

CLEANING FOR HEALTH & EFFICIENCY



The information presented in this report is designed to enable better understanding of the effects of sustainable cleaning and proper vacuuming of your facility.

Learn About:

Indoor Air Quality
Productivity
Labor Savings
Ergonomics

Partners in INDOOR AIR QUALITY



NATIONAL
PROUD
PARTNER

We Support Healthy Air | [Lung.org](https://www.lung.org)

ProTeam is a proud partner of the American Lung Association. Together, we fight for clean indoor air so that we all can breathe easier. We spend the majority of our time indoors, so breathing healthy air where we live, work and play is critical.

ProTeam is committed to developing innovative cleaning technologies to address indoor air quality concerns and supporting the American Lung Association in their strategic imperative to improve the air we breathe.

For more information on indoor air quality, call 1-800-LUNG-USA or visit [Lung.org](https://www.lung.org).

CLEANING OR POLLUTING?

By Ben Walker

Project & Business Development, ManageMen, Inc.

The cleaning industry is on the cusp of progressive transformation. Education of cleaning professionals, from the executive-level down to the front-line cleaning worker, with cleaning for health as a focal point, will play a major role in that transformation. Cleaning for health is a philosophical approach that ensures that cleaning operations are properly gathering unwanted materials (dust, allergens, fungal spores, pathogens, etc.) and either disposing of them or putting them in their proper place.

“When our indoor environments are properly cleaned for health, they not only remove harmful materials, they also create a state of social, physical and mental well-being.”



IMPROVE CLEANING PRACTICES

Poor cleaning procedures, equipment and habits can inhibit the effective cleaning of buildings.

Workers thinking big need to

think small

when it comes to health and cleaning.

Cleaning for appearance removes “big” visible soil rather than cleaning for health that removes “small” invisible bacteria, dust and airborne particulates and other micro, bio- and chemical contaminants – largely the contributors to unhealthy indoor environments.



