Best Practice Guide:

Custodial Equipment Modernization

Custodial Best Practice Toolkit

Table of Contents

1 Overview 3

2 Best Practice in Floor Care Equipment 4

2.1 Automatic Floor Scrubbers 4

2.2 Floor Polishing Burnishers 8

2.3 Floor Finish Applicators 12

3 Vacuum Selection Best Practices 14

3.1 Back Pack Vacuums 14

3.2 Canister Vacuums 15

3.3 Up right Vacuums 16

3.4 Wet dry Tank type vacuums 16

4 Chemical Dispensing 17

5 Hand Soap Dispensing 17

6 Air Hand Dryers 18

7 Microfiber Cleaning 19

8 Appendix – Custodial Equipment & Supplies Procurement 22

1 Overview

Best Practices Guide: Custodial Equipment Modernization

The purpose of this guide is to outline best practices that are available to school districts to assist with maximizing the efficiency and performance of custodial operations. The goal is to assist school districts across the province with maintaining a high standard of cleanliness that will result in a healthy learning environment for students and staff.

The following documentation provides analysis and best practice-based recommendations on selecting and implementing modernized custodial equipment in school districts. Equipment productivity benchmarks, including scenarios for large and small facility spaces have also been included for reference. It is expected that investing in and increasing the use of mechanized custodial equipment will result in the reduction in custodial musculoskeletal (MSI) injury rates and replacement costs for injured custodial staff.

Cost reductions will also be seen in reduced supply costs by ensuring dispensing systems are in place that maximize product effectiveness while reducing usage. It is expected that operational efficiencies will also be gained by extending timelines before major restorative cleaning is required. This will ensure the custodial cleaning time available is used as efficiently as possible to maintain a high level of cleanliness in our school system.

Custodial Best Practice Toolkit

Be sure to refer to the following documents that, along with this guide, comprise the Custodial Best Practice Toolkit:

- Standardized K-12 Custodial Handbook
- Best Practice Guide: Custodial Planning, Supervisory, & Training
- Custodial Self-Assessment Tool
- Service Delivery Project – Facilities Management Business Case

2 Best Practice in Floor Care Equipment

2.1 Automatic Floor Scrubbers

The current best practice for the cleaning and care of medium and large floor areas is to use ride on floor equipment. It has been shown to be the most productive and cost-efficient method to maintain the cleanliness of medium and large areas.

Today's automatic floor scrubbers are designed with features that not only reduce the time required to complete the task but also reduce the probability for injury for the operator. This equipment is designed to take the manual labour out of the daily floor care process.

Scrubber Selection

Best Practice: Ride-on Design Automatic Scrubbers

The most efficient models of automatic scrubbers are ride on models. They are available in a selection of sizes that can be adapted for most school designs.

Available features include: on board charging systems, on board chemical dispensing, solution recycling systems, oscillating pad systems, maintenance free batteries, chemical free systems and either standing or siting operator positions. Models with oscillating pad systems are the most efficient for cleaning without chemicals or stripping floors with limited chemical usage.

Models are available from most manufacturers in cleaning path sizes from 20 inches to over 50 inches. Machines that fit the typical school design are usually between a 20 inch to 28-inch scrub path. This enables the equipment to be used not only for daily floor maintenance but also for restorative floor processes throughout the facilities.

With stand-up configurations, the machines will fit into most custodial storage rooms and can be utilized as a second machine to cover second story areas.

Selection of equipment type and size will depend upon a number of factors including building size, entrance widths, door widths, number of stories, flooring type, storage space available, power availability, elevator accessibility, environmental commitment and LEED design standard to name a few.

Benefits

- Injury avoidance – operators are not subjected to the same stresses they would be by completing this task in any other fashion. Arms, shoulders, backs, legs and feet are given time to recover during this task thereby reducing the probability of injury during the shift.

- This type of floor machine will reduce /eliminate operator fatigue and reduce the

time required to complete the assigned task.

- Increased productivity as one operator can cover multiple areas in a facility freeing up demand on other staff or in single staff buildings freeing up time for the operator to improve cleaning standards in the facility.

- Increased floor cleaning standard – as the design of the automatic scrubber scrubs and picks up the scrubbed solution off the floor there significantly is less dirt retained in/on the floor surface which improves appearance and lengthens the restorative cycle.

