STATE OF CALIFORNIA

EDMUND G. BROWN, JR. *Governor*

DEPARTMENT OF INDUSTRIAL RELATIONS

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

1515 CLAY STREET, SUITE 1901
OAKLAND, CA 94612
(510) 286-7000 FAX: (510) 286-7037

ADDRESS REPLY TO:
PO BOX 420603
SAN FRANCISCO 94142-0603

July 28, 2011

Bill Pennington
California Energy Commission
Attention Docket No.
1316 Ninth Street
Sacramento, CA 95814
Attention Maziar Shirakh

Dear Mr. Pennington:

I am writing in response to certain proposed changes in Title 24, Part 6, Subchapter 3 that have been proposed for the Draft Revisions for Nonresidential Buildings for Possible Inclusion in the 2013 Building Energy Efficiency Standards. As the agency responsible for workplace health and safety in California, the Division of Occupational Safety and Health (Cal/OSHA) is concerned about the impact two of the proposed changes have on safety and health in California's workplaces.

These concerns remain despite the work that has been done between the Energy Commission staff and Cal/OSHA staff to resolve other code proposals regarding ventilation in parking garages and commercial kitchens. We have tried to resolve the remaining issues as well, but the concerns raised by Cal/OSHA staff have not been adequately addressed, and the proposed code is moving forward in the process. I am therefore writing to ask for your assistance in resolving these remaining issues, in order ot ensure that we do not jeopardize the health and safety or workers while attempting to reduce energy consumption.

Laboratory Ventilation

The Commission staff has proposed changes that would require certain energy recovery measures in laboratory hoods. These include an option to place a heat recovery system, such as heat recovery coils inside the duct. Although Energy Commission staff have stated that the energy savings associated with this alternative would be extremely limited, this option has remained in the proposed code sections.

Placement of any coils or recovery system inside the duct will compromise the efficiency of contaminant removal by creating a source of turbulence in the air flow. This will increase energy consumption because a higher fan speed will be necessary in order to create the required hood and duct velocities. More importantly, any projection or source of turbulence in the duct increases the likelihood of condensation or deposition of hazardous materials inside the duct. This can lead to additional airflow reduction, and can create the potential for hazardous materials deposited in the duct to react, creating a fire or explosion hazard.

Deposition of toxic materials also poses a hazard for any employees who need to access or service the ducts or energy return equipment. Where biological hazards may be present in the duct, the deposition of materials may create an infectious disease hazard.

The Commision staff has stated that these devices are only intended to be installed on laboratory hoods that are not being used for hazardous materials. However, laboratory hoods are typically installed specifically for the purpose of containing hazardous materials or biological agents. Even in a situation where a lab hood was installed for some other purpose, there is no way to predict the future uses of the hood.

Adoption of the proposal would also result in a conflict between the codes. The existing regulation in Title 8, California Code of regulations, Section 5143(a)(1) requires that "The exhaust system shall be so designed, constructed, maintained and operated as to prevent harmful exposure by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, mists, vapors or gases from said equipment or process and to convey them to suitable points of safe disposal, thereby preventing their dispersion in harmful quantities into the atmosphere of work rooms or other places where persons are employed."

Introduction of an obstruction into the duct would violate this regulation.

Cal/OSHA believes strongly that this option must be deleted from the proposal, because it poses a significant safety and health hazard. In addition, we believe that any code adopted regarding laboratory ventilation should specifically reference Title 8, Section 5154.1, Section 5154.2, and Section 5143 which contain other requirements for laboratory hood ventilation.

Automatic Shut-Off of Ventilation Systems Based on Unreliable Sensor Technology

The Commission has also proposed adding a subsection to Section 121(c) that would permit occupant sensor ventilation control devices. We are concerned that this provision will create poorly ventilated spaces in many workplaces, by permitting the use of unreliable sensor technology that would turn off ventilation in a space unless occupancy was detected.

