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April 5, 2013

VIA HAND DELIVERY & EMAIL

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Re: OSHPD Notice of Proposed Changes to the California Plumbing Code: 2012 Triennial Code Adoption Cycle: Opposition to Proposed Amendment of CMC §§ 217.0, 407.4.1.4, 602.1, 602.3.1 & Table 4-B and CPC §§ 217.0, 604.1, 609.9, 701.1.2.1 and 906.2.1.

Dear Mr. McGowan and Mr. Gall:

The following comments are submitted on behalf of the Coalition for Responsible Building Standards in opposition to the 2013 California Building Standards Code amendments proposed by the Office of Statewide Health Planning and Development ("OSHPD") that create a special OSHPD 3SE clinic occupancy exempt from currently applicable heating, ventilation, and air conditioning ("HVAC") requirements and plumbing pipe restrictions and disinfection requirements. The proposed OSHPD 3SE amendments should be rejected because: (1) they may result in significant public health, worker safety and environmental impacts; (2) they have been proposed in violation of the California Environmental

Quality Act ("CEQA"); and (3) they fail to meet the California Building Standards Law's nine-point criteria for adoption of building standards.

The specific provisions at issue are the proposed amendments to California Mechanical Code Table 4-B and sections 217.0, 407.4.1.4, 602.1 and 602.3.1, and California Plumbing Code sections 217.0, 604.1, 609.9, 701.1.2.1 and 906.2.1 ("the Proposed Amendments" or "the Project").[1] These Proposed Amendments exempt OSHPD 3SE clinics from:

(1) The requirement that heating, ventilation, and air conditioning ("HVAC") systems that serve direct patient service or sterile supply storage areas must provide two filter banks for airborne pathogen protection, one MERV 8 with 30% efficiency and one MERV 14 with 90% efficiency;

(2) The prohibition on using the space above a ceiling as an outside-air, relief-air, supply-air, exhaust air, or return-air plenum;

(3) The prohibition on using concealed spaces or independent construction within buildings as ducts or plenums;

(4) The prohibition on installing flex ducting that is more than 10 feet in length;

(5) The requirement that plumbing vents terminate at least 25 feet away from any air intake or vent shaft.

(6) The requirement to disinfect new or repaired potable water systems prior to use;

(7) The prohibition on the use of chlorinated polyvinyl chloride ("CPVC") drinking water pipe; and

(8) The prohibition on the use of polyvinyl chloride ("PVC") and acrylonitrile butadene styrene ("ABS") plastic drainage pipe.

[1] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013).

In addition, the Proposed Amendments also effectively exempt OSHPD 3SE occupancies from compliance with California Mechanical Code section 407.4.1.5, which requires that "Air from a patient room, exam room, treatment room shall not be transferred to another similar room without first having passed through air filters as required by Table 4-B or Table 4-C."

OSHPD has proposed adoption of these proposed regulations without any compliance with CEQA whatsoever. CEQA requires the evaluation of the potential environmental and public health impacts of proposed building standards before their adoption. As discussed in detail below, substantial evidence demonstrates that the Proposed Amendments may result in significant public health and environmental impacts, including: (1) reduced energy efficiency; (2) indoor and outdoor air quality impacts; (3) increased risk of infectious disease spread; (4) contamination of drinking water; (5) exposure of workers to toxic solvents and cements; (6) increased fire risks; (7) increased risk of contamination from premature pipe or HVAC system failures; and other environmental and public health impacts. Accordingly, CEQA requires preparation of an environmental impact report ("EIR") to evaluate these impacts before the California Building Standards Commission ("Commission") may approve the Proposed Amendments.

OSHPD's failure to comply with CEQA in proposing these code changes is surprising because these very same proposals were withdrawn from the December 2012 code proposals that OSHPD submitted to the Commission due to comments alerting the agency of its failure to comply with CEQA. OSHPD now brings forward the same proposals once again without having taken any action to remedy its prior failure to comply with CEQA and without having addressed any of the concerns raised in previous comments.

