

保护环境...
拯救世界！
制止污染



PV Vacuum Engineering Pte Ltd
(A member of Darco Water Technologies Limited)



不要再污染环境了

此时需要的已经不是选择和妥协。清洁工作的进行不能以污染周围或影响其周边环境为代价。

许多人并不知道，售价上千美元最昂贵的便携式真空吸尘器便携式真空吸尘器在使用时也会污染环境。

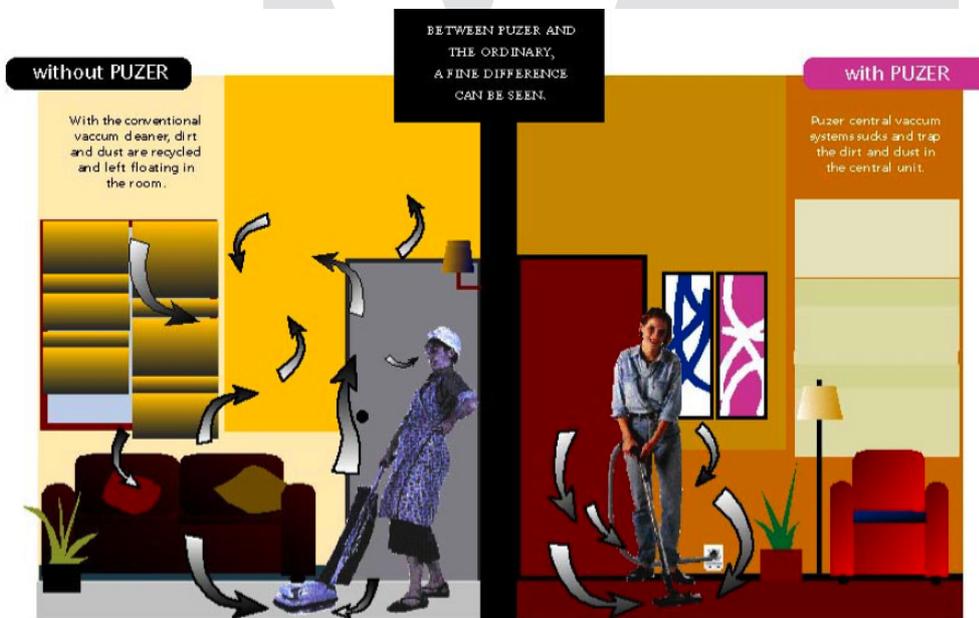
多年以前，经环境保护局研究并于1994年5月发表的一篇文章指出，具有代表性的真空吸尘器并不能减少/清除小于7微米的细微颗粒。这种微粒与便携式真空吸尘器(工业用或家用)的废气一同排出，占同时排出的细微粉尘的40%到60%。

实际上，这篇文章还指出，中央清洁真空系统是已知唯一的一不会将微观粒子再循环带入建筑物环境中的吸尘方法。

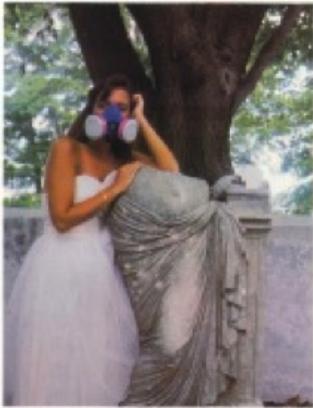
空气中悬浮微粒(PM 2.5)的增加会对人体健康和产量提高产生影响。细微颗粒会造成电子元件故障，通常导致电子元件提前报废。如果生产工艺采用涂层或喷漆制造抛光效果良好的表面，则细微颗粒也会对其产生影响。

由芬兰工作环境基金和VTT建筑技术资助的芬兰技术研究中心(VTT)研究表明，在需求最广泛的工业之一——建筑/装修行业中，与传统工业真空吸尘器相比较而言，高效的中央清洁真空系统可极大的节约成本。

因此，如果中央清洁真空系统可在这种工作环境下出色工作，则可很好地适用于任何环境。



摘自于1994年环境保护局文章（美国）



The Challenge of Maintaining Indoor Air Quality

By John Jefferson Opatore

Clearing for health isn't for everyone, but for those who expect to be in business in the 21st century—it will be a fundamental upon which you do business.

Since the 1970s and the Legislature's Clean Air Act... health problems inside the building environment, while typical vacuuming does not reduce fine particle levels (less than 7 microns) indoors. These particles tend to build-up and have the potential to cause harm to the human lung.

These spaces, it is estimated, contain nearly 10 to 15 percent of our... health problems inside the building environment, while typical vacuuming does not reduce fine particle levels (less than 7 microns) indoors.

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The Building As a Workplace... health problems inside the building environment, while typical vacuuming does not reduce fine particle levels (less than 7 microns) indoors.

Carpet Care: Key To Good Air Quality

By Alice L. Smith, ICF Associates

The importance of carpet maintenance is just beginning to be recognized... health problems inside the building environment, while typical vacuuming does not reduce fine particle levels (less than 7 microns) indoors.