- Reduces restorative costs by keeping the floor surface cleaner thus extending the deep scrub, strip and re-coat cycles. Relatively short payback time when injury reduction, replacement costs and floor care restorative life cycle extension are taken into consideration. Usually under 2 years direct payback.

For these reasons more and more school district across the province are moving towards ride on scrubbers as one of the solutions to increase efficiencies within their custodial operations.

Productivity Rates - ISSA 612 Standards

Using the ISSA standard practical cleaning time, which will give a conservative production rate, the use of ride on equipment significantly reduces cleaning times.

Equipment Type	**Sq. feet**	**Minutes**	**Sq. feet per hour**
Damp Mop with 24 oz Mop Head and Single Bucket and Wringer	1000	12	5000
Damp Mop with 16 oz. Mop Head using Single Bucket & Wringer	1000	14.4	4167
Wet Mop & Rinse with 24 oz. Mop Using Single Bucket & Wringer	1000	23.4	2564
Wet Mop & Rinse with 16 oz. Mop Using Single Bucket & Wringer	1000	34.8	1724
Scrub with Automatic Scrubber Scrub with 20" - wheel-propelled unit – Practical	1000	6.47	9274
Scrub with Automatic Scrubber Scrub with 20" -Rider - Practical	1000	4.41	14492
Scrub with Automatic Scrubber 24" Walk-behind wheel-propelled unit – Practical	1000	5.39	11132
Scrub with Automatic Scrubber	1000	3.87	15503

Equipment Type	Sq. feet	Minutes	Sq. feet per hour
24" Rider – Practical			
Scrub with Automatic Scrubber 26" Walk-behind wheel-propelled unit – Practical	1000	4.79	12526
Scrub with Automatic Scrubber 26" Rider – Practical	1000	3.59	16713
Scrub with Automatic Scrubber 27" Walk-behind wheel-propelled unit – Practical	1000	4.79	12526
Scrub with Automatic Scrubber 27" Rider – Practical	1000		
Scrub with Automatic Scrubber 28" Walk-behind wheel-propelled unit – Practical	1000	4.31	13920
Scrub with Automatic Scrubber 28" Rider with recycling - Practical	1000	3.33	18018
Scrub with Automatic Scrubber 32" Rider with recycling - Practical	1000	2.94	20408
Scrub with Automatic Scrubber 32" Walk-behind wheel-propelled unit – Practical	1000	4.04	14851
Riding auto-scrubber cleaning speed		275 linear ft per min	3.10 mph
Riding sweeper maximum speed		378.4 linear ft per minute	4.30 mph

Productivity Examples:

Elementary schools

Damp mopping a 4000 sq. ft elementary gymnasium takes 48 minutes while a 20-inch rider the same area would take 17.64 minutes.

The productivity comparison shows that on days that the ride on scrubber is used, the time to complete this one task has decreased by over 60 percent. In an elementary school there would be 30 minutes additional cleaning time made available per month for this one area. If there were 4000 sq. feet of common area in the school including halls and foyers an additional 30 minutes per day would be available.

Secondary school gyms

Damp mopping an 8000 sq. feet secondary gymnasium takes 96 minutes.
Using a 24-inch rider for the same area would take 30.96 minutes.
Using a 26-inch rider would take 28.72 minutes.
Using a 28-inch rider would take 26.64 minutes.

The productivity comparisons show that on days that the ride on scrubber is used, the time to complete this one task has decreasedby over 60 percent. In a secondary school there would be over 65 minutes of additional cleaning time made available per month.

Secondary school common areas

For secondary schools with common areas of 20,000 sq. feet
damp moping 20,000 sq. feet would be 4 hours or 240 minutes
Using a 24-inch rider for the same area would take 78 minutes.
Using a 26-inch rider for the same area would take 72 minutes.
Using a 28-inch rider for the same area would take 67 minutes.

The productivity comparisons show that on the day the common areas are auto scrubbed there would be an additional 162 minutes of cleaning time made available per week.

Alternate Recommendation:

For areas where ride on equipment is not viable, consider investing in walk behind self-propelled battery auto scrubbers for smaller schools and floor areas.

Walk behind automatic scrubbers do present a lot of the same efficiencies as the ride on automatic scrubbers. They perform the task of cleaning and scrubbing floors in a much more efficient manner then using a mop and bucket approach.

