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1.0 Introduction

UBC Building Operations' Custodial Unit (now referred to as UBC Custodial) is committed to reducing its impact on the environment and has implemented a comprehensive High Performance Green Cleaning Program to complement its Green Cleaning Policy. The goals of this policy are to reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants, which adversely affect air quality, human health, building finishes and systems, and the environment.

2.0 Program statement

The following boundaries apply to this program:

Physical boundaries: UBC Building Operations Custodial Services is responsible for cleaning at all campus buildings operated by the University.

Programmatic boundaries: Includes the purchase, handling, storage, disposal and standard operating procedures of all cleaning materials and equipment at UBC.

Note: The procedures outlined in this document are required for the LEED Canada EB:O&M Indoor Environmental Quality credit 3.1: High Performance Green Cleaning. Some content in this document is derived from the Canada Green Building Council's LEED Canada - Existing Buildings: Operations and Maintenance Reference Guide 2009, to align with specific credit requirements. All practices shall comply with applicable local regulatory requirements.

3.0 Implementation

The following sections present guidelines and resources for implementing this program. For specific green cleaning requirements, refer to the UBC Building Operations Custodial Green Cleaning Policy.

3.1 Staffing Plan

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UBC Custodial has implemented an appropriate staffing plan that is adequate to meet the cleanliness requirements set by the UBC Building Operations Custodial Green Cleaning Policy.

To satisfy the policy commitments, and to protect building systems and finishes from contaminants, the following measures will be employed in all UBC Vancouver buildings:

- Regular training/re-training of all cleaning personnel to address staff turnover and rotation.
- Frequent and intensive cleaning around areas particularly susceptible to dirt and bacteria collection such as around building entryways, bathrooms and food preparation and dining areas. UBC Custodial recognizes that increasing the frequency of cleaning will be more effective than the use of stronger chemicals on an infrequent basis.
- Documentation (including periodic review and task frequency evaluation) of the operations relative to cleanliness outcomes in the cleaning program.
- Regular revision of the staffing plan according to the ongoing results of cleanliness outcomes to maximize resource efficiency.

Roles and responsibilities are summarized as follows:

Superintendent:

- Responsible to direct, manage, coordinate and lead a staff responsible for the cleaning of Campus Buildings to APPA standards. Responsible for development of strategic business plans, implementing annual objectives and ensuring effectiveness of objectives.

Custodial Managers:

- Develops and implements strategic and operational plans for the Custodial Department to ensure effective staffing, work methods, tools and systems. Plays a critical role in supporting the Superintendent in managing custodial services and linking the Custodial Department with user departments.

Supervisors:

- Responsible for the delivery of construction cleaning and project work for all new and renewed buildings on Campus. Oversees quality assurance programs and ensures customer service and performance objectives are met.



Schedulers/Trainers:

- Under general direction is responsible for the planning, implementing and ongoing review of the Custodial work and custodial staff levels.

Head Service Workers:

- Responsible for the daily supervision and performance of a group of service workers and include the determination of multiple client needs and staffing requirements and ensuring all safety and administrative policies and procedures are adhered to.

UBC Custodial has committed to dedicating cleaning staff to ensure the APPA standards are adhered to and the cleanliness standards outlined in the UBC Building Operations' Custodial Green Cleaning Policy are achieved.

3.2 Training

Training for the cleaning staff at UBC Custodial must address the use, maintenance, disposal and recycling of their cleaning chemicals, dispensing equipment and packaging.

UBC Custodial has developed a Building Service Worker Training Manual which provides details on UBC's vision for a clean environment, policies and practices for cleaning staff, health and safety issues, information about equipment and supplies and standard cleaning and operating procedures (including low environmental impact practices and products).

The Building Service Worker Training Manual addresses:

- Green cleaning techniques and details on proper handling, use and storage of products and equipment.
- Environmental and health issues for the products and equipment used.
- Dispensing equipment and packaging.
- Management of hazardous spills and similar incidents.
- Cleaning by outsourced services.

The Building Service Worker Training Manual is provided to all new staff as part of their initial training. It is each employee's

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responsibility to read the Training Manual and practice its objectives.

Furthermore, all staff must receive WHMIS training as part of their orientation at the beginning of their employment. These training sessions are to be tracked and provided through the Risk Management Services and are available upon request.

Every new employee hired at UBC Building Operations Custodial Department is provided with an orientation of the department and hands-on custodial training. The Orientation and Training Record spreadsheet is available upon request from UBC Building Operations Custodial Department or by contacting 604-822-4165.

