water.

PE

Polyethylene. A flexible plastic used in many household items including plastic wrap and food containers.

PELS

Permissible Exposure Limits (standards set by OSHA).

PET

Polyethylene Terephthalate. A thermoplastic material used to manufacture plastic soft drink containers and rigid containers

pH

A measure of acidity or alkalinity on a scale of 0 to 14 where 7 is neutral. A pH less than 7 is acid and a pH greater than 7 is alkaline or base.

PM

Preventive Maintenance.

POPULATION DISTRIBUTION

means that some members of a population will be highly sensitive; some members of a population will be very resistant; and most members of a population will be neither sensitive nor resistant.

PP

Polypropylene. A plastic polymer that has good resistance to heat and is used in flexible and rigid packaging, film, and textiles.

PPB

Parts per billion

PPM

Parts per million

PRIMARY ROUTES OF ENTRY

Inhalation, Eye contact (ocular), Skin contact (dermal) and Ingestion

PS

Polystyrene. A plastic polymer used to make a variety of products including plastic cutlery and food containers. It is often used in its foamed state.

PVC

Polyvinyl chloride. A family of plastic copolymers, also known as vinyl. PVC is used to make products such as pipes, bottles, upholstery, and automotive parts.

PARTICULATE MATTER

A state of matter in which solid or liquid substances exist in the form of aggregated molecules or particles. Airborne particulate matter is typically in the size range of 0.01 to 100 micrometers.

PARTICULATES

Fine liquid or solid particles such as dust, smoke, mist, fumes, and fog found in air and emissions.

PATHOGENS

Microorganisms (i.e., bacteria, viruses, or parasites) that can cause disease in other organisms, humans, animals, or plants.

PESTICIDE

Substance intended to control, prevent, or kill a pest.

PHOSPHATES

Alkaline builders used in detergents to soften water.

POLLUTION

Unwanted by-product of human activity. the presence of matter or energy whose nature, location, or quantity produces undesired environmental effects.

POSTCONSUMER MATERIALS

A material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item. Postconsumer materials are part of the broader category of recovered materials.

PRECONSUMER MATERIALS

Materials generated in manufacturing and converting processes, such as manufacturing scrap and trimmings/cuttings.

PREVENTIVE MAINTENANCE

Regular and systematic inspection, cleaning, and replacement of worn parts, materials, and systems. Preventive maintenance helps to prevent parts, material, and systems failure by ensuring that parts, materials and systems are in good working order.

PRIMARY PACKAGING

The packaging that comes in direct contact with the product, not including the lid or cap of a container.

PROCURING AGENCY

Any Federal agency, or any state agency or agency of a political subdivision of a state that is using appropriated Federal funds for procurement.

PRODUCTIVITY

The efficiency with which a person performing a specific function does a job, or the output of a worker under specific environments and conditions.

Q

QUARTERNARY AMMONIUM

Chemical commonly used to sanitize and disinfect. Kills by rupturing the cell walls of the microorganisms.

R

RCRA Section 6002

Section 6002 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, directs EPA to designate items that are or can be produced with recovered materials and to recommend practices for buying these items. Among other things, RCRA Section 6002 also provides criteria for EPA to consider when selecting items for designation, and requires procuring agencies to establish affirmative procurement programs for designated items.

REACH

is the European Union Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), a law that went into effect in June 2007. It requires toxicity data to be registered with a new European Chemicals Agency in Helsinki for substances sold in the EU in quantities greater than 1 metric ton per year per company and evaluated for further testing. Ultimately, the EU may develop an authorization system to control substances of very high concern and progressively replace them with suitable alternatives where economically and technically viable, unless there is an overall benefit for society of using the substance.

RH

Relative Humidity

RMAN

Recovered Materials Advisory Notices (RMANs) provide purchasing guidance and recommend recovered and postconsumer material content levels for designated items. RMAN recommendations are guidance and therefore are not codified in the Code of Federal Regulations.

REVERSIBLE EFFECTS

are those where tissues are able to re-establish normal structure, function and capacity. Anticholinergic effects of organophosphates and peripheral neuropathy from n-hexane are examples of reversible effects.

RSP

Respirable suspended particles

RECOVERED MATERIALS

Waste materials and byproducts that have been recovered or diverted from solid waste, but does not include materials and byproducts generated from, and commonly reused within, an original manufacturing process.

RECLAMATION

Restoration of materials found in the waste stream to a beneficial use that may be other than the original use.

RECYCLABLE PACKAGE

A package that can be diverted from the waste stream through available processes or programs, and can be collected, processed and returned to be used as a raw material or product.