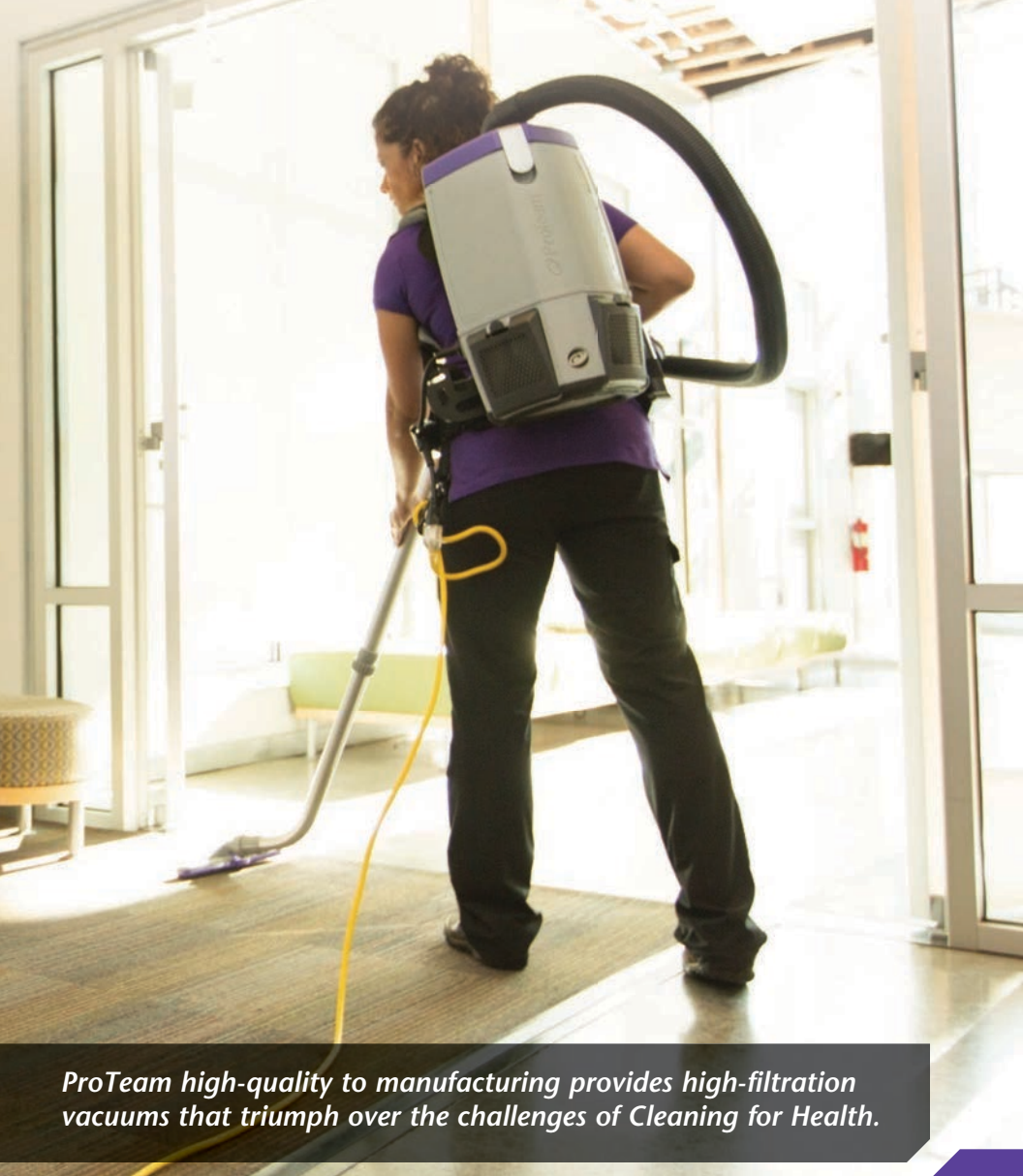
ProTeam vacuums capture soil and safely contain harmful particles, as well as prevent them from being reintroduced back into the environment. The improved air quality is the result of ProTeam vacuums' unique Four Level® Filtration system. This system captures tiny dust mites, bacteria, and other particles – which can cause unhealthy air.



ProTeam is committed to

CLEANING FOR HEALTH[®]

Historically, the quality of vacuuming has been evaluated by the appearance of the carpet. However, the statistical data of expert studies in this report will demonstrate the importance of proper vacuuming to issues of indoor air quality, particulate removal and containment, and also present new concepts on labor efficiencies.



ProTeam high-quality to manufacturing provides high-filtration vacuums that triumph over the challenges of Cleaning for Health.

FACTS

to know about indoor air quality



Carpets

Daily vacuuming is more important than interim deep-cleaning methods.

Dry soil is abrasive; when ground into your carpet, it cuts into carpet fibers—dulling appearance and reducing the longevity.

1. Carpets cover 70% of the floors in the United States.
2. Carpet can hold more than its weight in soil.
3. 70–80% of dust, dirt and grime is tracked into a building from outside.
4. 30% of dirt is deposited in the first 3 feet, while 90% is tracked off in the first 25 feet.
5. Carpet soil generally consists of 85–95% dry soil and 5–15% oily soil.
6. Carpet has a high surface area and is known to act as an organic dust sink containing bio-contaminants and allergens.

Hard Floors

When using the correct tools, ProTeam backpack vacuums clean 52% faster than a dust mop in crowded classrooms and congested areas.

1. Using traditional dust mopping methods requires extensive time to train employees.
2. Vacuuming is a faster, healthier and more efficient way to clean hard floors.
3. Dust and dirt are immediately contained within the Four Level Filtration in ProTeam vacuums.
4. Dust mopping continually redistributes dirt and fine particulate on and into the floor, leaving scratches and dulling a high-gloss finish.
5. Dust bunnies reappear in 24 hours when a floor has been dust mopped as compared to 72 hours when cleaned with a ProTeam backpack vacuum.