The end product is superior to mop and bucket operations. Also the restorative cycles are extended allowing for reductions in overall operating costs and increased operational efficiency. The two differences between the ride-on style and the walk behind style is the time to complete the area and increased operator fatigue from walking and turning the equipment.

Equipment type	**Area**	**Minutes per 1000 sq. feet**	**Sq. feet per Hour**
Damp Mop with 24 oz Mop Head and Single Bucket and Wringer	1000	12	5000
Scrub with Automatic Scrubber Scrub with 20" - wheel-propelled unit – Practical	1000	6.47	9274

Scrub with Automatic Scrubber Scrub with 20" - Rider - Practical	1000	4.41	14492

The walk behind self-propelled scrubber is 46 percent more efficient than utilizing a mop and bucket system for daily floor cleaning. Ride on scrubbers of the same cleaning path size are 65 percent more efficient than utilizing a mop and bucket system for daily floor cleaning.

2.2 Floor Polishing Burnishers

The use of floor burnishers increases the overall appearance of a floor surface while extending the restorative floor care cycle. Burnishing also reduces the surface drag that increases the physical stresses on the custodial staff while dust or damp mopping a floor area. The use of a burnisher also enhances the operator's ability to remove dirt from the floor surface.

Battery powered ride on floor burnishers:
The battery powered ride on floor burnishers provide most of the same advantages as the ride on automatic floor scrubbers

Benefits

- Injury avoidance – operators are not subjected to the same stresses they would be by completing this task in any other fashion. Arms, shoulders, backs, legs and feet are given time to recover during this task thereby reducing the probability of injury during the shift.
- This type of equipment will reduce /eliminate operator fatigue and reduce the time required to complete the assigned task.
- Increased productivity as one operator can cover multiple areas in a facility freeing up demand on other staff or in single staff buildings freeing up time for the operator to improve cleaning standards in the facility.
- Increased floor cleaning standard since the design of the burnishers polishes and repairs damage to the floor finish. The speed and pressure on the floor also smooths and hardens the finish extending the life of the finish.
- Equipment has the least negative effect on indoor air quality as the equipment is equipped with HEPA dust control systems.
- The operation of a high-speed floor burnisher also enhances the floor's ability to release surface dirt which results in lengthening the restorative cycle.
- Relatively short payback time when injury reduction, replacement costs and life cycle extension are taken into consideration. Usually under 2 years direct payback.

Using the ISSA standard practical cleaning time, which will give us a conservative production rate, the use of ride on equipment significantly reduces burnishing times.

Equipment Type	**Sq. feet**	**Minutes per 1000 sq. feet**	**Sq. feet per hour**
Dry Buff/Polish with 175 rpm 20" Rotary Floor Machine Electric	1000	25.2	2381
Dry Buff/Polish with 350 rpm 20" Rotary Floor Machine Electric	1000	15	4000
Dry Buff/Polish with 1000 + rpm 20" Rotary Floor Machine Electric	1000	6.6	9090
Dry Buff/Polish with 2000 + rpm 20" Rotary Floor Machine Electric	1000	6	10,000
Dry Buff/Polish with 2000 + rpm 24" Rotary Floor Machine Electric	1000	4.8	12,500
Dry Buff/Polish with 2000 + rpm 27" Rotary Floor Machine Electric	1000	4.2	14,286
Dry Buff/Polish with 2000 + rpm 20" Rotary Floor Machine – Propane	1000	3.65	16,438
Dry Buff/Polish with 2000 + rpm 24" Rotary Floor Machine – Propane	1000	3.05	19,672
Dry Buff/Polish with 2000 + rpm 27" Rotary Floor Machine – Propane	1000	2.7	22,222
Dry Burnish with 2500 + rpm 20" Burnisher – Battery	1000	3.68	16,260
Dry Burnish with 2000 + rpm 24" Burnisher - Battery	1000	3.33	18,018
Dry Burnish with 1600 + rpm 27" Burnisher - Battery-	1000	2.72	22,059
Dry Burnish with 2500 + rpm 20" Burnisher - Battery – Rider	1000	2.5	24,000
Dry Burnish with 2000 + rpm 24" Burnisher - Battery – Rider	1000	2.16	27,777
Dry Burnish with 1600 + rpm 27"	1000	1.85	32,432

Equipment Type	Sq. feet	Minutes per 1000 sq. feet	Sq. feet per hour
Burnisher - Battery – Rider			

Productivity Examples:

Elementary Schools

Elementary schools average of 4000 sq feet of corridor and common area time comparisons.