Furthermore, OSHPD's failure to comply with CEQA is wholly inconsistent with the EIR that was prepared in 2007 by the Department of Housing and Community Development ("HCD") to evaluate its expanded approval of CPVC in residential occupancies. HCD's CEQA review of CPVC determined that the installation of CPVC may result in several significant impacts, including worker health and safety impacts, water contamination impacts and air quality impacts. As a result, HCD imposed significant mitigation measures to address and reduce these potential impacts. These measures include: (1) requiring a one-week flushing regimen after installation to reduce water contamination; (2) requiring compliance with worker safety requirements, including safety training, ventilation and glove

use requirements; and (3) requiring the use of low-VOC one-step cement to reduce air quality impacts.[2]

OSHPD's proposal regarding CPVC not only fails to comply with CEQA, it also fails to require any of the basic public health and worker safety mitigation measures that HCD imposed after its CEQA review of CPVC. The failure to impose the HCD public health and worker safety mitigation measures for CPVC is particularly egregious because OSHPD acknowledges that these mitigation measures "are not tremendously onerous."[3]

Moreover, the reason for this failure is not that OSHPD believes that CEQA review is not required, rather it appears to be because OSHPD does not want to put the time or resources into complying CEQA's requirements. In an internal memorandum discussing potential CEQA review of CPVC, OSHPD conceded that "the state has conducted CEQA reviews of various plastic piping materials since 1982" and "*[a]ll such reviews have concluded that installation of plastic piping has the potential for significant environmental effects that require mitigation efforts*."[4] Nonetheless, OSHPD refuses to conduct a CEQA review for its own proposed approval of CPVC because the "plastics industry has not exhibited an interest in funding a CEQA undertaking."[5]

Lack of resources is not a valid excuse for ignoring the statutory requirements of CEQA. The Proposed Amendments may not be approved by the Commission until environmental review consistent with the requirements of CEQA has been completed and certified. Until then, the Commission must disapprove the Proposed Amendments or, in the alternative, table the proposal pending further study. Adoption of these Proposed Amendments prior to completion of this review would violate state law.

The Proposed Amendments should also be denied because they fail to meet the requirements of the California Building Standards Law. Health and Safety Code section 18930 requires that building standards be justified under the listed

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[2] See Cal. Code Regs., tit. 24, Part 5, § 604.1.1 and Appendix I, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, §§ 1.2, 1.2.1, 1.2.2.
[3] OSHPD, Memorandum on Withdrawal of OSHPD 3SE Proposals due to Adams Broadwell Joseph & Cardozo Comments [Appendix 76].
[4] *Id*. (emphasis provided).
[5] *Id*.

nine-point criteria. OSHPD's Proposed Amendments fail to meet at least three of the nine-point criteria: (1) the requirement that proposed building standards not be unnecessarily ambiguous or vague, in whole or in part; (2) the requirement that the adoption of standards be in the public interest; and (3) the requirement that the adoption of standards would not be unreasonable, arbitrary or unfair.

The definition of the OSHPD 3SE occupancies is unnecessarily ambiguous or vague because they fail to adequately define the scope of medical exams, treatment, procedures or other services that may be performed in these occupancies. The definition is also ambiguous or vague because it mischaracterizes or misstates the content of other provisions in the California Building Standards Code.

Adoption of the Proposed Amendments would be contrary to the public interest and unreasonable, arbitrary and unfair because the approval of these regulations prior to the completion of an EIR would violate state law and could result in numerous public health, safety and environmental impacts.

The Proposed Amendments are also arbitrary because their asserted justification is erroneous and not supported by substantial evidence. OSHPD claims that these less stringent standards are justified because OSHPD 3SE clinics would be smaller in size and the expected occupants are not likely to be immune-suppressed or carriers of infectious airborne diseases. OSHPD, however, has not identified any technical or medical studies to support these claims.

Moreover, the evidence in the record demonstrates that the exact opposite is likely to be true. The Proposed Amendments do not limit the size of 3SE clinics or the size of the buildings that may include 3SE clinics. Clinics could be located in 200,000 sq. ft. buildings or 500,000 sq. ft. indoor shopping malls, putting large populations at risk for disease exposure. Furthermore, OSHPD has stated that the 3SE clinic exemptions are intended to increase access in impoverished, rural or otherwise underserved communities, yet studies have shown that persons in these communities have a much higher incidence of airborne infectious diseases such as tuberculosis ("TB") and are much more likely have asthma, diabetes or other immune-compromising conditions. Accordingly, the Proposed Amendments will actually reduce protections against infectious disease spread and exposure to contaminants for the very populations most at risk for encountering and falling ill from these pathogens.

