WASHINGTON STATE UNIVERSITY
EXTENSION ENERGY PROGRAM

Indoor Air Quality in Northwest Schools

An electronic newsletter for school Indoor Air Quality (IAQ) exclusively for Northwest schools

Spring Quarter 2004

"We are not only cleaning to make the building look clean... we are trying to provide a healthier environment for working and learning."

Bill Faulkner

Anacortes School District

School Nurses Make a Difference

Health issues drive school indoor air quality concerns, and health impacts from indoor air pollutants need to be addressed by health professionals. That's why the Sedro-Woolley School District has selected its school nurses as indoor air coordinators for each of their schools.

At Sedro-Woolley schools in Western Washington, administrators and facility staff recognize that they do not possess the necessary medical training that allows them to make decisions regarding health issues of the building occupants. That's why this award winning school district (see page 5) is working hand-in-hand with school nurses to ensure the safety, health and productivity of students and staff.

The motto of school nurses is *"Healthy children learn better; school nurses make it happen."*

Major functions of school nurses include:

1. Leading the school team in promoting learning readiness and personal assets

   a. Counseling staff, students and parents regarding primary health care, emergency care, and referrals;

   b. Providing health care as the districts only credentialed, licensed, and qualified health professionals, to students, staff and parents;

   c. Educating about health, nutrition, special health care needs of children, health care access, being a health care consumer, self health care, domestic violence, and safe school environments;

   d. Partnering with staff, students, parents, medical community, health agencies and hospitals;

Continued on page 2

School Indoor Air Quality Newsletter for Northwest Schools

A quarterly electronic newsletter exclusively for NW schools.

Please circulate this subscription opportunity throughout the Northwest to those who may be interested.

There are two ways to subscribe:

1) To view the newsletter, click here: http://www.energy.wsu.edu/buildings/IAQ.htm

The newsletter contains a link for subscription information.

2) Or, send a blank email message to: subscribe-iaq@listserv.energy.wsu.edu

You will receive a confirmation message. When you reply to that message you will be subscribed and will receive all future postings. You can easily unsubscribe at any time.

This broadcast email list not only provides automatic delivery of the quarterly School IAQ Newsletter, but includes announcements about news of interest, training events, grant opportunities, and other information useful to school districts, agencies, and stakeholders involved in school IAQ and operations and maintenance.

The newsletter is an opportunity for all interested parties to communicate, and add to the collective wisdom.

Upcoming Events:

EPA's Annual IAQ Tools for Schools Symposium set for December 2-4, 2004, in Washington, D.C.

This is an excellent annual event that provides great presentations and a unique opportunity to network with school folks from across the nation.

A brochure is now available at www.epa.gov/iaq/schools

Table of Contents

WSUCEEP04_011

June 2004

School Nurses

Continued from page 1

The seven school nurses are excited to be key members of the school IAQ team.

e. Problem solving for complex medical ethical issues, safe medication administration for students with attention deficit disorder, attention deficit hyperactivity disorder, diabetes, asthma, and full inclusion for medically fragile students;

f. Assessing school and community health care needed for students, parents and staff.

2. Advocating for child health

   a. Ensuring standard of care through medical case management, seeing that each child is in optimum health in order to learn;

   b. Being a consistent liaison between home and school, hospital and school, school and medical community.

3. Establishing and maintaining a health office on school campuses

   a. Evaluating and monitoring student and staff health, health programs, legal mandates;

   b. Using nursing process and assessment skills to make nursing diagnoses based on clinical judgment.

4. Doing school health research to better serve the children in the schools

   a. Documenting services provided as to effectiveness, efficacy and equality;

   b. Exploring ethical issues around school health services.

Green Cleaning Pilot Project Update

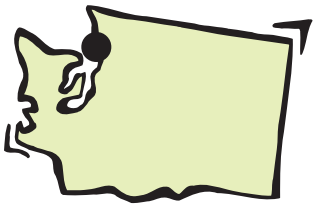
By Dave Blake, Northwest Air Pollution Authority

The Anacortes School District in Washington State is preparing to take the next step in the process of implementing green cleaning practices in their schools. To date, two schools have been participating in the pilot project (see articles in this and past newsletters by Bill Faulkner and Von Storme). School district administrators like what they have seen in these schools and are ready to expand the green cleaning program district-wide.