The current proposal would permit the use of ultrasonic or microwave detectors that are currently used to turn off lights under Section 119(d). The proposed language would also permit the use of carbone dioxide (CO2) sensors used in a demand control ventilation (DCV) application.

In previous code cycles, Cal/OSHA has expressed very strong concerns that reliable ventilation systems provide an adequate supply of outdoor air to occupants in California's workplaces. During the 2005 code cycle, Cal/OSHA expressed strong concerns, joined by representatives of school employees and others, regarding a proposal to mandate DCV systems in classrooms. During the 2008 code cycle, Cal/OSHA again expressed strong concerns regarding a proposal to mandate the expansion of demand control ventilation (DCV) systems in multi-zone occupancies, especially in classrooms, call centers, other high density office environments, social services lobbies, and medical buildings and other health care environments not already exempted from these code sections. In both code cycles, we were able to reach agreement, and we hope that we will be able to do so this time as well.

We have previously provided studies to the Commission that have found that inadequate ventilation has a negative impact on productivity in classrooms and offices, prolongs the presence of airborne infectious disease agents and increases their concentration, increases absenteeism, and subjects the building owners to problematic ventilation performance leading to occupant dissatisfaction. This, in turn, increases costs to Cal/OSHA for enforcement of regulations regarding ventilation systems.

Carbon dioxide sensor and control technology for ventilation systems has a number of inherent flaws. Studies, including research sponsored by the Energy Commission, have found installed CO2 sensors that are often not functioning properly, if at all. In addition, carbon dioxide based occupant sensing controls have long lag times before occupancy is detected, particularly in situations where ventilation systems are not running or are providing minimal air circulation, because the build up of exhaled carbon dioxide takes longer to be detected if the air is not moved past the sensor. The unreliability of this technology, the maintenance requirements, and ultimately the unacceptable indoor air quality caused the Los Angeles Unified School District to reject this technology after an initial trial.

Cal/OSHA is also concerned about othe reliability of motion detectors for controlling ventilation systems. Many of us have the experience of meeting in rooms in which the lights turn off automatically because they have failed to detect the presence of people who are sitting still. The turning off of lights is readily detectable by the occupants of a room. However, occupants may not be immediately aware of the loss of ventilation, until they experience a poor indoor environment. Although inconvenient, when lights turn off, they can generally be turned back on by operation of a manual switch. However, the proposed code does not appear to permit a manual occupant override. So people will be forced to continue to work in a space in which no ventilation is provided.

In that case, this would create a conflict in the codes, as Title 8, Section 5142(a) requires that:

> "(2) The HVAC system shall be operated continuously during working hours except:
> (A) during scheduled maintenance and emergency repairs;
> (B) during periods not exceeding a total of 90 hours per calendar year when a serving electric utility by contractual arrangement requests its customers to decrease electrical power demand; or
> (C) during periods for which the employer can demonstrate that the quantity of outdoor air supplied by nonmechanical means meets the outdoor air supply rate required by (a)(1) of this Section. The employer must have available a record of calculations and/or measurements substantiating that the required outdoor air supply rate is satisfied by infiltration and/or by a nonmechanically driven outdoor air supply system.

Cal/OSHA believes that the technology to support this new code provision is not sufficiently reliable, and we believe this provision should be removed from othe current proposed code.

We understand that the Energy Commission is working to reduce energy consumption in California, and we support this goal. However, that goal can not be accomplished by the sacrifice of the health and safety of California's workforce. I look forward to working with you to resolve these issues.

If you have any further questions, please contact Deborah Gold, Deputy Chief for Health (510)286-7013, or Senior Safety Engineers Bob Nakamura at (510)286-7005 or Jeff Ferrell at (916)574-2995.

Thank you for your attention.

Sincerely,

Ellen Widess

Ellen Widess
Chief

cc: Deborah Gold
Jeff Ferrell
Bob Nakamura
Steve Smith
Mike Horowitz