I. INTERESTS OF THE COALITION FOR RESPONSIBLE BUILDING STANDARDS

The members of the Coalition include the California State Pipe Trades Council and the Joint Committee on Energy and Environmental Policy ("JCEEP"), along with their individual members.

A. California State Pipe Trades Council

The California State Pipe Trades Council ("Council") is an association of plumbing and pipefitting unions together representing over 30,000 members working in the plumbing and pipe trades throughout California. The Council's purposes include advocating building standards and regulations governing plumbing materials and installation methods to protect the general public's health and welfare, the health and welfare of the Council members, and the environment. The Council also advocates for the use of high quality plumbing materials and installation methods to assure safe and effective performance in plumbing and sanitation systems, in order to maintain the reputation and integrity of the plumbing and piping industry.

The pipe trades have a long and proud tradition in the development and adoption of plumbing code standards, and have long recognized the link between their profession and public health. In the late 19th century, plumbing unions played a critical role in reducing urban infection and disease by advocating mandatory standards for plumbing systems to protect community health. Today, the California State Pipe Trades Council builds on this proud tradition by protecting the public health from plumbing hazards, while securing safe working conditions for its members. Over the years, innovations in plumbing technology and methods have created changes in the plumbing industry. The Council has consistently advocated for stringent testing and review of new materials when they have been shown to be potentially dangerous or ineffective. For this reason, the Council was an early supporter of the application of CEQA to the building standards adoption process.

The Council has long sought, and continues to seek, enforcement of CEQA in the building standards process in order to ensure that new building materials that may increase risks to the general public, to its members or to the environment are

adequately evaluated and, where necessary, restricted. The Council has participated actively in the past state agency health, safety, and environmental reviews of new building standards and plumbing materials proposed for approval in California.

B. Joint Committee on Energy and Environmental Policy

The Joint Committee on Energy and Environmental Policy is made up of the California sheet metal workers' local unions[6] and more than 25,000 technicians working for over 600 contractors throughout California. The mission of the Joint Committee on Energy and Environmental Policy is to promote responsible environmental, indoor air quality and energy policy in California as it pertains to and impacts the HVAC industry. JCEEP's members have over 15 training facilities throughout the state and thousands of workers being trained daily in HVAC specialties, such as testing, adjusting and balancing, commissioning, green building design, energy efficiency, sound and vibration control, and indoor air quality.

The sheet metal workers' unions have long advocated for and participated in the development of building standards for mechanical systems in order to safeguard the public health, achieve energy efficiency and ensure performance and durability of systems. For example, in the 1980's, the sheet metal workers unions and their contractors were among the first to bring attention to the problem of sick building syndrome, often diagnosed when buildings were made energy efficient to the detriment of the indoor environment of the building. Sick building syndrome causes are often attributed to problems with the HVAC systems.

JCEEP was established to continue this tradition of advocacy in California. JCEEP was formed on the premise that air handling systems need to be designed not just to manage comfort levels of indoor air, but also to protect against contaminants and health threats and to ensure energy efficiency.

[6] The sheet metal workers unions are locals of the International Association of Sheet Metal, Air, Rail & Transportation Workers ("SMART"), formerly known as the Sheet Metal Workers' International Association ("SMWIA").