RECYCLING

Recycling is a series of activities that includes collecting materials that would otherwise be considered waste, sorting and processing recyclables into raw materials such as fibers and manufacturing raw materials into new products.

RENEWABLE RESOURCES

A resource that can be replenished at a rate equal to or greater than its rate of depletion (i.e. solar, wind, geothermal and biomass resources).

RESPIRABLE PARTICLES

Respirable particles are those that penetrate into and are deposited in the nonciliated portion of the lung. Particles greater than 10 micrometers aerodynamic diameter are not respirable.

REUSE

Use a product more than once, either for the same purpose or for a different purpose. Reusing, when possible, is preferable to recycling because the item does not need to be reprocessed before it can be used again.

REUSABLE

Reusable means the potential of a product for reuse as defined above, and where facilities readily exist to make such reuse economically feasible.

RISK

The probability of injury, disease, or death under specific circumstances. In quantitative terms, risk is expressed in values ranging from zero, which represents the certainty that harm will not occur, to one, which represents the certainty that harm will occur.

RISK ASSESSMENT

The use of factual information to define the nature and impact of an adverse effect on individuals or populations who have been exposed to hazardous materials and situations. 2. A quantitative or qualitative evaluation to determine the probability of an adverse effect to human health or the environment by exposure to specific pollutants.

RISK MANAGEMENT

The process of evaluating alternative responses to risks and selecting among them. Includes consideration of technical, scientific, social, economic, and political information.

S

SARA

Superfund Amendments and Reauthorization Act of 1986

SBS

See "Sick Building Syndrome."

SENSITIVE SUB-GROUP POPULATION

means members of subgroups that comprise a meaningful portion of the general population, including, but not limited to, infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subgroups that are identifiable as being at greater risk of adverse health effects than the general population.

SVOC

Semi Volatile Organic Chemicals

SANITATION

1. Control of physical factors in the human environment that could harm development, health, or survival. 2. Process of putting an environment into a state that will not harm human health.

SANITIZER

One of three groups of anti-microbials registered by EPA for public health uses. EPA considers an antimicrobial to be a sanitizer when it reduces but does not necessarily eliminate all the microorganisms on a treated surface. To be a registered sanitizer, the test results for a product must show a reduction of at least 99.9% in the number of each test microorganism over the parallel control.

SICK BUILDING SYNDROME

Term sometimes used to describe situations in which building occupants experience acute health and/or comfort effects that appear to be linked to time spent in a particular building, but where no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be spread throughout the building.

SOLVENT

1. A substance capable of dissolving or dispersing one or more other substances. 2. The liquid component of a solution in which a substance is dissolved.

SOURCE REDUCTION

Source reduction is the elimination of waste before it is created. It involves the sustainable product designs, pollution prevention strategies, and waste elimination that lead to both economic and environmental benefits. Because it stops waste before it starts, source reduction is the top solid waste priority of the U.S. Environmental Protection Agency (EPA). In its solid waste management hierarchy, EPA ranks source reduction at the top of EPA's hierarchy because it reduces environmental impacts throughout the material's life cycle, from the supply chain and use to recycling and waste disposal. Therefore, source reduction is the most economical way to reduce waste.

STERILIZATION

The destruction of all living organisms in water or on the surface of various materials.

STERILIZER

One of three groups of anti-microbials registered by EPA for public health uses. EPA considers an antimicrobial to be a sterilizer when it destroys or eliminates all forms of bacteria, fungi, viruses, and their spores. Because spores are considered the most difficult form of a microorganism to destroy, EPA considers the term sporicide to be synonymous with "sterilizer."

SURFACTANT

Chemical compound that have both oil and water-soluble structures and can bring both water soluble and insoluble components together in a single liquid phase. Surfactants function in cleaning products to dissolve and remove oils and greases and to make water penetrate more readily.

SUSTAINABLE CLEANING

Sustainable cleaning is an integrated system of cleaning that uses sustainable practices and products having site-specific applications that will, over the long term:

- Enhances environmental quality and the natural resource base upon which the cleaning economy depends
- Takes a holistic, life cycle and cradle to grave approach to cleaning activities and products
- Protects humans before, during and after cleaning
- Make protection of human and environmental health the primary focus of cleaning
- Makes efficient use of nonrenewable resources and local building resources and integrates, where appropriate, natural biological cycles and controls.
- Helps sustain the economic vitality of cleaning operations
- Enhances the quality of life for professional cleaners and the societal community as a whole
- Extracts and removes unwanted substances out of the building and dispose of them properly
- Reduces, diminishes or eliminates chemical, particle and moisture residues
- Protects humans from exposure to contaminants, hazardous cleaning chemicals and residues
- Encourages proper disposal of cleaning products and the soils removed by them.
- Reduces or eliminates cleaning products that contain hazardous ingredients
- Reduces and controls the number of cleaning products used for cleaning a building