UBC Custodial will review the training with Supervisors to identify and verify if the cleaning staff require a refresher or reorientation of the training. In addition, UBC Custodial holds monthly mandatory meetings with all cleaning staff to provide information updates about new products in the inventory, refresh staff on cleaning techniques and to address ongoing performance. This is also a forum for staff to share concerns and experiences, or make suggestions for improvements.



3.3 Cleaning Systems

UBC Custodial is dedicated to using low environmental impact cleaning systems in all buildings. This includes: chemical dilution systems, cleaning materials, cleaning products, hand soaps, cleaning equipment, and floor maintenance activities.

3.3.1 Chemical Dilution Systems

UBC Custodial is dedicated to using chemical concentrates with appropriate dilution systems to minimize chemical use. UBC Custodial has committed to providing wall-mounted chemical dilution systems in 99% of UBC buildings.

The following criteria are adhered to at UBC Custodial:

- Chemical concentrates are dispensed from portion controlled, closed dilution systems to minimize chemical use.
- Core-less paper products are used in the building where possible and feasible. If not possible, paper core should be included in the recycling stream.

3.3.2 Low Environmental Impact Cleaning Materials

UBC Custodial is dedicated to using low environmental impact cleaning materials wherever possible. This includes: cleaning materials, janitorial paper products, and trash bags (including microfibre tools and wipes). Training is provided to staff in these areas to ensure the proper implementation of all systems.

The following criteria are adhered to at UBC Custodial with respect to disposable janitorial paper products and trash bags:

- U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.
- Green Seal GS-09 for Paper Towels and Napkins.
- Green Seal GS-01 for Tissue Paper.
- Environmental Choice CCD-082 for Toilet Tissue.
- Environmental Choice CCD-086 for Hand Towels.
- Janitorial paper products derived from rapidly renewable resources or made from tree-free fibers.



Resources :	
U.S. EPA Comprehensive Procurement Guidelines	http://www.epa.gov/epawaste/consERVE/tools/cpg/index.htm

3.3.3 Low Environmental Impact Cleaning Products

UBC Custodial has committed to using Green Seal or Ecologo for at least 40% of its cleaning products (by cost). UBC Custodial trains their staff in these areas to ensure the proper implementation of all systems.

A current copy Material Safety Data Sheet (MSDS) for each chemical used on site is stored in a binder located at each key UBC Custodial office (3 locations: C+CP, SUB and LSC Custodial sign-in/out offices) and is easily accessible to cleaning staff. Copies can be found in Appendix A.

All cleaning products conform to one or more of the following standards or criteria):

Cleaning products:

- Green Seal GS-37 for General-Purpose, Bathroom, Glass, and Carpet Cleaners used for Industrial and Institutional Purposes.
- Environmental Choice CCD-110 for Cleaning and Degreasing Compounds.
- Environmental Choice CCD-146 for Hard Surface Cleaners.
- Environmental Choice CCD-148 for Carpet and Upholstery Care.

If the above standards are not applicable for a specific product category (e.g., for products such as disinfectants, metal polish, floor finishes or strippers), products must meet one or more of the following programs for the appropriate product category:

- Green Seal GS-40 for Industrial and Institutional Floor-Care Products.
- Environmental Choice CCD-112 for Digestion Additives for Cleaning and Odour Control.
- Environmental Choice CCD-113 for Drain or Grease Traps Additives.
- Environmental Choice CCD-115 for Odor Control Additives.
- Environmental Choice CCD-147 for Hard Floor Care.
- California Code of Regulations maximum allowable VOC levels for the specific product category.



Hand soaps do not contain antimicrobial agents, except where required by health codes and other regulations. A summary of all cleaning chemicals, Janitorial Paper Products and Trash Bags products by cost and type is also included in Appendix B.

Resources :	
GreenSeal	http://www.greenseal.org/
EcoLogo / Environmental Choice	http://www.ecologo.org/en/

3.3.4 Sustainable Cleaning Equipment

All cleaning equipment meets the following requirements. All future purchases of equipment will also meet these requirements:

- Vacuum cleaners are certified by the Carpet and Rug Institute "Green Label" Testing Program.
- All new vacuum cleaners purchased will 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.
- Most Powered floor maintenance equipment, including electric and battery-powered floor buffers and burnishers, are equipped with vacuums, guards and/or other devices for capturing fine particulates and operates with a sound level of less than 70dBA.
- Automated scrubbing machines are equipped with variable speed feed pumps and on-board chemical metering to optimize the use of cleaning fluids.
- Battery-powered equipment is equipped with environmentally preferable gel batteries.
- Powered equipment is ergonomically designed to minimize vibration, noise and user fatigue. UBC Custodial have performed Ergo Assessments on their cleaning equipment inventory, details of which can be requested from the UBC Building Operations Custodial Office at 604-822-4165.
- Equipment is designed with safeguards, such as rollers or rubber bumpers, to reduce potential damage to building surfaces.