Buffing a 4000 sq. feet of corridor space with a 20-inch 350 rpm swing buffer takes 60 minutes.
Burnishing the same area with a 20-inch 2000 rpm electric burnisher would take 24 minutes.
Burnishing the same area with a 20-inch 2000 rpm rider would take 10 minutes.

Utilizing ride on technology on the day that burnishing is performed there will be over 50 minutes of additional cleaning time available to increase standards in the facility. This also enables the custodial staff to increase the frequency of burnishing to increase appearance levels and decrease restorative floor care requirements.

It is the most efficient method of performing this function.

For small schools where storage is limited and square footage does not warrant the expenditure, the use of an electric 20-inch burnisher will still reduce the time required by more than 50 percent and provide an additional 36 minutes of cleaning time on the days floor buffing is done.

Secondary Schools

Changing floor care practices from swing buffing to burnishing has been taking place since the mid-90s in school districts around the province. This practice reduces the time required, improves the overall appearance of facilities and to a degree extends the restorative floor care cycle.

Secondary school common areas average approximately 20,000 sq. feet.

Dry buffing the average secondary school common area space of 20,000 sq. feet with a 20 inch 350 RPM swing buffer would take 300 minutes while using a 20-inch electric burnisher would be 120 minutes.

The next evolution:

Battery powdered burnishers- the majority of battery powdered burnishers have drive systems that decrease the effort required to operate the equipment. Changing from a electric burnisher to a battery burnisher with a drive system increases efficiencies but does not maximize productivity.

Dry burnishing 20,000 sq. feet of floor with a 20-inch battery burnisher is 73 minutes.
Dry burnishing 20,000 sq. feet of floor with a 24-inch battery powered is 66 minutes.
Dry burnishing 20,000 sq. feet of floor with a 27-inch battery powdered is 54.4 minutes.

Moving from buffing with 350 rpm swing buffers to 20-inch battery burnishers provides an additional 227 minutes of cleaning time per week.

Moving from an electric 20-inch burnisher to a battery burnisher of the same pad size provides an additional 47 minutes of available cleaning time per week.

Changing to a larger machine with a larger pad diameter reduces the time for the task even further.

Ride-on advantage:

A 20-inch battery ride on burnisher covering the same area would be 54 minutes.
The increased productivity compared to an electric burnisher is 66 minutes more cleaning time available for facility improvements.

A 24-inch battery ride on burnisher covering the same area would be 43 minutes
The increased productivity compared to an electric burnisher is 77 minutes more cleaning time available for facility improvements.

A 27-inch battery ride on burnisher covering the same area would take 37 minutes
The increased productivity compared to an electric burnisher is 83 minutes more cleaning time available for facility improvements.

This shows that on the day the common areas are burnished there would be an additional 66 to 87 minutes of additional cleaning time per week available to that facility.

If the present common area burnishing program is done on a weekly basis, moving to a ride on burnisher would free up over 2500 hours of cleaning time on an annual basis. This does not take into account the uses of the equipment for restorative floor care which will further increase efficiencies in the operations department.

Alternate Recommendation

For areas that ride on equipment is not viable the use of a battery powered burnisher with drive.

For small schools where storage is limited and square footage does not warrant the expenditure the use of an electric 20-inch burnisher will still provide a 50% productivity increase over a 350 RPM swing buffer.

2.3 Floor Finish Applicators

Best Practices – Utilize Back Pack Floor Finish Applicators for floor finish application.

Histrionically floor finish was applied by a mop and bucket method where the fine string mop head was soaked in the bucket and wrung out. It was then applied to the floor. When the mop head started to drag it was placed back into the bucket, soaked, wrung out and the process continued.

The difficulties with this method was every time the mop head was placed back into the bucket and wrung out contaminates were left in the bucket. The finish in the bucket would change colour from a white translucent product to a colour that was more a tan colour in appearance indicating the cross contamination had occurred. The operator would have to lift the mop re soak and wring out multiple times during process which places greater physical stresses on the operator.