Sources— *Carpet and Rug Institute, Dalton GA; ISSA: International Sanitary Supply Association; IIREC: Institute of Inspection Cleaning and Restoration; Dust Mopping Floors for Health and Efficiency Test, Colorado State University, 1998*

PROTECT the Built Environment

Environmental factors in schools can cause serious health problems for children.

The average American spends approximately 90 percent of his or her time indoors. Studies of human exposure to air pollutants by the EPA indicate that indoor levels of pollutants may be 2 to 5 times – and occasionally more than 100 times – higher than outdoor pollutant levels.

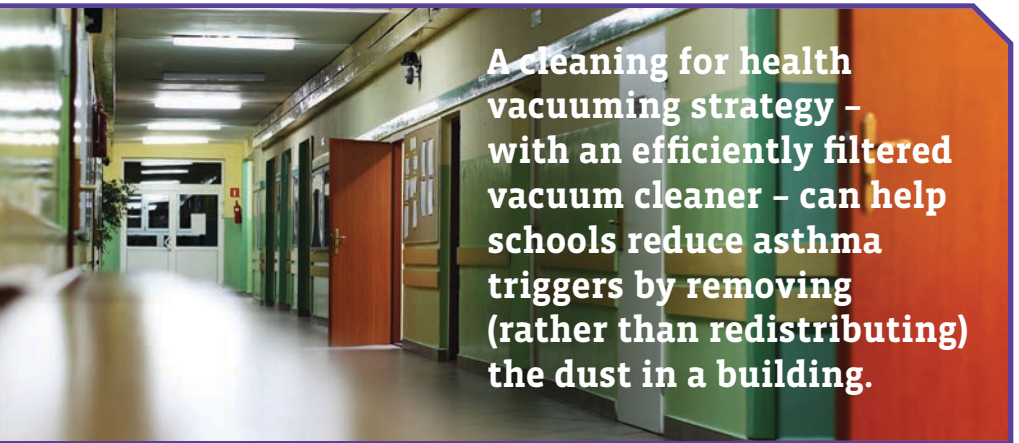
Children are more susceptible to air pollution because they breathe a greater volume of air relative to their body weight. To make matters worse, schools tend to be at a higher risk of poor indoor air quality because they can have 4 times the occupants as a regular office building for the same amount of floor space and generally less maintenance, making air quality in schools an area of a particular concern.

90%

time indoors

4x

the occupants



Programs that promote healthy indoor air quality (IAQ) can:
Improve Health
Increase Students' Ability to Learn
Improve Test Scores
Improve Adult Productivity in the School System

Maintaining healthy physical conditions and good environmental quality in schools can yield a high rate of return on academic outcomes.

Sources—

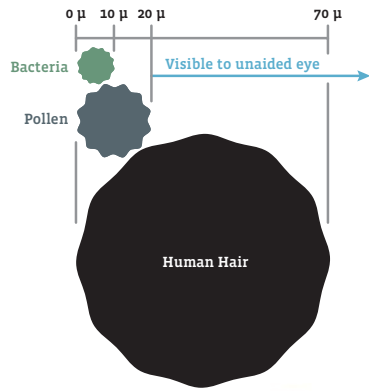
<https://www.epa.gov/iaq-schools/why-indoor-air-quality-important-schools>

<https://www.epa.gov/indoor-air-quality-iaq/schools-and-indoor-air-quality>



Micron (μ):

This measurement of particles (1 micron = 1 millionth of a meter) is often used in promoting particle removal. To put things in perspective, your hair is about 70 microns in diameter and, without magnification, you can only see particles that are about 10 microns or larger.

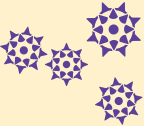


FIL•TRA•TION:

- **Noun**
1. the process of filtering
 2. the act or process of removing something unwanted from a liquid, gas, etc., by using a filter



People can inhale particles 10 microns and smaller.



