STATE OF CALIFORNIA
DEPARTMENT OF INDUSTRIAL RELATIONS
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
1006 Fourth Street, Third Floor
Sacramento, California 95814
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In the Matter of a Petition by:	
INTERNATIONAL BROTHERHOOD ELECTRICAL WORKERS LOCAL UNION 1245 3063 Citrus Circle P.O. Box 4790 Walnut Creek, CA 94596 Applicant.	PETITION FILE NO. 151 DECISION

The Occupational Safety and Health Standards Board hereby adopts the attached PROPOSED DECISION.

OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

GERALD P. O'HARA, Chairman

EDWARD ASHTON, Member

JACK F. BRANTLEY, Member

WILLIAM DONNELLY, Member

ALVIN GREENBERG, Ph.D, Member

DR. JOHN PETERS, Member

R. J. RODRIGUEZ, Member

BY: STEVEN A. JABLONSKY, Executive Officer

DATE: May 26, 1983

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PROPOSED
PETITION DECISION OF THE
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
(Petition File No. 151)

The California Occupational Safety and Health Standards Board received a petition from Mr. Ronald G. Fitzsimmons, International Brotherhood of Electrical Workers, Local Union 1245, on behalf of a committee comprised of officials from several union locals (hereinafter referred to as "Petitioner") on December 7, 1982 to develop and promulgate a comprehensive regulation which would ensure that workers are protected from indoor pollutants.

Letters supporting the petition were received from Walter L. Johnson, President of the Department Store Employees Union, and John F. Henning, Executive Secretary-Treasurer, California Labor Federation, AFL-CIO.

Labor Code Section 142.2 permits interested persons to propose a new or revised regulations appropriate for adoption concerning safety and health and requires the Standards Board to render its decision no later than six months following the receipt of such proposals.

The Petitioner did not propose a specific regulation for the Standards Board to consider.

SUMMARY

The scope, application, and purpose of the requested regulation and supporting arguments are summarized in the following excerpt from the petition:

> "Because of the complex nature of the problem, we feel that the standard should both require adequate ventilation and control the use of office products (such as aerosols, copiers and cleaning materials), building materials (such as particle board and paneling), and tobacco smoke, which may pose a threat to workers' health. Additionally, the standard should include guidelines to ensure proper building design (e.g., proper placement of intake and exhaust ducts).

Specifically, the standard should include recommendations for minimum acceptable ventilation rates as stringent as those recommended by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) in their Standard No. 62-1981, "Ventilation for Acceptable Indoor Air Quality." These recommendations prescribe: 1) outdoor air quality acceptable for ventilation; 2) minimum ventilation rates for various indoor environments based on the type of space and its use; and 3) criteria for reduction of outdoor air quantities when recirculated air is treated by contaminant removal.

The standard should also limit the emission of pollutants from building materials and office products. Cal/OSHA should examine the current standards for known indoor pollutants, including radon, asbestos, formaldehyde, and combustion products (nitrogen oxides and carbon monoxide). Additionally, Cal/OSHA should consider establishing regulations for exposure to tobacco smoke and other indoor air pollutants.

Recent studies have shown that harmful indoor pollutants have been found at concentrations greater than in the surrounding outdoor air. This is especially the case in the new 'energy efficient' buildings, when air exchanges have been reduced to low levels. The concentration of pollutants increases when the air exchange rate is reduced. Additionally, vapors from insulation materials such as urea formaldehyde foam can contribute to the problem.

In the past several years, complaints concerning indoor air pollution have increased substantially. There has been a dramatic increase in the number of investigations by the National Institute of Occupational Safety and Health (NIOSH) related to indoor pollutants in non-industrial settings. In 1980-81, approximately 13% of their Health Hazard Evaluations (HHEs) concerned indoor pollutants, compared to 5% in 1977. More than 70% of the buildings investigated in these studies were sealed hermetically and had central air conditioning and recirculation ventilation systems.

In a few of these investigations, the employees' complaints stemmed from poor building design (e.g., diesel fumes and motor vehicle exhaust entering the ventilation system). In several other studies, specific building materials were identified as the source of the problem (such as asbestos insulation, urea formaldehyde insulation, carpet glues, office copiers, and spirit duplicators). In a majority of the studies, however, no single source could be identified as the main contributor to the problem.