UBC Custodial keeps a log for all powered cleaning equipment to document the date of equipment purchase and all repair and maintenance activities. This includes vendor specification sheets for each type of equipment in use. This database can be reviewed upon request by contacting the Building Operations Custodial office at 604-822-4165.

Resources :	
Carpet and Rug Institute - Green Label Plus Program	http://www.carpet-rug.org/commercial-customers/green-building-and-the-environment/green-label-plus/

4.0 Additional Green Cleaning Activities

4.1 Custodial Effectiveness Assessment

UBC Custodial conducts audits in accordance with APPA Leadership in Educational Facilities' (APPA) Custodial Staffing Guidelines to determine the appearance level of the facility. UBC have set a target score of a minimum of 75%.

Allocated staff members conduct walk-through inspections of a sample of rooms in the building to evaluate the effectiveness of the cleaning program. They are tasked with identifying areas that fall below UBC Custodial's expected standard and note suggested improvements to the cleaning program accordingly.

UBC Custodial has adopted a 5 step process for APPA audits, as outlined below:

Step 1: Identify the auditor or auditors.

UBC Custodial selects the appropriate Head Service Workers, Managers and Supervisors to perform the audits in their spaces of responsibility. UBC Custodial requires the Head Service Worker to



complete two audits per month, and Managers and Supervisors to perform audits on a less frequent random basis.

Step 2: Identify the audit sample.

Where possible, random spaces are selected for audit to ensure that each space type is adequately represented. In addition, UBC Custodial requires auditors to focus on problem areas that have been identified either by the client or the custodial department. Audits of these areas are repeated until the required satisfaction level is achieved.

Step 3: Develop an audit analysis for each space type.

A standard list is compiled for each space type reflecting the common items found in that space. The APPA scoring system involves five appearance levels and weighting factors. The appearance levels are as follows:

- Level 1: Orderly Spotlessness
- Level 2: Ordinary Tidiness
- Level 3: Casual Inattention
- Level 4: Moderate Dinginess
- Level 5: Unkempt Neglect

Detailed descriptions of each appearance level and specific discriminators for scoring can be found in the APPA guidelines. For each space type, score the appearance items using the five levels, apply the weighting factor to determine the raw score, and calculate the average appearance level for the audited rooms.

Step 4: Conduct the audit.

APPA estimates that a room can be audited in 10 minutes. The audit should be performed during a period of normal business operations (although it does not need to be performed during business hours), when occupancy and activities would reflect normal levels and patterns. No advance notice of the audit should be given to clients.

Step 5: Calculate the score.

Calculate the overall appearance level of the building by aggregating the audit averages for each space type. To determine the Overall Appearance Level, divide the total Average Score for Space Type by the number of APPA Category space types.



Please refer to Appendix C for a copy of the UBC Custodial Quality Assurance audit form.

Resources :	
APPA	http://www.appa.org/

4.2 Indoor Chemical Pollutant Source and Control

UBC utilizes entryway systems (grilles, grates, mats) to reduce the amount of dirt, dust, pollen and other particles entering the building at all public entryways, and has developed the associated cleaning strategies to maintain those entryway systems as well as exterior walkways.

UBC Custodial policy is to install 3 meters (10 feet) of mats immediately inside all public entryways for all new or renovated buildings. Public entryways that are not in use or serve only as emergency exits are excluded from the requirements, as are private offices.

UBC policy for hazardous materials and hazardous wastes in labs requires that they are not disposed of via sinks and are collected in approved containers to be processed through the Environmental Services Facility for either recycling or disposal by approved methods. Further information regarding this policy can be found in the UBC Technical Guidelines.

Resources :	
UBC Technical Guidelines	http://www.technicalguidelines.ubc.ca/

4.3 Indoor Integrated Pest Management

UBC Custodial maintains an indoor integrated pest management (IPM) plan, defined as managing indoor pests in a way that protects human health and the surrounding environment and that improves economic returns through the most effective, least-risk option. The IPM uses the least-toxic chemical pesticides, minimal use of chemicals used only in targeted locations and only for targeted species.

UBC Custodial contracts the Pest Services through Orkin/PCO Services Corporation to ensure the program is specific to the Vancouver campus.

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The IPM Plan employs a seven step approach to pest control which addresses every factor in pest prevention and eradication, including maintenance and sanitation.

Please refer to Appendix D for the full IPM Plan.