II. OSHPD 3SE CLINICS

A. The Definition of OSHPD 3SE Clinics is Vague and Ambiguous

OSHPD has proposed building standards that would create a special OSHPD 3SE clinic occupancy that would be exempt from the ventilation, filtration, ducting and plumbing material requirements that currently apply to OSHPD 3 Clinics and all other OSHPD-regulated healthcare facilities. In the Proposed Amendments, OSHPD defines "3SE clinics" as any of the following facilities:[7]

> *(1) Primary Care Clinics providing services limited to those listed in California Building Code Section 1226.6 (i.e. clinics without treatment rooms and that perform procedures limited to those that may be performed in exam rooms as defined in California Building Code Section 1224.3). Outpatient clinical services of a hospital providing services equivalent to a primary care clinic may also be classified as OSHPD 3SE.*
>
> > ***Exception:*** *Primary Care Clinics that include treatment rooms, procedure rooms, or patient treatment spaces that require positive or negative pressure other than airborne infection isolation exam rooms, shall not be classified OSHPD 3SE.*
>
> *(2) Rehabilitation Clinics providing services limited to those listed in California Building Code Section 1226.10; and*
>
> *(3) Psychology Clinics providing services limited to those listed in California Building Code Section 1226.12.*

This definition is vague and ambiguous because it fails to adequately disclose or define what services, procedures or treatments may be performed in OSHPD 3SE facilities. Moreover, the statement that OSHPD 3SE primary care clinics are limited to clinics that provide "services" listed in California Building Code Section 1226.6 makes no sense. California Building Code Section 1226.6 does not list what

[7] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at pp. 1-2 (CMC § 217.0) & 5-6, (CPC § 217.0) (definition of "OSHPD 3SE").

services may be provided in Primary Care Clinic examination rooms. Instead, Section 1226.6 merely references the Section 1224.4.4 requirements for the dimensions of an examination or treatment room, along with the requirement that such rooms must contain a hand washing fixture.

In addition, the parenthetical in subdivision (1) of the above definition incorrectly states that California Building Code Section 1226.6 defines primary care clinics as "clinics without treatment rooms and that perform procedures limited to those that may be performed in exam rooms as defined in California Building Code Section 1224.3." Section 1226.6 does not define primary care clinics in this manner, or at all.

Furthermore, it is not clear if this parenthetical is an attempt to further narrow the definition of OSHPD 3SE clinics to clinics that only contain exam rooms, and not treatment rooms or procedure rooms. If that is the intent, this is inconsistent with the "Exception" contained below this definition. The "Exception" states that OSHPD 3SE clinics may not include "treatment rooms, procedure rooms, or patient treatment spaces that require positive or negative pressure." This "Exception" would not be needed if treatment rooms, procedure rooms or patient treatment spaces were not permitted in OSHPD 3SE clinics.

Even if OSHPD 3SE clinics were only allowed to have "exam rooms," this still wouldn't provide a clear or comprehensive definition of what procedures may be performed in OSHPD 3SE facilities. California Building Code Section 1224.3 defines "Exam Room" as "A room with a bed, stretcher, or examination table and capability for periodic monitoring (e.g., measurement of blood pressure or pulse oximetry) in which procedures that do not require a specialized suite can be performed (e.g., pelvic examination, blood transfusion)." However, Section 1224.3 does not list what procedures may be performed in an exam room or what procedures require a "specialized suite."

The "Exception" in the Section 217 definition restricts OSHPD 3SE primary care clinics to clinics that do not contain treatment rooms, procedure rooms, or patient treatment spaces that "require positive or negative pressure other than airborne infection isolation exam rooms." This provides only parital guidance as to

specific procedures that may or may not be performed in OSHPD 3SE facilities.[8] It does not disclose or limit the full scope of services that would be allowed in these clinics.

Table 4-A of the California Mechanical Code indicates that positive or negative air pressure is not required for: (1) patient rooms; (2) treatment or examination rooms; (3) blood draws/phlebotomy; (4) x-rays, CT scans, MRIs, and ultrasounds; (5) dialysis treatment rooms; or (6) lactation rooms. Accordingly, each of these rooms would be allowed in an OSHPD 3SE facility. However, the scope of services that may take place in unpressurized "patient rooms, "treatment" rooms or "examination" rooms is not set forth. For example, it appears that OSHPD 3SE clinics may be used for giving shots, taking swabs and cultures, providing urine or stool samples, stitching and bandaging, and removing minor cysts or lypomas; but these activities are not expressly listed or identified.