Housekeeping is probably the most common means of removing potential allergens, and vacuum cleaners are the most commonly used tool.



Vacuum cleaning removes some fungus and spores from carpeting, but it also reintroduces them to the air, either through the action of the vacuum's beater bar or through conventional bags.



Vacuuming without proper filtration is one of the main causes of the reintroduction of allergens and harmful particles into the air.

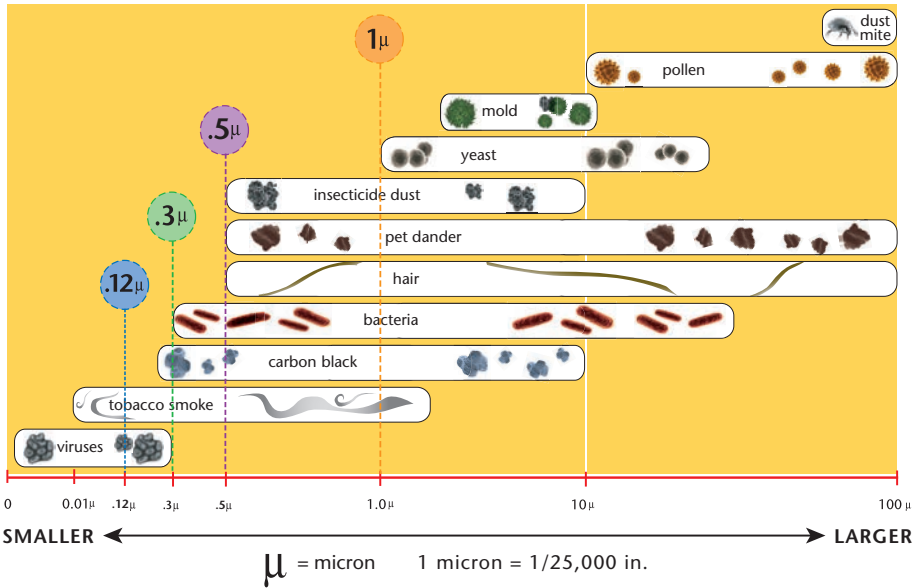


Vacuums with high filtration collection systems retrieve soil and safely contain harmful particles, preventing them from being reintroduced into the built environment.

Sources— JW Vaughan, JA Woodfolk, TA Platts-mills. "Assessment of vacuum cleaners and vacuum cleaner bags recommended for allergic subjects". *Journal of Allergy and Clinical Immunology*. November 1999. 104(5):914-16. Ibid. Popplewell EJ, Innes VA, et al. *Pediatr Allergy Immunol*. 2000 Aug;11(3):142-8. "Indoor Allergens: Assessing and Controlling Adverse Health Effects", Educational Committee on the Health Effects of Indoor Allergens. Division of Health Promotion and Disease Prevention. National Academy Press, Washington, D.C. pp 37-39, 86-117, 222-225;

PARTICULATE CHART

This chart illustrates the relative size of different common particulate.



ProTeam backpacks with ProLevel™ Filtration are up to 99.9% effective at capturing and containing particles measuring .5μ or larger.

ProLevel Filtration is a multi-layer filtration system, including a HEPA media filter, that is tested within the vacuum by an independent lab pursuant ASTM 3150.

technical definitions:

HEPA

A HEPA (High Efficient Particulate Air) filter is a throwaway, extended-medium, dry type filter in a rigid frame having a minimum particle collection efficiency of 99.97% (that is, a maximum particle penetration of 0.03%) for 0.3-μ particles.

ULPA

An ULPA (Ultra-Low Penetration Air) filter is a throwaway, extended-medium, dry type filter in a rigid frame, having a minimum particle collection efficiency of 99.999% (that is a maximum particle penetration of 0.001%) for particles in the size range of 0.1 to 0.2 μ.

