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## **Noise, Health, and Cleaning**

A friend of mine visited me while I was living in New York City. As we walked around New York and saw the many sites, we came to a crosswalk and noticed, essentially at the same time, that we really were not talking to each other. Instead, we were shouting—shouting because the city was so loud we could barely hear each other above the roar.

Although we had planned to keep touring the city for a couple more hours that day, we both felt irritable and complained of headaches and fatigue. Instead of continuing with our exploration, we decided to head for quieter surroundings and get some rest.



The physical effects we experienced—the result of noise or “unwanted sound”—are not uncommon. Noise can have a detrimental effect on health, mood, alertness, and energy. Studies have found that noise levels of 100 decibels (dB) are loud enough to seriously hamper alertness and attention and cause temporary hearing loss. Noise levels of 90 to 95 dB can result in skill and task errors as well as speech difficulty. And levels of 70 to 85 dB are loud enough to interfere with normal and telephone conversation and make it difficult to think.

But, unlike other forms of pollution, such as air or water pollution, less is known or reported about the problems caused by noise. However, more and more studies are being performed, and they indicate that noise not only can affect mood and health, as it did for my friend and me, but also can hamper learning in an educational setting as well as impair judgment in a hospital situation.

### **Aircraft Noise and Learning**

One of the more recent studies was reported in June 2005 by *The Lancet*, a monthly medical journal published in

London. This study involved 2,800 children aged nine and ten, attending 89 primary schools near major airports in the Netherlands, Spain, and England. Because the airports were also surrounded by busy roadways, the investigators assessed the noise effects of both road traffic as well as air traffic and then analyzed how this noise might affect the learning abilities and the health of the students.

Examining the data and comparing the results to those dealing with children in similar but much quieter schools, the researchers found that the students in schools near the noisy airports had “delayed” reading levels of up to two months as well as impaired reading comprehension. The researchers attributed the poorer performance to noise exposure.

In their report, the researchers also noted that a similar but much smaller study had been recently conducted in Munich, Germany. In this study, the reading and comprehension scores of children were tested before and then after a nearby airport closed. Interestingly, what they found was that the student test scores actually *improved* once the local airport was closed.

Overall, the author of the study concluded that exposure to high noise levels in a school setting was not conducive to a healthy educational environment. He also went on to say that noise, “increased stress in children, lowered reading scores, impaired memory, and reduced the quality of life...for the students as well as instructors.”

### **Where’s the Noise on Campus**

Another study was conducted at Western Maryland College, Westminster, MD. This study set out to find the noisiest locations on campus and the culprits causing the noise. Although its findings were specific to this particular university, they probably can be applied to many other college settings.

What researchers found was that student gathering places such as cafeterias, the student union building, and most social areas were noisy but relatively comfortable at about 70 to 80 decibels. Surprisingly, even construction work at the college, at 72 to 85 dB, was not all that offensive unless it was persistent. The loudest sources of noise on this campus were found to be:

- Hair dryers, at 85 dB
- Stereos, 90 dB
- Loud car radios, 93 dB
- Vacuum cleaners, 95 dB

### **Hospital Noise**

A third study, this one conducted by the University of Houston, sought to determine the least and most bothersome noises in



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healthcare environment. Thirteen different healthcare facilities were chosen for the tests, and sound-measuring devices were placed in a variety of locations throughout the different buildings. Then, more than 300 healthcare staff members were asked to rank the noises recorded on the measuring devices, from least to most bothersome.

According to the report, the least bothersome noises were normal conversation that often accompanies shift changes;

conversations between doctors, nurses, and patients; and call lights. The most bothersome noises were found to be intercoms and buzzers, telephones, and cleaning equipment.

In fact, this report found vacuum cleaners, which have been measured at as much as 90 decibels, to be the loudest and most bothersome cleaning tool used in a medical facility. They were followed by floor machines such as buffers and burnishers, carpet extractors, and other cleaning tools—even janitorial carts.

### **Cleaning and Noise**

As the janitor (cleaning) industry embraces Green Cleaning and the use of more environmentally preferable cleaning tools and chemicals, some leaders in the industry believe reducing the noise generated by some cleaning equipment will also soon be considered a “Green” issue.

“Some janitor manufacturers are already addressing the problem,” says Mike Schaffer, president of Tornado Industries, a manufacturer of professional vacuum cleaners and floor and carpet care equipment. “We are seeing a variety of new cleaning tools that are quieter, with smaller

but more efficient motors or with more sound-deadening insulation.”

Schaffer says his own company has just recently introduced two new vacuum cleaners that emphasize quiet. One is an upright vacuum cleaner, which at 65 dB is considerably quieter than more traditional uprights; the other is a canister vacuum cleaner that produces only about 60 dB. Both machines are specifically designed for noise-sensitive environments such as in medical centers, in educational facilities, or where Day Cleaning systems are employed.

“Cleaning equipment that produces less noise reduces worker fatigue and frustration and helps cleaning professionals perform their tasks more efficiently,” Schaffer says. “This is a major component of Green Cleaning—reducing cleaning’s impact not only on the environment but on the people who must perform the actual work.”

According to Schaffer, other examples of how cleaning equipment is being designed to be quieter include:

- Liquid soap dispensers are being replaced with soft-touch foam dispensers, which are much quieter to use.
- Touch-free towel dispensers are becoming more common and are much quieter than traditional pull-down-lever dispensers.
- Larger and more vibration- and sound-absorbing wheels are being used on vacuum cleaners, extractors, no-touch machines, and janitorial carts to help reduce the sounds of cleaning.

“Green Cleaning has really been customer driven,” says Schaffer. “Our customers have asked us to develop and use more environmentally preferable cleaning tools and equipment, and we are meeting their demands. The same will be true with reducing the noise levels of cleaning. We can expect janitor manufacturers to introduce quieter tools in the future that also help protect the indoor environment.”

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