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cleaners is how best to empty the carpet of the collected contaminants. Take vacuuming, for example, where filtration systems allow 40 to 60 percent of the fine dust picked up from the carpet to be recirculated back into the air.

ENGINEERING

摘自于1994年环境保护局文章 (美国)

lets penetrate, and often gaps or seams that are biodegradable. Then, with the addition of a fresh film, provide an extra barrier for mold to grow. As the paint film ages and is subjected to environmental influences such as washing, numerous changes begin to give rise for a combination of chemical changes that lead to a combination of different organisms.

As materials and systems are limited to the paint film, the pH goes up. This simple change alone can severely limit the ability for bacteria to survive but improve the environment for fungi to thrive. As the fungi overtake the existing bacteria, their regular work can now occur when conditions are available. In the case of a wall, the bacteria could be from joint. It is prone to wall based and/or joint-based and joint areas to mold. Otherwise, this same succession can occur in the opposite order. Fungus is in areas of high humidity, such as the Gulf Coast, Pacific Northwest, or river valleys, spore levels are in high-rise buildings are precontaminated before occupancy or finishing over years. This latent spore load combined to the building materials or deposited on the materials during construction may help grow and cause the deterioration, discoloration, and health-related problems associated with fungal growth.

Cases of Contamination

A recent experience relating to this occurred within a residential development in central Florida. Frames were up and plasterboard with joint cement and tape had just been installed, when several rain cells and construction was delayed. More significant though, was that the temperatures stayed near 87°F. Complete drying did not occur quickly and it was suspected that sufficient fungal spore levels existed. Construction was later completed. One month later, stripes of fungal growth and staining

deposits, the carpet was then treated with carpet protector. Employees complained on the "new" carpet and the carpet did not stand up during the carpet trade.

Two other important areas of construction education are central vacuuming and new dust and floor cloths. Many building owners are installing anti-static vacuum systems, not aware of possible vacuum "set back" their buildings. Central vacuum systems are the only known method of vacuuming that does not recirculate microscopic particles back into the building environment, as the filtered exhaust air is ducted out of the building. This is a key to improving indoor air quality in all known settings and is the only known method of vacuuming that does not recirculate microscopic particles back into the building environment.

New dust and floor cloths allow removal of dust instead of just moving it around. These new cloths have an opposite charge of dust and hold the dust until they are washed. They can be washed hundreds of times without losing this ability—and there is no oil residues to cause staining or sootiness.

These new products and systems can make a major positive impact on the quality of the environment and also save money at the same time by reducing the frequency of cleaning.

Some through steel wallpans. These strips corresponded exactly with the joint creases. Upon discovery, all layers were heavily contaminated including the wood stud wall.

A hotel property in Florida was having problems and shortly discovered Legionnaires was present in the HVAC, cooling tower and outside water fountain. The fountain was used for the recycling and evaporation of the cooling tower water. The hotel property had to spend over \$200,000 to totally clean and disinfect the entire operation and had close to 11,000 employees in buildings. All of this could have been prevented by a proper disinfecting program for the cooling tower. If that system is a more reasonable cost for the property owner.

Conclusion

Is there a cost effective solution to water bacteria in controlling and eliminating "Sick Building Syndrome"? Yes, but you will probably need an environmental expert to focus on areas where your applications relating to cleaning and disinfecting can be applied or related to better but not indoor air quality. The results

improved indoor air quality, a more active dust reduction program, better room air filtration systems, better attention to conditioning the building by elimination of Legionnaires and TB, carpet protection, and water filtration systems, can provide a more indoor air. In fact, a direct water treatment and proper air filtration can totally eliminate mold, odors, bacteria and other particulate-causing problems for rooms and buildings.

Indoor air quality is a movement that will demand much more attention in the future. The EPA is expected to become very aggressive on indoor air quality problems, with legislation enacted that would require facilities to test and prevent indoor air contamination. The pro-active, non-reactive measures to avoid indoor air quality problems now to avoid inhibition later.

Additional Resources with Links

Indoor Air Quality: Health, Comfort, Energy and Productivity. EPA, 2014. A comprehensive overview of indoor air quality, including health, productivity, energy, and environmental impacts.

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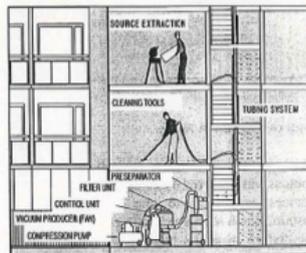
VTT Building Technology

The Central Vacuum System on the Renovation Site

The summary is based on a study conducted at the Technical Research Centre of Finland (VTT) by the Construction Management and Production Technology Group. The project was financed by The Finnish Work Environment Fund and VTT Building Technology.

Quick implementation of a renovation project requires an efficient and reliable vacuum system. An efficient central vacuum system provides significant cost savings over traditional industrial vacuum cleaners. In addition to cost savings, the central vacuum system makes the work less strenuous and improves working conditions. According to users, the greatest advantages of the central vacuum system are strong suction and the maintenance free, light and easy to move equipment.

