



## EEOP Newsletter

Environmental Education Outreach Program (EEOP)  
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Web version @  
<http://www.nau.edu/eeop/newsletter>

### **The Newsletter**

This newsletter is a service of the Institute for Tribal Environmental Professionals (ITEP) Environmental Education Outreach Program (EEOP). We've created this newsletter specifically for K-16 students, educators, and tribal professionals that are interested in learning more about environmental issues with a focus on air quality. The newsletter will also contain information about EEOP programs and activities.

### **Indoor Air Quality in Schools**

Twenty percent of the US population, nearly 55 million people, spend their days in our elementary and secondary schools. The EPA has conducted studies that show that 1 in 5 of our nation's 110,000 schools reported unsatisfactory indoor air quality, and 1 in 4 schools reported ventilation -- which impacts indoor air quality -- as unsatisfactory. Students are at greater risk because of the hours spent in school facilities and because children are especially susceptible to pollutants.

The toll of air quality related health conditions on education is large. Asthma alone accounts for 14 million missed school days each year (Centers for Disease Control and Prevention 2002). Asthma prevalence has been on a steep rise since 1980. Although many cases of asthma probably go undiagnosed, health officials estimate that 6.1 million children in the United States have asthma. Allergies are estimated to be the cause of an additional 2 million lost school days annually. Current evidence indicates that viral infections predispose children to asthma attacks and allergic responses (Papadopoulos and Johnston 2001). This is important, given that schoolchildren are estimated to experience 7-10 colds each year (Johnston and Holgate 1996) and that improved IAQ and ventilation may reduce the airborne transmission of viruses (Myatt et al. 2004). The effective management of IAQ in schools can reduce students' exposure to the air pollutants that trigger allergies and asthma attacks, potentially improving students' ability to learn.

In an article published in the *Environmental Health Perspectives* Journal, investigators found that schools reported that their IAQ programs led to improved workplace satisfaction, fewer asthma attacks, fewer visits to the school nurse, and lower absenteeism. When actively supported by the school administration, an IAQ program appears to be a valuable factor in improving the learning environment for school children.

The US EPA provides a variety of resources to help educators with improving air quality in schools. The EEOP staff is interested in working with tribal schools to improve indoor air quality. If your

school is interested in implementing an Indoor Air Quality program, contact the EEOP staff for assistance.

### **Summer Scholars 2006: Helping Us Breath Easier.**

Nearly 60 Native American students have spent a week on campus through the Summer Scholars program. The middle school and high school students, accompanied by teachers and tribal environmental professionals, were from Shonto, Tuba City, and Kaibab Paiute. They came to Northern Arizona University (NAU) to apply science and technology to issues in their local community. The focus for the three one-week sessions was Indoor Air Quality (IAQ) and the impact of poor air quality on human health.

Following the one week session on the NAU campus, the Environmental Education Outreach Program (EEOP) staff will work with the students to conduct an Indoor Air Quality assessment for their school. Matthew Zierenberg, Summer Scholars Director, stated, "The school assessment will allow the students to demonstrate their new problem solving skills in their own community."

Each Summer Scholars participant also received a carbon monoxide alarm to install in their home. Carbon monoxide is a poisonous, colorless, odorless gas that can form during any combustion process. According to Dr David G. Penney, Adjunct Professor of Occupational and Environmental Health in the School of Medicine, Wayne State University, "Carbon Monoxide (CO) is the most commonly encountered and pervasive poison in our environment. It is responsible for more deaths than any other single poison..." As a result of their time at NAU, the Summer Scholars participants have the knowledge and supplies to protect the lives of their family and community.

Summer Scholars participants also learned about issues such as radon, asthma triggers, and air quality monitoring. Field trips included doing an IAQ assessment of a Flagstaff school and a visit to an IAQ lab in Phoenix.

In addition to student participants, the Summer Scholars program provided educators that accompany the students a one-week demonstration and orientation to Problem Based Learning. The program also demonstrated the use of the Oregon State University – Community Education and Outreach Program Hydroville curriculum. The curriculum features real-world scenarios, based on actual occurrences and real data. The Hydroville Indoor Air Quality Challenge Problem deals with an indoor air quality problem at a school. Solving the problem requires an integration of skills in several disciplines: engineering, physical science, biological science, environmental health, mathematics, social studies, and language arts. Scenarios are structured to help students understand the complexity of environmental health issues and to emphasize that many real-world issues have no single correct answer.