Toward that end, Facilities Director Jerry Lynch invited all custodians to a 90-minute interactive presentation by Rich Prill of Washington State University Extension Energy Program. Rich built the presentation around an outline of topics Jerry provided. It was a nice outline and I will include it here. I must comment that the outline provided shows us that Jerry is one administrator that "gets it," as Steve Ashkin, green cleaning guru of The Ashkin Group would say. Jerry obviously has a good grasp of the whys and hows of green cleaning. Here are his topics for discussion:

- Green cleaning beliefs/philosophy
- Benefits to kids and staff
- Connection with a "healthy school"
- Potential impact on student achievement
- Changing role of the custodian
- Enlisting support from others (parents, kids, teachers, etc.)
- Challenges to making the change
- Day to day differences in how one cleans
- Products/chemicals for green cleaning
- Traditional cost vs. green cleaning costs

Jerry opened the meeting with a tactfully stated challenge for the custodians. For the transition to green cleaning to work, each custodian needs to understand why the switch is important on a personal and global scale, to believe in it personally and become more and more a steward of the health of the facility and its occupants, and to be an ambassador of the program, promoting it at every opportunity to students, staff and parents.



Rich started with a short review of indoor air quality fundamentals and then facilitated the discussion of each topic above. It was an excellent opportunity for everyone to share opinions and ideas, including the reality that things are different in each school. I believe we accomplished a lot in 90 minutes, the presentation was well-received by staff and, if nothing else, the custodial staff has a good idea which direction the district is trending toward, and that direction will be shaped by input from everyone.

This phase of the green cleaning implementation process follows initial training set in motion during 2003, working closely with Steve Ashkin. Step one consisted of training by Ashkin for administrators. Step two was training by Ashkin for custodial supervisors. Step three initiated pilot green cleaning programs only in those schools and districts that expressed the most interest and had the best chance of success. Now, step four means taking lessons learned in pilot schools and sharing them with other district schools as they evolve the program next year.

Congratulations to Anacortes School District for its hard work doing the right thing for students and staff. If they are successful, it will be because each individual involved cares enough to go the extra mile in their jobs. If this district is successful, the green cleaning program will spread to other districts. Future success will be due to their current efforts. I hope they all get the job satisfaction payback they deserve.

Notes from the Field

Anacortes High School Green Cleaning Project: A Project of Discovery or *"What Was I Thinking?"*

By Bill Faulkner, Anacortes School District

During a recent visit, indoor air quality experts Rich Prill and Dave Blake asked me to put some thoughts down on paper regarding our participation in the IAQ Northwest Air Pollution Authority Green Cleaning Pilot Project. As I tried to organize my thoughts, a few major themes came to mind.

Probably the largest challenge or discovery is that not all schools are alike. Mt. Erie Elementary here in Anacortes is also participating in the project, so we were directed to use the same chemicals. The product has been extremely successful at Mt. Erie Elementary.

However, we met with limited success using it here at the high school. First, this served to point out several major differences between the two schools. Other than the obvious age difference between the students, there are hidden factors that make a tremendous difference. At the high school level we have many more outside influences, such as the availability of snacks and soft drinks, after hours building use, athletics programs and facility types.

The net effect of these factors is that the chemical we used for approximately 90 days, which claimed to be a "one size fits all" solution, wasn't effective in certain areas, particularly against the high sugar content of the soft drinks. We are now on our second product trial, which appears to be a better solution for our requirements.

In conjunction with new "green" chemicals, we have begun to use Micro Fiber cloths. This technology is obviously the direction the industry is headed and with good reason, the cloths are extremely effective at capturing dust and dirt with no treatment and hence no residue left behind. And they can be washed and re-used many times. Micro Fiber products are now available for virtually every application, from wet mops to dust mops and window washing. They also clean better than the conventional rags and lambs wool tools used before.

The whole point is to shift the paradigm and the perception of our customers – the staff, students and public: We are not only cleaning to make the building *look* clean, but in fact, we are trying to provide a healthier environment for working and learning.

As I told Rich, Dave and my staff, green, healthier cleaning chemicals and processes are the direction our profession is headed. We can either be in on the ground floor or be dragged kicking and screaming into it. I prefer to be one of the pioneers, and I am pleased that Washington State schools are on the cutting edge.