Resources :	
Orkin	http://www.orkincanada.ca/en-ca/



APPENDIX A: CLEANING CHEMICALS MSDS REGISTER

MSDS reference	Cleaning Product name	Product Use
1	Buckeye Citation	Floor finish
2	*Enviro Chem floor finish restorer	Floor finish restorer
3	ES 53	Cream bathroom cleanser
4	ES 64c	General purpose disinfectant
5	ES 71c	General purpose cleaner
6	ES 75c	Heavy-duty degreaser/cleaner
7	Plaza Plus Sealer	Floor sealer/finish
8	GOJO foam hand cleaner	Foam hand cleaner
9	ES 56c	Washroom cleaner
10	ES 90	Floor stripper

*New product on cleaning product inventory as of June 2012

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**APPENDIX B: SUMMARY OF ALL CLEANING CHEMICALS, JANITORIAL
PAPER PRODUCTS AND TRASH BAGS PRODUCTS BY COST AND TYPE**

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Annual Purchase of Janitorial Paper Products and Trash Bags (01/4/2011 to 31/3/2012)

Date of Purchase	Purchasing entity/organization	Item Purchased	Sustainability Criterion	Cost per item (\$)	Quantity Purchased	Total Value (\$)
3/26/2012	UBC Building Operations Custodial	Scott Jumbo Roll Tissue JRT	U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.	9.6	335	3,216.00
3/30/2012	UBC Building Operations Custodial	#8331 8" Scott Roll Towels	U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.	29.2	7465	217,978.00
3/29/2012	UBC Building Operations Custodial	#92 XL bags 35x50	U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.	21.32	1090	23,238.80
3/30/2012	UBC Building Operations Custodial	Garbage L bags 30x38	U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.	18.32	3453	63,258.96
3/30/2012	UBC Building Operations Custodial	4472 Garbage Lab bags 24x30	U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.	20.42	1180	24,095.60
3/21/2012	UBC Building Operations Custodial	600018 Garbage bags 22x24 clear	U.S. EPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.	19.88	250	4,970.00
Total value of sustainable janitorial products and trash bags:						\$336,757.36
Total value of janitorial products and trash bags:						\$336,757.36
Sustainable janitorial paper and trash bag products as a percentage of total cost of janitorial paper and trash bag products:						100%

Annual Purchase of Cleaning Products, Disinfectants and Hand Soaps (01/4/2011 to 31/3/2012)

Date of Purchase	Purchasing entity/organization	Item Purchased	Sustainability Criterion	Cost per item (\$)	Quantity Purchased	Total Value (\$)
3/26/2012	UBC Building Operations Custodial	Buckeye floor finisher	N/A	21.66	1302	28,201.32
3/21/2012	UBC Building Operations Custodial	ES 53 Cream bathroom cleanser	Environmental Choice Program CCD-146J-Bathroom Cleaner	5.74	1590	9,126.60
3/30/2012	UBC Building Operations Custodial	ES 64c General purpose disinfectant	N/A	32.79	1034	33,904.86
3/26/2012	UBC Building Operations Custodial	ES 71c General purpose cleaner	Green Seal GS-37	53.39	1044	55,739.16
3/30/2012	UBC Building Operations Custodial	ES 75c Heavy-duty degreaser/cleaner	Environmental Choice Program CCD 146 Hard Surface Cleaners	45.72	241	11,018.52
9/29/2011	UBC Building Operations Custodial	Plaza Plus Sealer	N/A	92.2	10	922.00
4/1/2011	UBC Building Operations Custodial	ES 56c	Environmental Choice Program CCD 146 Hard Surface Cleaners	6.19	2189	13,549.91
1/13/2012	UBC Building Operations Custodial	ES 90	Environmental Choice Program CCD 147 Hard Floor Care	13.87	720	9,986.40
3/27/2012	UBC Building Operations Custodial	GOJO foam hand cleaner	Environmental Choice Program CCD-104: Hand Cleaners - Industrial & Institutional	11.07	8058	89,202.06
-	-	* Enviro Chem floor finish restorer	Environmental Choice Program CCD-147: Floor Care Products	-	-	-
Total value of sustainable (certified) cleaning products and materials:						\$188,622.65
Total value of cleaning products and materials:						\$251,650.83
Sustainable cleaning products and materials as a percentage of total cost cleaning products and materials:						75%

*New product (as of June 2012) on the list of cleaning products used by UBC Custodial. It does not fall within this reporting period however will be included in future inventories.

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APPENDIX C: UBC CUSTODIAL QUALITY ASSURANCE AUDIT FORM

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APPENDIX D: UBC INTEGRATED PEST MANAGEMENT PLAN