Source— Robert A. Woellner, President, Senior Scientist. Quality Environmental Services & Technologies Inc.; http://www.engineeringtoolbox.com/particle-sizes-d_934.html



vs.



Backpack Vacuum Cleaning Effectiveness

Sweeping

In soil removal tests conducted at Turi Surface Solutions Laboratory:

A ProTeam Backpack vacuum removed more than 98% of the soil – a 10% increase with vacuuming compared to sweeping.

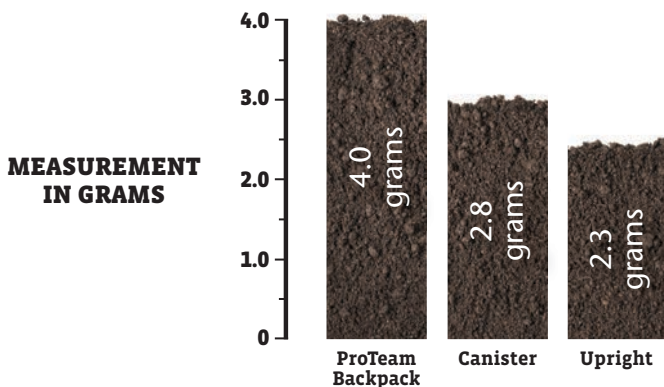
Source— Toxics Use Reduction Institute (TURI), University of Massachusetts Lowell, November 2012.

VACUUM CLEANER EFFICIENCY

In 5 passes, the ProTeam backpack vacuum is:

43% more efficient than a commercial upright vacuum and

30% more efficient than a canister in removing soil.**



**** Soil removed does not include carpet fiber**

Sources— Quality Environmental Services & Technologies, 1996; APC Filtration, Inc., 1996; An Evaluation of ProTeam's QuarterVac and CoachVac in a School Environment, Dr. Eric Brown, Cleaning Research International, UK, 1994

ERGONOMIC DESIGN FAST AND EASY TO USE

The results of two studies by the Department of Surgery, Division of Orthopedics, at Ohio State University and the Battelle Memorial Institute, determined that ProTeam backpack vacuum cleaner's ease-of-use and ergonomic design allowed workers to vacuum more than twice the area in half the time with less fatigue and body strain (a figure backed by the ISSA official timetables for cleaning).

Ergonomic Motion

With a backpack – vacuum side-to-side, not front-to-back

Requires less than half the energy and effort to clean the same area as it would take with an upright

- Backpack vacuums are lightweight. When worn properly, the effect of the backpack on body joints and posture is negligible and similar to walking.
- When working near stairs, using a backpack improves mobility and is recommended to reduce the risk of falling.
- Backpack vacuum users use a more neutral posture compared to extreme arm and leg extensions seen when using an upright.
- Backpack vacuum users experience less body stress due to the use of larger muscle groups by minimizing "hunching over" often associated with upright and canister vacuums.
- Efficiency is increased by allowing more carpet to be cleaned in a shorter amount of time due to the natural walking motion used.



Arms Getting Tired?

The arms are the main muscles used when vacuuming front-to-back.

Side-to-Side Vacuuming

uses leg and back muscles that do not fatigue as easily as the arms.

"Side-to-side vacuuming, along with a typical work-rest schedule, is one of the best ways to vacuum large areas on a regular basis."

*Jim Fullmer,
Certified Human Factors Professional*

Source— Battelle Memorial Institute, Ohio State University, Columbus, Ohio, 1998. Reviewed by Jim Fullmer, Certified Human Factors Professional, 2009.

ProTeam
Cleaning for Health® Since 1987

FREEDOM OF MOVEMENT

FlexFit® Articulating Harness Improves Comfort and Productivity

LESS FATIGUE

vacuum feels lighter and more comfortable

STAY COOLER

open weave avoids collecting (or trapping) heat during operation

FREEDOM OF MOVEMENT

articulating flexibility is responsive to the motion of the user's shoulders, back and hips—increasing comfort and reducing fatigue

WEIGHT DISTRIBUTION

innovative design distributes weight evenly for lighter feel

IMPROVED BALANCE

pivoting ball joint distributes the weight to the natural center of gravity



20% less pressure is felt on the body with the FlexFit articulating harness vs. a standard harness.

