The California Air Resources Board Releases Portable Classroom Study

The California Air Resources Board (ARB) recently released a draft report to the State Legislature on its study of environmental health conditions of portable classrooms in California. The Portable Classroom Study was mandated by AB 2872 (Chapter 144, Statutes of 2000), which allocated $1 million to evaluate the design and construction, maintenance practices, indoor air quality and potential toxic contaminants of California's portable classrooms. The study, however, is more comprehensive in that it assesses the environmental conditions of the *all* public school classrooms, including traditionally constructed facilities. AB 2872 additionally required the ARB to develop recommendations to prevent and remedy unhealthful conditions for California's K-12 population.

SUMMARY

The study concludes that, generally, public school classrooms in the state are adequately constructed and maintained as to pose no serious health risks to the public school children. The ARB suggests, though, that improvement in construction (design and product choices) and maintenance and operations practices can go a long way to improve the indoor air quality of California's classrooms. The report's findings are not necessarily surprising in that all school facilities in the state, including portable classrooms, must meet the requirements of the California Building Code (CBC), which contains some of the most rigorous building and energy standards in the nation, and must be reviewed and approved by the Division of the State Architect.

The report assesses the areas of ventilation, temperature, air pollutants, floor dust contaminants, moisture and mold, noise and lighting. In the area of ventilation, the report finds that classrooms receive adequate outdoor air 60 percent of the time, with a small percentage of classroom hours receiving seriously deficient levels of outdoor air. The study suggests that proper maintenance and operation of HVAC units, and improvements in the design of these systems to mitigate noise, will improve classroom ventilation levels. Slightly better findings were made for temperature and humidity, and again, the proper maintenance and operation of HVAC units is cited as a cost-effective remedy to any problems.

The study of air pollutants, namely aldehydes including formaldehyde, in classrooms is not a new area of interest for school facility designers and manufacturers. Formaldehyde emissions have been addressed by the building industry at large since at least the early 1990s, when the ARB classified it as a toxic air contaminant. The industry has been producing low- or no-formaldehyde emitting building products, which are in turn specified and used by facility designers and manufacturers. The latest in technology improvements in this area is the development of low- or no-formaldehyde emitting insulation. Such progress in the building industry is affirmed by the results of the ARB's study, which indicates that a mere four percent of the classrooms studied had formaldehyde levels above OEHHA's standard for acute eye, nose and lung irritation. Portable classrooms did not perform as well as traditionally-built classrooms with a mean difference of formaldehyde concentrations of 8 ppb (parts per billion), but just 5 ppb over OEHHA's short-term health-based guideline.

Ambient noise levels in classrooms were found to exceed the newly published ANSI Classroom Sound Standard of 35 decibels, which "appears technologically and financially unattainable at this time," states the Portable Classroom Study. There is no statewide regulation or statute pertaining to classroom sound levels. The study, however, offers as a long-term recommendation that a task force should be convened to determine whether such a statewide standard should be developed.

METHODOLOGY

The Portable Classroom Study was conducted in two phases. Phase I consisted of questionnaires regarding environmental conditions at the school and classroom levels that were mailed to facility managers and teachers. 384 schools and 1,133 classrooms were surveyed for this phase of the study with a response rate between 40 – 45 percent. Phase II was a field study of environmental conditions at 67 schools (201 classrooms) of which 14 were chosen specifically because of their Phase I responses. The sample population is representative of the target population, which includes all public schools in the state with at least one portable classroom on campus. One in three classrooms studied were of traditional construction and 50 percent of the surveyed schools were elementary schools because portable classrooms are more prevalent at the elementary level. Finally, nearly 75 percent of the schools were located in suburban areas.

RECOMMENDATIONS

The recommendations developed by the ARB and outlined in the Portable Classroom Study are divided into three tiers based on levels of priority and potential costs. Group One recommendations are what the ARB considers to be of high priority with relatively low costs associated with them, while Group

Two and Three are still priority recommendations but have substantive cost implications. Below is a summary of the ARB's recommendations:

Group One: High Priority, Low Cost Recommendations

- School buildings – traditional and portable – should comply with existing state regulations.
- School districts should conduct self-assessments on basic health and safety conditions.
- "Best Practices," such as those developed by CHPS, should be incorporated into state policy for the design and construction of new public schools.
- Design review for school facilities should be expanded to include ventilation system design, building materials and maintenance planning.
- Portable classrooms should be properly sited away from highways potential flood areas.
- Proper vacuuming and cleaning procedures training should be given to janitorial staff.

Group Two: Priority with Potentially Substantive Costs

- School districts should develop an Indoor Environmental Quality (IEQ) Management Plan (currently only 11 percent of schools use the EPA's *Tools for Schools Kit*).
- School districts should develop and implement an Integrated Pest Management Program.
- The State should develop a full commissioning procedure for all new facilities.
- The State and districts need to assure preventative maintenance.
- The Lead-Safe Schools training should be expanded to more school districts.
- The State should develop statewide chemical exposure guidelines/ standards for classrooms.

Group Three: Future Priorities

- The State should convene a task force to identify "stable, long-term funding" for construction, modernization and maintenance of schools.
- The State should develop a Training and Certification Program for school facility managers.
- The State should develop an IEQ-in-Schools outreach group to develop and disseminate training materials and curricula.
- The State should convene a task force of audiological and medical experts to evaluate the impact of classroom noise on academic performance and health and determine whether or not the state should develop a statewide noise threshold for classrooms.
- The State should improve the school facility inventory and database.
- School Districts should solicit community support to assist with basic functions of facility maintenance or to provide financial support.
- Portable classrooms should be redesigned to incorporate new technologies to improve the learning environment.
- Older portable classrooms should be retired and replaced by newer classrooms.

While the Portable Classroom Study illuminates some problem areas in California public school classrooms, generally, classroom environments – both traditional and portable – pose no serious health risk to the K-12 population. Moreover, the proper maintenance and operations of facilities and supporting systems, such as HVAC units, will do much to improve the classroom environment. The C.A.S.H. Maintenance Network is devoted to promoting the proper maintenance and operations practices, as well as to ensuring that funding for such is adequate.

For more information on the C.A.S.H. Maintenance Network, contact Gretchen Kocinsky at the C.A.S.H. office at (916) 448-8577 or via email at gkocinsk@m-w-h.com.