I'm convinced these efforts are well worth the changes required. I feel as though I have a vested interest in this program since my 8-year-old son is a student at Mt. Erie Elementary.

Study Examines Connections Between Asthma and Obesity

A recent study by researchers at the University of Southern California challenges the idea that children with asthma are less likely to exercise, contributing to their high incidence of obesity.

Among the 3,800 children participating in the longitudinal study, new-onset asthma was diagnosed about 1.5 times more often in children who were overweight or obese. The risk was slightly higher for overweight boys. The study concluded that obese children were more likely to develop asthma. The study results indicate that controlling obesity may be an effective strategy for controlling asthma.

For more information see *Obesity and Asthma Risk in School Age Children*, by Jerry Phelps, Environmental Health Perspectives Online, March 2004, at http://ehp.niehs.nih.gov/docs/2004/112-3/chil (scroll to headline).

Integrated Pest Management in Schools

The U.S. Environmental Protection Agency has posted information about Integrated Pest Management in Schools on-line at http://www.epa.gov/pesticides/ipm/index.htm . The site includes background on the problem, success stories, and resources for further reading.

Buildings of the Future – Today

Building a new school? Don't just tweak old design elements: Consider some truly advanced designs.

Check out H.L. Turner Group's Advantage Classroom for ideas on what to specify. The Turner Group has designed and built schools that meld energy efficiency, comfort, indoor air quality, and resource efficiency. Visit the Advantage Classroom on-line at http://www.advantageclassroom.com/.

Remember:

Once a mind has been expanded by new information it never returns to its original dimensions.

Mike Riddle

Sedro-Woolley Wins Tools for Schools Excellence Award in 2000

Mike Riddle, director of facilities for the Sedro-Woolley School District, worked with school nurses to create customized IAQ programs tailored to each school and has found this strong team approach to be very effective and efficient.

Riddle says, " I couldn't be happier with the way things are working."

Investigating Carpet in Schools

During the last few months the Washington State University Extension Energy Program staff has been experimenting with methods to find a metric to evaluate school carpets in terms of particle emissions and particle load. The goal is to find an easy and inexpensive method to evaluate carpet in terms of indoor air quality, so that schools can make more informed decisions about cleaning equipment, labor, techniques, and cleaning schedules.

After numerous discussions with researchers across the United States, we decided to use an existing protocol to share our data with others. The protocol involves the following basic steps:

1. Define a square meter of "typical" carpet in a "typical" classroom or other space.
2. We use the same Hoover® Windtunnel vacuum for all tests.
3. Weigh a clean vacuum filter bag with a scale accurate to 1/10th of a gram.
4. Vacuum the square meter for 3 minutes.
5. Weigh the bag.
6. Vacuum the area again for 3 minutes.
7. Weigh the bag.
8. Repeat the 3 minute test and reweigh the bag.
9. Measure 2.5 micron particle emissions from three locations *within the square meter* after slapping the carpet five times with the palm of an open hand.
10. Measure 2.5 micron particle emissions from three locations *immediately outside the square meter* resulting from slapping the carpet five times with the palm of an open hand.

Additional measurements recorded:

- Measure particles (2.5 microns) emitted from vacuum exhaust during the test;
- Measurement of the suction of the vacuum (in Pascals) at the start and end of the test (pressure gauge connected to tube located beneath vacuum near beater-bar).

Summary of Test Results in 19 Schools

An average of 11.6 grams of particle matter was removed from the square meter of carpets in the first three minute tests. The results ranged from a low of 2.8 to a high of 25.2 grams.

Aggressive "Spank Test"

After the three minute tests, the amount of 2.5 micron particle matter released from "spanking" the carpets was reduced by an average of four times, with some tests yielding a 10-fold decrease in released particles.

We "spanked" the carpet inside the square meter after the three minute tests and compared the particle counts to the same spank test outside the square. We used a Dust Trak particle meter. The spank was performed using an open hand and five slaps in the vicinity of the particle meter.

- Vacuumed area = 132 (Micrograms/M^3) average
- Un-vacuumed area = 562 (Micrograms/M^3) average

We also observed that the amount of particle matter removed from the carpet (by weight) diminished along a classic decay curve for most of the test sites. In other words, the weight of the particles removed during the first three minutes was twice as high as the for the second three minutes; the third three minute test yielded half as much as the second test – essentially we found diminishing returns by weight for our vacuuming investment.