> Health effects experienced by employees in the buildings under investigation included eye and skin irritation, headaches, fatigue, sinus complaints, shortness of breath, coughing and dizziness. In many cases these symptoms were reported by workers in buildings in which measured exposures were below the current PELs. Additionally, in the majority of cases, as the ventilation rates in the building were increased, the complaints dropped off."

The petition was referred to the Division of Occupational Safety and Health for an evaluation, and in its report of February 2, 1983, the Division acknowledges that the "tight building syndrome" can be an occupational problem and the petition under review has merit. Due to various constraints, however, the Division believes the best approach would be to investigate a minimum ventilation requirement for offices based on the ASHRAE Standard No. 62-1981. In the Division's opinion, approaching indoor pollution from a ventilation performance standpoint, while only indirectly addressing the presence of individual contaminants, offers a practical means of addressing the complexities of nonspecific indoor air pollution.

The Division recommends that the petition be granted to the extent that minimum ventilation standards be incorporated into the General Industry Safety Orders, to assure the maintenance of adequate ventilation levels in places of employment and the upgrading of ventilation systems designed for levels which are less than current building occupancy would dictate.

The Standards Board's staff also reviewed the petition and the evaluation report from the Division. In the report dated April 22, 1983, staff suggests that not all aspects of the petitioner's requested comprehensive regulation would appear to fall within the Board's rulemaking authority. For example, restricting the use or application of consumer products (aerosols, copiers, and cleaning materials) or building materials (such as particle board, paneling, and insulation) either by provisions that would specifically prohibit their use or by provisions that would specify the type and amount of pollutant that could emanate from a particular product or material may be beyond the Standards Board's statutory authority to regulate.

The staff report also indicates that the establishment of employee exposure limits to specific substances would not appear to be feasible for controlling indoor air pollution at the present time because currently available information is inadequate to determine the appropriate exposure limits for most, if not all, such pollutants. Studies of office environments have been characterized by a general inability to identify the source of employee health complaints. Further, exposures to suspect substances have commonly been measured at levels much lower than generally accepted as safe in the industrial environment.

Research to determine acceptable indoor air contaminant levels was authorized by the State Legislature in 1982 with the enactment of AB 3200 (Tanner) as Article 9.5 (Indoor Environmental Quality) to Chapter 2 of Part 1 of Division 1 of the Health and Safety Code. Responsibility was given to the Department of Health Services (DOHS) for the coordination of a coherent State effort to protect and enhance indoor environmental quality and to "conduct and promote the coordination of research, investigations, experiments, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, and control of indoor pollution." In the implementation of the act, an interagency committee was formed comprised of representatives from State (including the Cal/OSHA Consultation Service) and Federal agencies having functions and interests related to indoor air quality. The DOHS also has initiated studies concerning air pollution problems in residences, including mobile homes, but it is unlikely that the development of comprehensive and defensible indoor air quality standards can be accomplished except over the long term.

The establishment of criteria to assure adequate ventilation of office buildings was another regulatory approach to the control of indoor air quality included in the petition, and the Division indicated that this approach, utilizing the ASHRAE Standard 62-1981, Ventilation for Acceptable Indoor Air Quality, was worthy of investigation. In evaluating the Ventilation Rate Procedure included in ASHRAE 62-1981, the Standards Board's staff notes that it is intended to indirectly achieve acceptable indoor air quality by providing outside air or cleaned, recirculated air of proper quality and quantity. The criteria for the quality of acceptable outside air include the Environmental Protection Agency's ambient air quality standards (i.e., carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide and total particulates) and guidelines for 27 additional substances "selected from current practices in various states, provinces, and other countries." For other substances, the guidelines suggest limits 1/10 of the limits permitted under OSHA regulations except where this may result in "unreasonable limits" requiring "expert consultation."