Using a back-pack floor finish applicator to complete this process has many advantages that can reduce the costs of this process. Applicator pads can be changed out quickly during the process to assist in reducing cross contamination of finish on the surface giving a better, clearer and cleaner result. Also, applicator pads hold less finish in the pad so product wastage during cleanup is minimal compared to finish mops.

The product is the applicator tank does not come in contact with the pads so cross contamination from wetting the pad is not possible and the product in the applicator tank can be returned to the supplier's container when the job is complete so wastage of product at the end of the job in minimal.

In addition, the use of an applicator can reduce the physical strain on the operator as it required less arm movements and body twisting then a finish mop and the microfiber applicator pad weighs 80 % less when filled with finish.

Benefits

- less product waste
- a cleaner application and no cross contamination of product
- quicker cleanup of pads and applicator
- faster application
- better control of application
- less physical strain on operator and more ergonomically correct way to complete task

Costs

- Initial costs of applicators will be more than a basic finish mop and handle assembly.
- Training for operators will be required for both application process and equipment maintenance

Cost can be limited if the district is using a finish crew for floor finish application.

Time comparisons from ISSA Cleaning Time

Method	**Sq. feet**	**Minutes per 1000 sq. feet**	**Sq. feet per hour**
Apply Floor Finish using Mop	1000	36	1667
Apply Floor finish using Gravity-Feed Applicator	1000	24	2500
Apply Floor Finish using back pack applicator and 24" microfiber mop	1000	9.5	6316
Clean-Up Materials & Equipment After Use		**Minutes**	
Mop (Kentucky, string type) wring and rinse in service closet sink after applying finish/seal		10	
Mop (flat microfiber) wring and rinse in service closet sink after applying finish/seal		1	

Summary

The above chart demonstrates the most productive method of applying floor finish is utilizing a floor back pack finish applicator with 24-inch microfiber applicator pads. This method is more than three times more efficient then mop and bucket application and the clean-up of pads and applicator is considerably quicker and easier.

3 Vacuum Selection Best Practices

Since in most districts carpeting is being replaced with hard surface floors school districts the locations that carpeting is found usually is limited to libraries, auditoriums and music rooms.

Secondary school classrooms are also an area that carpeting may still be present depending on the replacement cycle. Area carpets are also found in primary classrooms for reading areas and matting is usually found at all entrances to a building.

Dry Vacuums are used for a number of other functions such as low dusting, high dusting, cleaning dust mops and removing debris from hard surface areas such as stairways.

The Wet tank style vacuum is primarily use for floor restoration process in areas that an automatic scrubber cannot access.

Vacuum selection

The number one efficiency that can be gained with carpet care is the effect vacuums have on indoor air quality.

Any vacuum used in a K-12 school district should be equipped with a proper filtration system that prevents the re-circulation of dust in the facility. HEPA filtration is the best practices standard for all vacuums used for dry vacuuming.

HEPA stands for high-efficiency particulate air.

Essentially, **True HEPA** air purifiers captures up to 99.97 percent of particles as small as 0.3 microns, which include a range of allergens and odors. On the other hand, a purifier with a **HEPA Type** filter is capable of capturing 99 percent of particles that are 2 microns or larger, such as pet dander and dust.

The HEPA filtration is available on most commercial vacuum models.

3.1 Back Pack Vacuums

Back Pack Vacuums allow the operator to access areas quicker than a canister or tank style vacuum.

Back Pack Vacuums also reduce the trip hazards by not having a hose and canister trailing behind the operator and eliminate the hose management issues typically experienced with the other styles of vacuums. They also reduce stresses on the arm and elbow areas as there is no machine and hose assembly being pulled behind the operator.

Back Pack Vacuums typically weights approximately 10 lbs. and are designed with an ergonomic harness which distributes the weight evenly across the operators hips and

shoulders. Custodians who utilize this style of vacuum must have a degree of fitness which will allow them to work with the additional weight.

These vacuums are not designed for individuals who have a history of leg and back issues. Hence, vacuum equipment selection for the individual custodian is an important factor in choosing the right tools for the job.

ISSA cleaning times indicate that Back Pack Vacuums are twice as efficient as the canister and tank styles.