We did not do the aggressive "hand slap" particle emission test between the three minute vacuuming regimes as we didn't want to disturb the

particles within our three-meter area prior to conducting the three minute weight tests. It is thus unclear whether the particle emissions (spank test) might mirror the 50 percent reduction per test.

We noted carpet type, age, cleaning history, equipment used, square foot assigned per custodian, distance to exterior, presence of walk-off mats, carpeted hallway, etc.

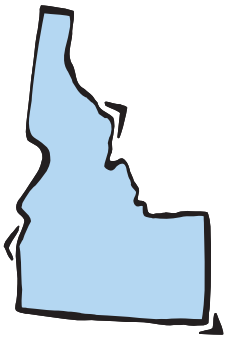
Considerations:

Clearly, many schools have carpet that contains and releases large amounts of particle matter. Perhaps we should reduce this indoor air burden. Deciding on the best approach is the challenge:

- We would like a measurement that tells us when we should do deep cleaning or bite the bullet and replace the carpet.
- How many extractions does it take to revive a dirty carpet? How do we know?
- Should we consider trying to cut back on daily vacuuming and reallocate our money and labor to perform more frequent extractions to get the deep dirt out? Does this reduce exposure to particles more effectively? How do we configure our schools to allow more frequent carpet extraction during regular school operations. One suggestion is to carpet only a half to a third of each classroom to allow chairs and desks to be left in the room during extraction, or relocate students for the day.

Please provide your thoughts and suggestions about this – or other "metrics" – you think should be considered. We will provide updates as we share data and findings with other practitioners and researchers.

Contact Rich Prill at 509-477-6701, or sent e-mail to prillr@energy.wsu.edu

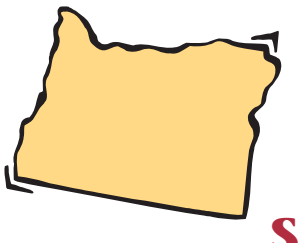


Idaho Schools Participate in IAQ Assessments

Kara Stevens is the indoor environment program manager for the Bureau of Community and Environmental Health at the Idaho Department of Health and Welfare. She continues to expand the Tools for Schools program across the state.

This school year she coordinated and participated in indoor air quality walk-throughs in 27 schools. The school districts participating this year included Freemont (four schools); Lake Pend Oreille (11 Sandpoint schools), West Bonner (five schools), and St. Maries (four schools).

For more information, contact Kara at stevensk@idhw.state.id.us



Bend-La Pine School District Creates Customized IAQ Program

Oregon's Bend-La Pine School District has instituted assessments of indoor air quality, and incorporated training and prevention into its customized IAQ program. The aim is to minimize the everyday issues that arise and prevent small problems from turning into nagging and expensive episodes, says Chuck Volz, school district facilities director. "We strive for excellence in our school buildings and want to keep them that way."

On the Oregon Trail – New Beginnings

From the journals of Lindarose Allaway of Portland, Oregon

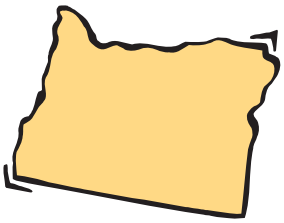
In the Oregon Territory, schools are starting to incorporate the U.S. Environmental Protection Program's Tools for Schools Programs into their daily operations as part of their mission to create healthy and safe learning environments. Dedicated leaders are rounding up resources and staff to make Tools for Schools an Oregon standard. Like pioneers of our past, these leaders are seeking collaboration with local school indoor air quality experts, the "wagonmasters," who have traveled the trail and can share experiences and knowledge to make this journey successful here in the West.

A major challenge in Oregon is the variety of physical environments ranging from the moderate wet coastal zone, large agricultural valleys, mountainous environments as well as stretches of high desert that lend themselves to a variety of agricultural endeavors. Like the pioneers, finding resources and assembling the essentials tools to deal with these many challenges, produces TFS programs unique to each school environment and integrated into regular school operations.

Some early pioneers in the Oregon story include school districts in the metropolitan area of Portland, the Willamette Valley in Salem, and the Central Oregon area, east of the Cascade Mountains. To date they have taken similar paths but are making their TFS work specific to the needs of their school districts.