In addition the program director, Matthew, the Summer Scholars program is staffed by eight NAU students who act as assistant instructors and mentors. Guest presenters include NAU faculty and staff, as well as tribal environmental professionals from Navajo Nation and the Intertribal Council of Arizona (ITCA).

In later issues of this newsletter we will report on efforts to conduct IAQ assessments in the schools represented at Summer Scholars. For more information on Summer Scholars or Indoor Air Quality, go to the EEOP website or contact Matthew Zierenberg.

## **Student Summer Interns**

Eight college students have been selected to participate in the ITEP Student Summer Internship. The students have been placed around the nation, working with tribe environmental offices and EPA offices. Four of the interns are in the Northwest with the others scattered around the rest of the country.

Each ITEP Intern has been given a specific capstone project that they are currently working to complete. A short list of these projects include: tribal emission inventories and ambient air data collection; development of an Alaskan solid waste incinerator outreach program; developing relations between Kansas tribal and state governments on local and national air issues; development and implementation of outreach materials and programs to encourage tribal participation in the comment period for the two Tribal NSR (New Source Review ) Rules; and conducting research to find a correlation between health indicators and local burn bans.

We have a very talented group of interns performing important work that supports tribes. We appreciate all the work they are doing and look forward to reporting on their finished projects in future issues of the EEOP newsletter.

The EEOP staff will also be recruiting both interns and host agencies for the 2007 summer season beginning in October 2006. All applications will be accepted via the EEOP website.

If you would like more information about the ITEP Student Summer Internship program please contact Matthew Zierenberg.

## **Water Quality and Wastewater on Hopi**

Ten youth from the Kykotsmovi Hopi Youth Program learned more about their own community, while providing an important service for the community.

One of the EEOP staff helped the youth learn about wastewater treatment and water quality. Wastewater treatment is one of the important community services that protects the health of the community and the environment. Kykotsmovi, under the direction of the village Water Commissioner uses an innovative constructed wetlands method to treat the wastewater.

The youth learned about water quality measurements such as pH, electrical conductivity, phosphates, alkalinity, and nitrates. They used their new skills to sample and test water in the wastewater treatment plant after it has been treated, including treatment with chlorine to kill bacteria and parasites. The data from these tests will help the Kykotsmovi community decide how to use the treated water.

If you are interested in more information on water quality or wastewater treatment, contact the Mansel A.Nelson.

## **Eyes in the Sky - Geospatial Information Technology (GIT)**

One of the EEOP staff attended a workshop to learn how to use Geospatial Information Technology (GIT) to analyze and visually communicate information. GIT include computer mapping programs, aerial and satellite images plus image analysis software, and global positioning system (GPS) units.

The EEOP staff will be integrating the use of GIT into many of the EEOP programs and projects. The first major project will be a collaboration with Leupp Public Schools to document important plants in the Leupp area. Students will document the location of plants with a GPS to record longitude and latitude. The information collected will be documented use ArcView, a Geographical Information System (GIS) software. The location of the plants will be compared to other geospatial information available such as soil types and precipitation.

If you are interested in more information on GIT, contact Mansel A. Nelson.

## **Future Issues**

In our next issue the lead article will be about the importance of mentorship and the role of mentorship in preparing youth for future careers in science, engineering, and technology. We will introduce our mentorship program for high school and college students and provide information on how to apply to participate in the EEOP mentorship program. We will provide an update on the Student Summer Internship program, including more details on the accomplishments of some of the interns. We will also be reporting on the Indoor Air Quality Internship program that currently has 14 students and 4 host sites involved. Additionally, we are interested in publishing articles from you. Send us your articles sharing stories from students, teachers, or tribal professionals influenced by ITEP or EEOP activities.

## **Credits and Contacts**

The US Environmental Protection Agency (USEPA) Office of Air and Radiation provides part of the funding to make this newsletter possible. The newsletter is disseminated on various list serves, however, if you would like to join the newsletter list serve, contact [mansel.nelson@nau.edu](mailto:mansel.nelson@nau.edu).

Our staff looks forward to providing new services and developing new programs, as well as continuing existing programs. We especially look forward to hearing from you. So please visit our website at <http://www.nau.edu/eeop> or contact us via telephone or email.

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