- Encourages use of equipment and techniques that promote sustainability
- Promotes the use of sustainable environmentally preferable sustainable cleaning products

SUSTAINABLE GREEN CLEANING PRODUCT

In order to be considered a sustainable product, a sustainable cleaning product must provide environmental, economic and social benefits while protecting and enhancing the needs of future generations, public health, welfare and environment over their full commercial cycle, from raw materials extraction to final disposition. A sustainable cleaning product must also provide the equivalent in performance and quality to other cleaning products. A sustainable cleaning product can be petrochemical-based or bio-based but must demonstrate throughout the supply chain, multiple attributes that protect public health and environment and foster healthy and prosperous conditions for human and ecological systems. Claims made on all sustainable attributes must be certified pursuant to this standard with public documentation that can be peer reviewed.

SUSTAINABILITY

Using resources in a way and at a rate that allows people to meet their needs and future generations to also meet theirs. It also means meeting environmental, economic and social needs.

T

TSP

Total suspended particulate concentration

TVOCS (TOTAL VOLATILE ORGANIC COMPOUNDS)

The total mass, typically in milligrams per cubic meter, of the organic compounds collected in air.

TERATOGEN

An agent that causes physical abnormalities in a developing embryo or fetus.

TERATOGENESIS

The nonhereditary birth defects in a developing fetus by exogenous factors such as physical or chemical agents acting in the womb to interfere with normal embryonic development.

THRESHOLD LIMIT VALUE (TLV)

Air concentration of chemical substances to which healthy workers can be exposed for 8-hour work days during a 40-hour work week without suffering an adverse effect.

TOLERANCE

A decreased responsiveness to the adverse effects of a chemical, biological or physical agent.

TOTAL SUSPENDED PARTICULATE MATTER

The mass of particles suspended in a unit volume of air when collected by a high-volume air sampler.

TOXIC

Capable of having an adverse effect on an organism; poisonous.

TOXICITY

The inherent ability of a chemical, biological, or physical agent to cause adverse effects in living organisms.

TOXICITY, ACUTE

The ability of a substance to cause adverse health effects (usually death) from a single exposure. The usual measure of acute toxicity is the amount of the substance required to kill half of the laboratory rats or mice exposed to it. (See Lethal Dose 50).

TOXICITY, CHRONIC

The ability of a substance to cause adverse health effects from non-lethal exposures over a period of time. One measure of chronic toxicity for aquatic organisms is the LC50 in water.

TOXICOLOGY

Study of adverse effects of chemical, biological agents, and physical agents on living organisms.

TRIPLE BOTTOM LINE

When economic, social and environmental benefits are integrated and balanced, sustainability can be maintained. Some businesses refer to this goal as the triple bottom line.

U

UG/M3

Micrograms per cubic meter

ULPA

ULPA (Ultra Low Penetration Air) is a filtering efficiency specification for filters used in environments like pharmaceutical labs wherein the highest degree of clean air must be maintained. An ULPA filter must retain all particles as small as 0.12 µm (micrometers - formerly microns) in size at an efficiency rate of 99.999%. The phrase "as small as" means that if all particles were that small, it would still have that efficiency. This should not be confused with the phrase "down to" which may mean a mixture of particle sizes for the stated efficiency.

USGBC (U.S. GREEN BUILDING COUNCIL)

A coalition of leaders from across the building industry that works to promote buildings that are environmentally responsible, profitable, and healthy places to live and work.

V

VAPOR

A substance in gas form, particularly one near equilibrium with its condensed phase, which does not obey the ideal gas laws; in general, any gas below its critical temperature.

VENTILATION

The process of supplying and removing air by natural or mechanical means to and from any space. Such air may or may not be conditioned.

VOLATILE

Able to evaporate readily. 2. Able to go to gas phase from a liquid or solid phase.

VOLATILE ORGANIC COMPOUNDS (VOCs)

Compounds that evaporate from the many housekeeping, maintenance, and building products made with organic chemicals. These compounds are released from products that are being used and that are in storage. In sufficient quantities, VOCs can cause eye, nose, and throat irritations, headaches, dizziness, visual disorders, memory impairment. Some are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans. At present, not much is known about what health effects occur at the levels of VOCs typically found in public and commercial buildings.

W

WHO

World Health Organization

WASTE WATER

Spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

WATER POLLUTION

Presence in water of enough harmful or objectionable material to damage or compromise water quality.

WATER SOLUBLE

A substance that will dissolve in water