OSHPD also fails to identify the scope of services or treatments that may occur at rehabilitation clinics or psychology clinics. California Mechanical Code section 1226.10 does not describe the services or treatments that may be performed at "Rehabilitation Clinics" except to indicate that such clinics may include: (1) physical therapy service space; (2) occupational therapy service space; or (3) speech pathology and/or audiology service space. California Mechanical Code section 1226.12 does not describe the services or treatments that may be performed at "Psychology Clinics" except to say that they shall provide, at least, an interview room, consulting room and group therapy room.

Finally, the restriction on activities requiring positive or negative pressure only apply to treatment rooms, procedure rooms or patient treatment spaces in primary care clinics. This restriction does not apply to psychology clinics or rehabilitation clinics. Rehabilitation clinics, for example, may include physical therapy and hydrotherapy rooms that Table 4-A identifies as requiring negative air pressure. This restriction also does not apply to non-treatment rooms in primary care clinics that Table 4-A identifies as requiring positive or negative pressure, such as waiting rooms, toilet rooms, shower rooms, clean linen rooms and sterilizer equipment rooms.

[8] Treatments or procedures that California Mechanical Table 4-A identifies as requiring positive or negative pressure would be barred, including: bronchoscopy and endoscopy, infusions, delivery rooms, operating rooms, cardiac catheterization labs, and cystoscopy.

B. There Are No Limits on the Size of OSHPD 3SE Clinics or the Number of Occupants in OSHPD 3SE Buildings

The Proposed Amendments claim that less stringent standards are acceptable for OSHPD 3SE clinics because "the size of the units limit use and occupancy, thereby minimizing hazards."[9] The assumption that OSHPD 3SE clinics will be smaller and have fewer occupants than OSHPD 3 clinics is not supported by the plain language of the regulations. The Proposed Amendments impose no limitations, whatsoever, on the size of OSHPD 3SE clinics or the number of examination rooms. Clinics could range from 2-3 exam rooms to 200 or more exam rooms.

In addition, OSHPD 3SE clinics are described as often located within larger commercial or residential buildings as "storefront units."[10] Accordingly, even if these clinics were generally smaller than regular clinics, the number of building occupants, tenants or visitors that may potentially be exposed to airborne infectious diseases transmitted through HVAC systems may actually be greater than in regular stand-alone clinics. Airborne infectious particles can spread through ventilation systems not only from exam room to exam room, but also throughout the entire building.[11] Clinics may be just one of many tenants residing in a 200,000 sq. ft. building or 500,000 sq. ft. indoor shopping mall, putting large populations at risk for disease exposure.

The Proposed Amendments do not require an OSHPD 3SE clinic to be physically isolated from other occupancies in a building. To the contrary, the changes apparently encourage the integration of the clinic with the rest of the building as a cost saving measure. For clinics that are installed as "storefront units" in larger, multi-occupant facilities (e.g., shopping malls, office buildings,

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[9] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at pp. 1-2 (CMC § 217.0) & 5-6, (CPC § 217.0) (definition of "OSHPD 3SE").

[10] *Id.*

[11] Dr. Woods Comments [Appendix 74]. ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 130, § 12.2.3 [Appendix 77].

public housing buildings), reductions in currently required ventilation, filtration and ducting requirements will increase the risk of exposure to airborne infectious diseases to not only patients, but also to other occupants in the of the same building structure.[12]

C. OSHPD 3SE Clinics May Be Constructed In New or Existing Buildings

The OSHPD 3SE exemptions would apply to both new buildings and OSHPD 3SE clinics that open in existing buildings. OSHPD has stated that "One must realize that the OSHPD 3SE facilities that the Code Section addresses are often clinics with limited budget that are locating into existing, light-commercial buildings."[13] The OSHPD 3SE proposal to weaken ventilation, filtration and ducting requirements fails to take into account the additional health risks that often exist in HVAC systems in existing buildings that were not constructed or maintained with healthcare services in mind.