Vacuum Types	**Sq. feet**	**Time per 1000 sq. feet**	**Sq. feet per hour**
Vacuum with Back-Pack Vacuum & 14" Orifice Carpet Tool	1000	8.1	7407
Vacuum with Back-Pack Vacuum & 16" Orifice Carpet Tool	1000	8	7500
Vacuum with Back-Pack Vacuum & 18" Orifice Carpet Too	1000	7.75	7742
Vacuum with Tank Type/Canister Vacuum & 14" Orifice Carpet Tool	1000	22.2	2703
Vacuum with Tank Type/Canister Vacuum & 16" Orifice Carpet Tool	1000	20.4	2941
Vacuum with Tank Type/Canister Vacuum & 18" Orifice Carpet Tool	1000	18.6	3226
Vacuum with 14" Upright Vacuum	1000	21	2857
Vacuum with 16" Upright Vacuum	1000	17.4	3448
Vacuum with 18” Upright Vacuum	1000	14.2	4225

According to the productivity table above, utilizing a back-pack vacuum is expected to increase efficiencies by over 50%.

3.2 Canister Vacuums

Today canister vacuums come in a variety of shapes and sizes. HEPA filtration is available on most commercial models. Weight, durability, suction, filtration, tools availability and maneuverability should be considered when choosing which a vacuum is suitable for your district.

Where a back-pack vacuum is not practical due to operator suitability a light weight canister vacuum with HEPA filtration is the recommend alternative. The canister vacuums typically weight 50 % less than a tank style vacuum and they follow the operator more efficiently.

The ISSA cleaning times indicate there is no difference between in area cleaned per hour between a tank style and a canister style vacuum But the lighter weight and easier maneuverability of the canister style vacuum will result in less physical stresses put on the operator which should result in less MSI type injuries.

3.3 Up right Vacuums

Upright vacuums put the most physical stresses on the body of the operator. This is due to the operator having to move the weight of the machine continually throughout its operation.

Use of this type of equipment should be limited to small areas where it is not viable to use any other style – e.g. for outbuildings

3.4 Wet dry Tank type vacuums

These vacuums are primary used for wet pickup in today's school environments. A couple of features that optimize operation of this type of equipment is the addition of a large area floor squeegee and drain valves / plugs.

A large area squeegee attachment enables the vacuum to be used is the same fashion as an auto scrubber for picking up solutions from the floor. These types of attachments lessen the amount of arm and back movement making the operation easier and quicker than the use of a vacuum wand and hose.

Drain plugs for areas that have a designed drain area that enable the operator to empty the equipment into a floor drain without the same physical effort of picking up or tipping the tank to empty it.

If tank style vacuums are being used for dry pickup then the filtration systems must be such that it can provide HEPA quality filtration. Typically, this is accomplished with the use of high filtration paper bags in the vacuum and secondary filtration on the vacuum exhaust.

4 Chemical Dispensing

Best practice: Use of chemical dispensing systems for cleaning chemicals

The use of cleaning chemical dispensing systems not only saves wastage and over use of cleaning products it also has a direct effect on the cleaning frequency requirements and life cycles on surfaces.

Over dilution of cleaning products creates detergent residues on surfaces which if not rinsed off will cause the surfaces to be tacky and allow dust and dirt to adhere better to the surfaces thus increasing the frequency of cleaning required.

Overuse will also affect the life cycle of the surfaces whether they are painted surfaces or finished surfaces. Detergents will cause surfaces to dry out and lose their ability to be cleaned effectively and will cause finishes to soften and be more prone to damage.

Overuse of detergents on floor surfaces will soften the surfaces and allow dirt and solution to penetrate the surfaces easier increasing the need for restorative floor care maintenance IE: scrub and re-coat or strip.

Savings from the reduction of use can be upwards of 50% of cleaning chemical costs alone which does not take into account the addition time taken due to life cycle issues. This type of efficiency creates a costs reduction without reducing manpower requirements.

Chemical dispensing systems also have reduced the weight of the containers of the cleaning products used in the dispensers. Most dispensing systems use containers that are 4 liters or smaller eliminating the handling of 20 liter pails. These systems also reduce the restorative care processes particularly on hard surface floor and carpets which will allow staff time to improve the cleaning standards in other areas in the facility.

Using proper dilution rates for cleaning products also makes them easier and safer for the custodial staff to use.

5 Hand Soap Dispensing

Best Practice – Self Contained Foaming Hand Soap Dispensers

The use of foaming hand soap dispensers has increased substantially in the K-12 school districts. Foaming the hand soap reduces the per washing use by upwards of 60%.