Source— Auburn University, 2013. FlexiForce Sensor

THE TEAM CLEANING SOLUTION

Team Cleaning® is a flexible, efficient and cost-effective cleaning system for custodial operations. Team Cleaning applies the power of systems to reduce costs and maximize productivity.

It offers solutions to the many challenges that managers face—through better deployment of labor, effective cleaning methods, simplified training resulting in healthier environments.

Team Cleaning Tasks Are Grouped Into 4 Distinct Functions

ProTeam Education Products and Services offered:

Light-Duty Specialist™

Dusting, emptying trash, spot cleaning, etc.



Vacuum Specialist™

Vacuumping carpets and hard floors



Restroom Specialist™

Cleaning, sanitizing and restocking restrooms



Utility Specialist™

Cleaning lobbies, spot cleaning, glass, mopping and scrubbing floors, etc.



Team Cleaning results in increased productivity, less equipment, clear-cut responsibilities and easier supervision.

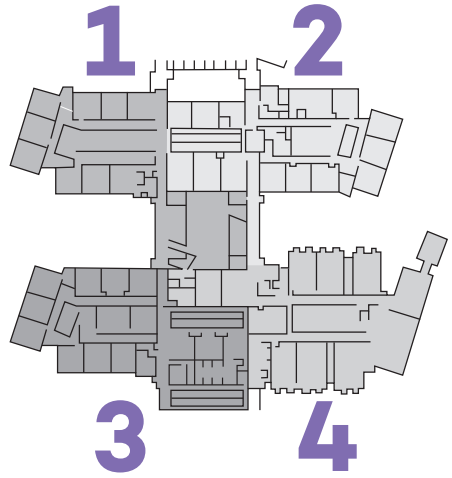
Team Cleaning allows flexible staffing configurations depending on the size and type of facility. The assigned tasks to each Specialist remains constant. The exception is smaller facilities where the workers may switch from one Specialist's duties to another. All workflow is driven based on Specialist's Job Cards.

TEAM CLEANING

- *Balanced Workflow*

In a five-day program the key to efficient, balanced workflow is to divide the cleanable square feet assigned to the Light Duty and Vac Specialists into four equal quadrants to manage cleaning frequencies: daily (routine), weekly (detail) and monthly (periodical).

The Light Duty and Vac Specialist Job Cards clearly show the starting point, a path to follow, assigned tasks and allotted time to perform. The detail is performed Monday through Thursday on a rotation basis to complete weekly requirements.



Monthly periodical frequencies are rotated over four Fridays utilizing the same designated quadrants; in this manner, the schedule has been fully met.

Vac Specialist as an Example:

Routine: traffic areas – Monday–Friday

Detail: square all corners – weekly by quadrant Monday–Thursday

Monthly periodical: clean vents, etc.... using four Friday quadrants

Source— Concepts4

“Thirty years ago when the ProTeam Backpack Vacuum System was created it represented at the time, a technological breakthrough. In retrospect, we now know it was disruptive technology as compared to other offerings to the cleaning industry. It was initially an experiment that within time was recognized as superior to the age old upright vacuum from the perspective of productivity, filtration, ease of use and a much lower fatigue factor. These enabled operators to extend vacuuming through a full shift and opened the door to a more efficient workflow system attaining a new level of high performance cleaning utilizing specialists working with team interaction – Team Cleaning. This disruptive innovation is now recognized by most leading industry experts as the best practice for addressing today’s marketplace challenges.”

Jim Harris, Sr. Founder and President, Concepts4

ANALYSIS OF LABOR TIME

The comparison chart below shows how many hours need to be allocated to vacuuming using different vacuum types in the square feet required to be cleaned.