HVAC systems that provide indoor air quality control within the existing facilities are likely to have become degraded since their installations, and are likely to be inadequate for infection control within OSHPD 3SE clinics.[14] Numerous studies have documented that HVAC systems in existing buildings often contain dangerous conditions due to use of out-of-date, poorly maintained or poorly installed systems. When one study looked at HVAC problems in several buildings, they found the following problems:[15]

- 70 percent had inadequate amounts of outside air
- 50 percent to 70 percent had inadequate air distribution to the parts of the buildings where people worked
- 60 percent had inadequate filtration to remove outdoor pollutants

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[12] Dr. Woods Comments [Appendix 74].
[13] OSHPD Response to October 3, 2012 Jeffery Peipert comment [Appendix 78].
[14] Dr. Woods Comments [Appendix 74]; Aerias Air Quality Sciences, IAQ Resource Center, *Heating, Ventilating and Air-Conditioning Systems in Commercial and Educational Buildings*, http://www.aerias.org/DesktopModules/ArticleDetail.aspx?articleId=46 [accessed March 20, 2013] [Appendix 79] (the values referenced in this article are from: Woods, *Cost Avoidance and Productivity in Owning and Operating Buildings*, *Occupational Medicine: State of the Art Reviews*, Vol.4, No. 4 (Oct. – Dec., 1989) at pp. 753-770).
[15] *Id.*

- 60 percent had standing water in the system, which had the potential for microbial growth
- 40 percent with visible mold and fungus growing on the insulation
- 20 percent with malfunctioning humidifiers
- 75 percent had inadequate maintenance programs

These findings do not support OSHPD's assumption that it is unnecessary to apply secondary filter and other HVAC standards to OSHPD 3SE buildings located in existing buildings. To the contrary, these findings demonstrate that clinics located in older existing buildings that were not constructed or maintained with healthcare clinics in mind have a greater need for secondary filters and fully ducted systems than clinics constructed in brand new buildings.[16]

The Center for Disease Control has determined that "[d]ecreased performance of healthcare facility HVAC systems, filter inefficiencies, improper installation, and poor maintenance can contribute to the spread of health-care-associated airborne infections."[17] Poor air flow and leaky supply duct runs have been identified as ventilation hazards associated with increased potential of airborne disease transmission.[18] By proposing to allow OSHPD 3SE clinics in existing buildings without having to replace or upgrade the building HVAC system, these clinics will increase the potential of airborne disease transmission.[19] This risk is further exacerbated by the removal of filtration requirements that could mitigate some of these increased risks.

[16] Dr. Woods Comments [Appendix 74].
[17] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)*, (2003) at p. 13, http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf [accessed March 25, 2013] [Appendix 80].
[18] *Id*. at p. 22, Table 7.
[19] See Dr. Woods Comments [Appendix 74].

D. Patients at OSHPD 3SE clinics Are Likely to Include Carriers of Airborne Infectious Diseases and the Immune Compromised

1. Patients at OSHPD 3SE Clinics Are Likely to Include Carriers of Airborne Infectious Diseases

OSHPD's underlying assumption that OSHPD 3SE clinics are less likely to be an outbreak source for airborne infectious diseases is not supported by any evidence.[20] To the contrary, the Association for Professionals in Infection Control and Epidemiology ("APIC") warns that patients with unrecognized infectious diseases are often seen in clinics. APIC has found that "Infectious diseases account for 20-30% of physician office visits, with acute infection of the respiratory tract as the most common reason for consulting a physician. As a result, there have been multiple outbreaks of measles, tuberculosis, and other infectious diseases traced to physician office or clinics."[21] Accordingly, APIC warns that there needs to be an *increased* focus on infection prevention and control programs in these settings – not a decreased emphasis as proposed by these regulations.[22]

Furthermore, persons with undiagnosed infectious airborne diseases are more likely to first be seen at a primary care clinic, than at a hospital or specialized clinic. It is well-established that a "primary care center serves as the patient's first point of entry into the health care system."[23] Insurance companies commonly require persons to consult with their primary care physician before seeing a specialist.[24] Moreover, carriers of airborne infectious diseases may be infectious before any identifying symptoms become evident.[25] Accordingly, this first

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[20] OSHPD's response to a Public Record Act request for all documents supporting the Proposed Amendments did not include any studies or reports that would support a finding that OSHPD 3SE clinics are unlikely to see patients with undiagnosed airborne infectious diseases.
[21] Friedman & Petersen, Association for Professionals in Infection Control and Epidemiology (APIC), *Infection Control in Ambulatory Care* (2004) at pp. 1, 56 [Appendix 81].
[22] *Id.* at p. 1.
[23] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 13, § 3.1.3 [Appendix 77].
[24] Dr. Woods Comments [Appendix 74].
[25] Friedman & Petersen, Association for Professionals in Infection Control and Epidemiology (APIC), *Infection Control in Ambulatory Care* (2004) at p. 7 [Appendix 81].