The quantity of ventilation air prescribed by rate tables in ASHRAE 62-1981 address residential facilities and smoking and non-smoking occupancies within various commercial, institutional, and industrial facilities. The ventilation rates for smoking occupancies in general office space and in office meeting and waiting spaces are, respectively, four and five times greater than the rates for non-smoking occupancies. (A rate ratio of 5 to 1 for smoking versus non-smoking occupancies is the maximum prescribed by the standard for any facility.) The ASHRAE rate tables are claimed to be derived from physiological considerations, subjective evaluations, and

professional judgments, and Appendix D (Rationale for Minimum Physiological Requirements for Respiration Air Based on Carbon Dioxide Concentration) explains the derivation of the prescribed ASHRAE minimum ventilation rate in cubic feet per minute per person. The increased ventilation rates for non-smoking occupancies in laundries, kitchens, assembly rooms, etc. apparently consider the generation of heat and moisture within such facilities. It is not known, however, to what relative extent various factors, contributed to the establishment of the recommended ASHRAE ventilation rates for smoking occupancies. The ventilation rates prescribed for smoking occupancies would apparently resolve the otherwise difficult problem of determining what particular component of tobacco smoke is the most appropriate indicator of its concentration and hazard. However, there is no assurance that tobacco smoke would not continue to be a problem among non-smokers in the absence of evidence establishing a correlation between the recommended ventilation rates and health complaints, or lack of complaints.

Except for carbon dioxide and tobacco smoke, the ASHRAE Ventilation Rate Procedure does not address pollutants generated within an indoor space, and consequently, the utilization of this procedure would not guarantee the control of contaminants emanating from building materials, carpeting, furniture, etc. or contaminants otherwise generated within the facility, particularly in designated non-smoking occupancies requiring minimal rates. Although the higher ventilation rates for smoking occupancies would predominate in buildings conforming with ASHRAE 62-1981, thus reducing the likelihood of health problems from such other pollutants that may be generated within the building, there again is no assurance that such problems would not occur.

The Board's staff concludes with the suggestion that the entire problem of indoor air quality may be beyond the Standards Board's ability to resolve. Staff believes that resolution of the indoor air quality problem particularly in new, energy-efficient buildings should be sought through an overall, coordinated effort to which the Cal/OSHA Program would contribute.

The Standards Board has reviewed the petitioner's proposal, and the evaluations from the Division of Occupational Safety and Health and the Board's own staff. The Board concurs with staff that some aspects of the petitioner's proposal are beyond the Board's statutory authority, i.e., the regulation of consumer products. Also, until better information is available related to specific causes of indoor air pollution including the possible synergistic interaction between low levels of contaminants, a comprehensive standard addressing specific contaminants, as suggested by the petitioner, is unrealistic at this time.

Subsequent to the issuance of staff's report, the Standards Board has learned that the California Energy Commission (CEC) has drafted a proposal and an environmental impact report for the revision of energy performance standards for nonresidential buildings contained in Chapter 2-53 of the State Building Code (Title 24). Relevant to the petition, proposed new Section 2-5342 would require that the quantity of ventilation air for smoking and non-smoking areas in new office buildings be not less than the respective values included in the ventilation rate table of ASHRAE Standard 62-1981.

The CEC's environmental impact report acknowledges the several limitations of ASHRAE 62-1981 pointed out in staff's evaluation and further notes that the standard has not been endorsed by either the American National Standards Institute or the Building Officials Conference of America. Nevertheless, in CEC's evaluation, ". . . it still appears to be a useful model for achieving acceptable ventilation and indoor air quality in office buildings."

The action proposed by the CEC should resolve the Petitioner's concerns regarding indoor air pollution in new, energy efficient office buildings. The Standards Board believes the proposed action by the CEC is appropriate since there is no question as to CEC's authority and the CEC standard would assure that ventilation considerations are addressed during new building design.

However, the Standards Board concurs with the petitioner's recent contention that these CEC standards would not address problems faced by employees occupying existing office buildings. Consequently, the Board believes its decision should be in accord with the recommendation of the Division of Occupational Safety and Health to investigate a minimum ventilation requirement for office buildings compatible with applicable building codes and standards.

CONCLUSION AND ORDER

The Occupational Safety and Health Standards Board has considered the petition submitted by Mr.Ronald G. Fitzsimmons on behalf of a committee of several labor unions to develop a comprehensive regulation on worker exposure to indoor pollutants. For the reasons stated in the Summary, the petition is granted to the extent that an advisory committee will be convened to consider a regulation for controlling indoor air quality within office buildings through prescribed minimum ventilation requirements.