Reduced dust levels and strenuousness of work as well as higher productivity and quality through a central vacuum system more suited to the construction site were the goals of the study. An additional goal was to determine any possible advantages of the central vacuum system (Fig.) over the traditional industrial vacuum cleaner which would give a boost to its use in apartment block renovation.



Introduction

The economic benefits of new production techniques and procedures generally need to be proven before they can gain wide acceptance. Improvement of the work environment and ergonomics, for instance, often also boosts labour productivity.

Auxiliary construction work, such as cleaning and materials handling, are key issues in improving site productivity. Exceptionally good results are achieved if work can be made less strenuous and working conditions improved while reducing the amount of auxiliary work and performing it more efficiently.

Practical development work

The use of the central vacuum system and the related problems and needed development with respect to various work phases were examined through worker interviews and site monitoring. The research project sought to find practical solutions.



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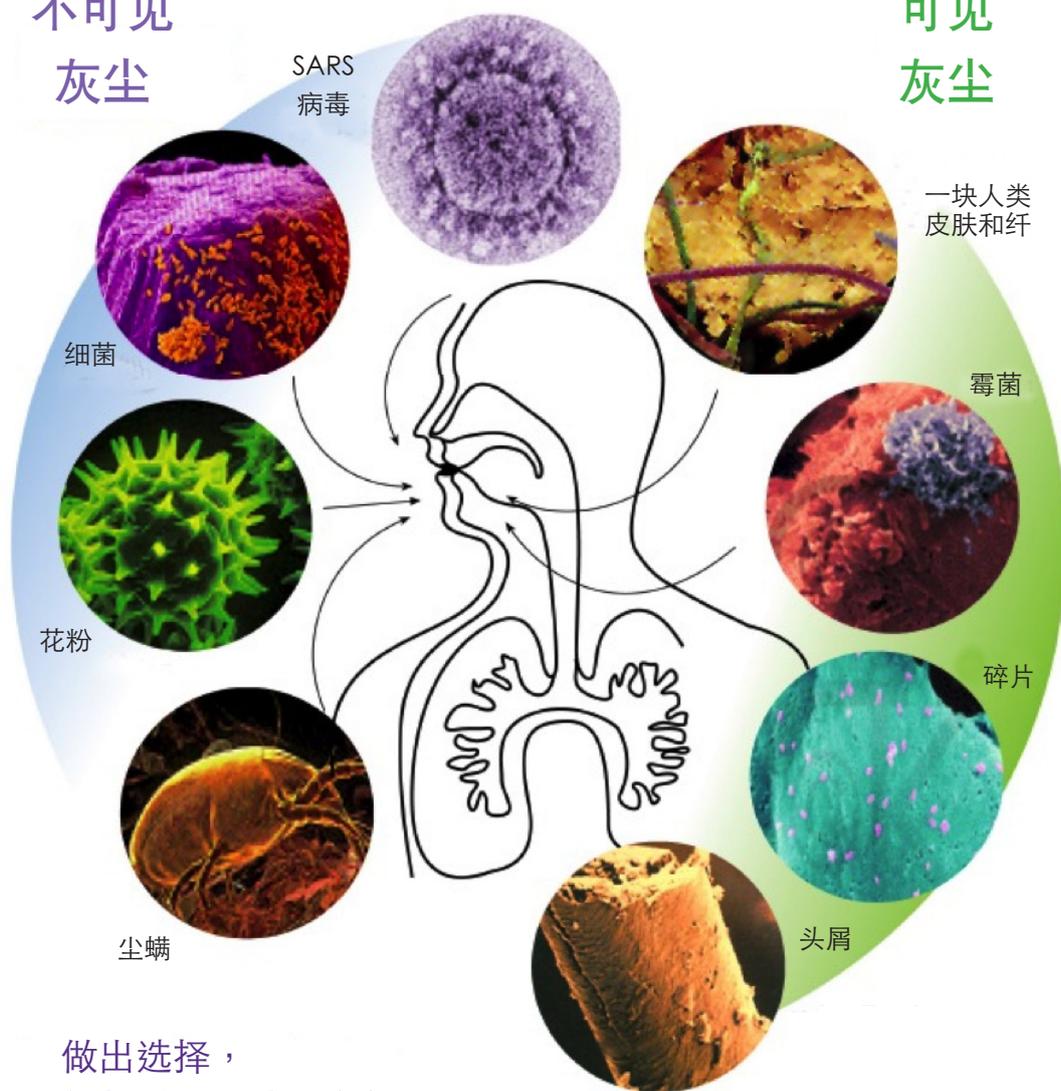
这些微粒子是什么...

我们周围真实的室内空气



不可见
灰尘

可见
灰尘



做出选择，
你想呼吸污浊的空气吗？

用我们的肉眼观察，我们呼吸的空气好像并没有受到污染。把这些污染物放大1000倍，我们将会看到漂浮在空气中的极易被我们吸入体内的细小生物。使用Puzer清除您生活环境中的微粒，就可以最大程度地让您的呼吸道畅通无阻。

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