TIME SPENT VACUUMING

VACUUM TYPE	2,500 Sq. Ft.	5,000 Sq. Ft.	10,000 Sq. Ft.	25,000 Sq. Ft.	100,000 Sq. Ft.	500,000 Sq. Ft.	1,000,000 Sq. Ft.
Single Motor Upright	52.5 Min	1.75 Hrs	3.5 Hrs	8.75 Hrs	35 Hrs	175 Hrs	350 Hrs
ProTeam Dual Motor Upright	46 Min	1.5 Hrs	3 Hrs	7.7 Hrs	30 Hrs	154 Hrs	308 Hrs
Tank Canister	1 Hr	2 Hrs	4 Hrs	10 Hrs	40 Hrs	200 Hrs	400 Hrs
ProTeam Speed Canister	22 Min	44 Min	1.5 Hrs	3.7 Hrs	15 Hrs	73 Hrs	147 Hrs
ProTeam Backpack	20.3 Min	40.5 Min	1.4 Hrs	3.4 Hrs	13.5 Hrs	67.5 Hrs	135 Hrs
ProTeam Backpack*	15 Min	30 Min	1 Hr	2.5 Hrs	10 Hrs	50 Hrs	100 Hrs
ProTeam Battery Backpack*	10.5 Min	21 Min	42 Min	1.75 Hrs	7 Hrs	35 Hrs	70 Hrs

**used in a Team Cleaning System*

Cordless Backpack vacuums are 5X more productive than corded uprights

Sources— ISSA 612 Cleaning Times (www.issa.com). Used with permission.

ANALYSIS OF BACKPACK VACUUM SAVINGS

CASE STUDY #1 *ABC Services*

Labor Rate: \$13.00/hour
 Vacuuming Area: 100,000 sq. ft.
 Annual Work Months: 12
 Monthly Work Days: 22

VACUUM TYPE	Sq. Ft. Per Hour	Daily Cost	Monthly Cost	Annual Cost
14" Upright	2,857	\$455	\$10,011	\$120,120
Pull Behind Canister w/14" Tool	7,059	\$184	\$4,052	\$48,576
ProTeam Backpack w/14" Tool	7,407	\$176	\$3,861	\$46,464
ProTeam Backpack w/14" Tool*	10,000	\$130	\$2,860	\$34,320
ProTeam Battery Backpack w/14" Tool*	13,000	\$100	\$2,200	\$26,400

**used in a Team Cleaning System*

Annual Savings using a ProTeam Backpack Vacuum* versus a Pull Behind Canister w/14" Tool:

\$14,256 or 29%!

Annual Savings using a ProTeam Backpack Vacuum* versus a 14" Upright:

\$85,800 or 71%!

Source— ISSA 612 Cleaning Times (www.issa.com). Used with permission.

CASE STUDY #2

Marcis & Associates cleans the 2.4 million square ft M.D. Anderson building in Texas

- 15 Elevators – 30 seconds each
- 5 Elevator Landings – 2 min.
- 4 Building Entrances – 3 min.
- Cafeteria Common Area – 10 min.
- Skybridge Common Area – 10 min.

50% REDUCTION

Takes only 45.5 minutes to clean using a battery backpack.



CARPET AND RUG INSTITUTE APPROVED

ProTeam vacuums have earned Seal of Approval/Green Label from the Carpet and Rug Institute (CRI) signifying the vacuum systems meet higher standards for carpet cleaning effectiveness and indoor air quality. Vacuums must pass three cleaning requirements: soil removal, dust containment and carpet fiber protection.



PROTEAM IS A MEMBER

ISSA	AHE	VDTA	NPMA
BSCAI	NWFA	CRI	PRSM
NRA	CIRI	CSSA	RFMA
ARSCI	IHRSA	USGBC	DKI

PARTNERSHIPS

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866.888.2168
customerservice.proteam@emerson.com

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