Using self-contained foam hand soap dispensing systems eliminates the possibility of cross contamination and bacterial growth in the dispensers. Also, product costs are greater than bulk hand soap but the health advantages and usage reduction balance the equation.

6 Air Hand Dryers

Best Practice – install High Speed Hand Dryers with HEPA Filtration where viable

An alternative to using paper towels in public restroom areas is to provide new technology high speed hand dryers.

Paper towels are one of the largest custodial supply items purchased out of the custodial budget and having an effective method of reducing this expenditure is worth examining. Since the budgets for paper supplies is one of the largest costs for custodial departments and method of limiting consumption while filling needs assist in costs reduction.

Moreover, custodial time to clean up paper towels left and the reduction in maintenance cost for unplugging toilets and drains clogged with paper towels and the time it takes to clean up flooded areas also adds to the reasons for moving away from paper towels.

Historically the use of hand dryers has been received with mixed results. The products available did not meet the expectations for performance and were not received well by the clientele. Units were for the most part unused and the preferred method of hand drying was to use paper towel or wipe the hands on the persons clothing.

However, with the development of high speed hand dryers the opinions are changing. Having air hand dryers that provides good results and dries hand in 10–15 seconds has changed the playing field and presents an opportunity for reduction of waste, decreased operating costs and reduced task time for custodial staff.

Some of the newer High-Speed Hand Dryers have available HEPA filtration options which filters the air before it comes in contact with the user hands. The use of HEPA filtration ensure cross contamination does not occur when operating the hand dryer. The use of HEPA filtration reduces the health concerns with transferring air borne bacteria thru the dryer. The high speed hand dryers also use less power then the older versions 1500 watts instead of 2300 watts which makes them more economical to operate.

Installing Models with infrared sensors also reduces contact points for the users, have less moving parts and Save power consumption as the dryer shuts down when the hands area removed instead of continuing until the timed cycle is finished.

7 Microfiber Cleaning

Best practices: Where ever practicable utilize microfiber cleaning technology

Microfiber technology is used in the cleaning industry to make microfiber mops, cleaning pads, cloths, and dusters. It is a fine synthetic fiber that is designed to clean on a microscopic scale. The design of the fibers allows microfiber products to collect far more dirt and dust then cloths made of other materials.

Benefits of Microfiber Cleaning Technology

- Microfiber mops, dusters, and cloths are light and ergonomic. This significantly diminishes the amount of time needed for particular cleaning tasks.
- Using microfiber technology enables staff to reduce the use of cleaning chemicals for daily cleaning tasks. The design of the fibers allows for the capture of dirt and soil which leaves the surfaces virtually free of unwanted materials. The products are designed to clean any surface with only water. Regular cloths do not trap particles in this way and need chemicals to assist in the cleaning process.
- Using microfiber helps preserve interior finishes. Microfiber products will not scratch surfaces, as long as they are well-rinsed and free of grit. Since microfiber picks up debris rather than pushing it, particles do not have the opportunity to leave scratches.
- Microfiber products provide a superior level of hygiene and cleanliness for the areas they are used on. Because of the design of the fibers the microfiber cleaning cloths and pads are able to remove a greater amount of bacteria from surfaces then conventional cleaning cloths. This enables staff to maintain a cleaner heather environment in schools. For these reasons the health care industry has adopted the use of microfiber technology for building service departments throughout the province.

In school districts the use of microfiber cleaning cloths and dusters is today's norm. There are a few practices that should be followed to ensure we are providing the healthiest environment:

1. A colour coded Microfiber cloth system needs to be implemented to avoid cross contamination on surfaces. A number of school districts have gone to a colour coded system for where these cloths are used. Some districts utilize a four colour systems with their cloths. Some use three and one of the districts is using a five colour system to assist in in ensuring appropriate and defensible cleaning practices are adhered to. See example below:

   5 Colour Cloth System

   - Red for toilets and urinal
   - Pink for sinks and fountains
   - Green for general cleaning
   - Blue for windows and glass

- Yellow for chalk rails

Whatever system you put in place, all custodial staff must be trained and must adhere to the system. These microfiber products have been shown to assist in creating a greener cleaning process, reduce the amount of cleaning chemical used and create a healthier environment within a school facility.