A trail report about these activities is provided to inspire and share information with others traveling into new territories. All of the schools in Oregon experience major obstacles in school funding due to recent statewide changes in school funding and this continues to be a major concern for the state legislature and Oregon citizens.

West of the Cascade Mountains is the state's largest metropolitan area, the city of Portland. The Portland Public School District serves a population of 53,000 students in about 100 school buildings. This school district is challenged by its size, aging buildings and reduced resources. PPS District custodial services were eliminated several years ago and all custodial work is now contracted. The district Department of Health and Safety undertook a TFS implementation, assisted by funding from EPA Region X.



Under the leadership of Patrick Wolfe, site based interventions are provided by district health and safety staff. Portland has gone one step farther to make this program available in all schools in a proactive manner. Information is provided on the school district web site, incorporated into a school safety committee "toolbox." These tools include mechanisms for quarterly IAQ school walk-through reports and a "TFS 101" curriculum to be used in monthly school safety committees to train committee members in basic IAQ issues. Additional onsite training is offered to school safety committees at their request.

Portland pioneers have learned that just circling the wagons to fend off issues does not work and that by taking a leadership role, utilizing TFS resources, they are back on the trail to making their widespread and varied school communities stronger and better able to manage IAQ concerns.

Central Oregon began their TFS journey in a somewhat different manner. The La Pine schools in the Bend-La Pine School District became partners this school year in a Centers for Disease Control funded Asthma Friendly Schools project. Working with the Oregon Healthy Kids, Healthy Schools program, the La Pine schools have worked all school year to identify asthmatic children, community resources and school practices in a coordinated school health approach. Inge Aldersebaes, manager of the Oregon Healthy Kids, Healthy Schools programs, notes that this provides a vehicle to bring TFS into La Pine and establish a relationship so that an ongoing process can be developed to effectively reduce asthma triggers and allergens in the school setting. Accomplishments in La Pine include on-site trainings and school walk-throughs. The TFS coordinator in La Pine is Morris "Woody" Woodruff, the elementary school custodian and a member of the school asthma team. A plan has been developed with the district facilities manager and work is in process to correct known problems. Because the La Pine schools are part of the Bend-La Pine School District, Chuck Volz, facilities

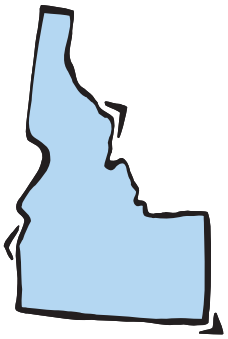
manager for this school district, participated in the TFS trainings and requested some walk-throughs in Bend schools this spring.

Chuck reports that as a result of these activities, he has learned about other sources of asthma allergens such as dust found in soft furniture and carpets and low cost options to make good air quality a standard in all school facilities. He states it is especially helpful to learn more about pollutants, their contamination of air and how air flow can be changed, or in the words of IAQ specialist Rich Prill: "Good Air In and Bad Air Out."

Chuck has already undertaken some important changes in sites visited by the TFS team this spring and plans to offer the Region X TFS training for all of his staff and invite other Central Oregon schools to this event, scheduled for October 8, teacher in-service day. In addition, Chuck wants to see a TFS program provided at the April 2005 statewide annual training meeting of the Oregon School Facility Managers. Chuck is planning on addressing the sustainability of the TFS program by working with school and district safety committees to make IAQ an ongoing process, similar to the Portland Public Schools model.

That's what new on the Oregon Trail for the Spring of 2004. Plan to hear more about these journeys and the pioneer spirit at work in Oregon school districts in upcoming editions of this newsletter.

Watch for Asthma Information



The Idaho Asthma Prevention and Control Program continues to make improvements in schools. Program staff works hand-in-hand with Kara Steven of the Idaho Department of Health and Welfare to increase the number of schools served by the U.S. Environmental Protection Agency's Tools for Schools Program.

Some important program materials will be arriving at all Idaho schools the first week of August:

1. A new CD-ROM based game to teach fourth to eighth graders about asthma called *Quest for the Code* will be included in the packet.
2. The School Asthma Management Model for Idaho (SAMMI) is an administration manual to help school staff manage asthma in the school environment. It includes information about classrooms, emergency management, and materials for teacher and administration staff. SAMMI is in support of the new asthma inhaler law. Students will be allowed to self-medicate.

For more information contact health education specialist Jean Woodward at woodwarj@idhw.state.id.us.