2. Ergonomically designed micro fiber desk and table cleaning pole and pad assemblies increases the speed with which desks and tables can be cleaned and help reduce the stress on the custodian's arms and wrists.

   Microfiber equipment can also be used on any flat surface so it can be utilized for other cleaning applications. Desk cleaning times can be reduced substantially due to the size of the pad which contacts the desk surface which makes it up to 4 times faster to accomplish the same task with the cloth and sprayer approach while at the same time reducing the risk of injury.

3. Microfiber Dust Mops have been available to schools for a number of years and are more efficient than cotton nylon or rayon dust mops. The cost of the Microfiber dust mops is similar to other styles with the advantage of better dust retention.

4. Microfiber dusters have been available for a number of years and show superior cleaning abilities when compared to other materials. Since indoor air quality is a concern for all school facilities these styles of dusters should be the norm for all school districts where both high and low-level dusting is required.

   Microfiber dusters are available in a number of designs including ones with extendable handles which make the high dusting requirements more efficient.

   Staff training is required to ensure staff understand the correct procedures required to use and maintain the dusters for optimal performance and injury avoidance.

5. Microfiber wet mops have been utilized in the health care industry for a number of years. They are lighter than the traditional wet mop and do reduce the physical stresses placed on the operator. They have not been utilized widespread in the education setting due to the limited pick up capabilities of the design and the mops ability clean in heavily soiled areas without multiple pad changes.

   While the jury is still out on the use of this style of equipment in a school setting, time studies show that it is an effective way to reduce tasks times for damp mopping. See table below.

   Future changes to equipment design may make this a viable alternative for the education sector in the future.

ISSA Cleaning 612

Cleaning Times for damp moping areas with Micro fiber mops in comparison to damp moping with a 24 oz wet mop and single bucket and wringer.

Method	**Area**	**Time per 1000 sq. feet**	**Sq. feet per hour**
Damp Mop w/ 24 oz. Mop Head using Single Bucket & Wringer	1000 sq ft	12 minutes	5000 sq. feet +
Damp Mop w/ 18" Microfiber Flat, Break Mop Holder, Using Double-Sided Bucket and Open-Base Wringer	1000 sq feet	6.18 minutes	9708.7 sq. feet
Difference		5.82 minutes per 1000 sq. feet	4708.7 sq. feet per hour

The above comparison indicates utilizing microfiber mop systems can increase efficiencies by 48.5%

8 Appendix – Custodial Equipment & Supplies Procurement

The BC Education Marketplace (BCEM) is a K-12 public school initiative, partnered with the Ministry of Education and created to deliver cost and administrative savings that can be reinvested in student education. BCEM provides:

- services to establish shared contracts for goods and services
- resources to support **district** procurement best practices.

BCEM partners with subject matter experts from BC Districts in five BCASBO Zones for collaborative procurement projects. Teams are formed to research, develop and implement procurement strategies for specific goods or services.

BCEM, in collaboration with the Ministry of Education Service Delivery initiative, worked with a Custodial Advisory group to identify a number of high volume custodial supplies. Current agreements designed to leverage volume discounts by aggregating the demand across the K-12 sector include:

- garbage bags
- paper towels
- toilet tissue

In addition, BCEM has a number of supplier agreements in place covering mechanized custodial equipment for a range of equipment brands and manufacturers.

The equipment available through this agreement includes:

- touchless cleaning systems,
- dry and wet vacuums,
- burnishers,
- auto scrubbers,
- carpet extractors and similar products.

All Districts have access to these products, pricing, warranty and service offerings. There are many products being offered from a variety of manufacturers **supplying all areas of the province.** Pricing expires December 31, 2018.

Due to the sensitivity of publishing competitive price lists and quotes, BCEM requires that each school district request access and use a restricted Login to access the pricing provided by the equipment manufacturers. School district representatives should contact BCEM to get access to the pricing lists and discuss any other equipment procurement requirements with the BCEM staff.

The link to the BCEM website and agreements related to Facility operations are provided below.
BCEM Website: http://bcedmarketplace.ca/
Agreements: http://bcedmarketplace.ca/agreements?category=2

For more information please contact:

Maria Melan
Director
Email: Maria Melan (melan_maria@bcedmarketplace.ca)

or

Bruce Tisdale
Executive Director
Email: tisdale_b@bcedmarketplace.ca