encounter will usually occur before the infectious airborne disease has been diagnosed, further increasing the likelihood of its spread.[26]

"A primary source of pathogenic microorganisms in the health care environment is the patient suffering from contagious disease."[27] Because "the basic principles of disease transmission and prevention are the same in ambulatory care service areas as in traditional hospital settings,"[28] a patient with an airborne infectious disease will be just as infectious in an OSHPD 3SE clinic as in a hospital. However, the risk of spread of this infection through ventilation systems will now be greater in the OSHPD 3SE setting because of the reduction in filtration and other protective HVAC system requirements.[29]

In addition, OSHPD 3SE clinics may be more likely to receive patients who are carriers of airborne infectious diseases than other OSHPD 3 clinics due to their intended locations.[30] OSHPD staff has repeatedly stated that a primary goal of the OSHPD 3SE proposals is to make it more likely that clinics will be constructed in impoverished, rural or otherwise underserved communities.[31]

Medically underserved and low-income populations are more likely to carry airborne infectious diseases such as TB.[32] Even though OSHPD 3SE clinics may be more likely to serve populations with higher incidences of undiagnosed airborne infectious diseases than OSHPD 3 clinics, the Proposed Amendments provide these clinics less infection control than OSHPD 3 clinics. As a result, protections against

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[26] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 218, § D.4 [Appendix 77] (healthcare personnel "make multiple contacts with undiagnosed patients before they are recognized as infectious").
[27] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 28, § 4.2.1 [Appendix 77].
[28] Friedman & Petersen, Association for Professionals in Infection Control and Epidemiology (APIC), *Infection Control in Ambulatory Care* (2004) at p. 2 [Appendix 81].
[29] Dr. Woods Comments [Appendix 74]. While the Proposed Amendments allow OSHPD 3SE clinics to have airborne infection isolation rooms, OSHPD 3SE clinics are not required to have these rooms. Without airborne infection isolation rooms, occupants in these clinics and clinic buildings will not be protected from those patients with airborne infectious diseases.
[30] Dr. Woods Comments [Appendix 74].
[31] OSHPD, Response to California State Pipe Trades Comment (Oct. 8, 2012) [Appendix 98].
[32] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)*, (2003) at p. 10, http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf [accessed March 25, 2013] [Appendix 80].

infectious disease spread will be diminished for the very populations most at risk for encountering these diseases.

2. No Assurance Exists that Patients at OSHPD 3SE Clinics Will Be Less Susceptible to Contracting Airborne Infectious Diseases than Those Who Visit OSHPD 3 Clinics

Immune-compromised patients have the greatest risk of infection by airborne microorganisms, including persons with diabetes and persons with respiratory illnesses such as asthma or emphysema.[33] Because of their intended locations, a significant percentage of OSHPD 3SE clinic patients are likely to be immune-compromised and at greater risk of contracting airborne infectious diseases through exposure to aeroallergens, aerosolized fungi and bacteria, and viruses within the clinic.[34]

For example, diabetes, asthma and other diseases that increase the risk of infectious disease are especially high in California among the underinsured and in the rural areas of the California Central Valley.[35] Diabetes rates in California are now at near epidemic levels, having risen more than 38% in the last decade, with rates significantly higher among lower income or rural populations. In largely rural areas such as Tulare County, over 12 percent of adults have diabetes.[36]

Asthma rates in California are similarly alarming. Since 2001, the percent of Californians diagnosed with asthma has increased from 11.3% to 13%.[37] The percentages of children in California diagnosed with asthma range from a high of over 30% in rural Kings County to a low of approximately 8% in Orange County,

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[33] *Id.* at p. 6.
[34] Dr. Woods Comments [Appendix 74]. citing Kowalski & Bahnfleth, *Airborne Respiratory Diseases and Mechanical Systems for Control of Microbes*, HPAC Journal (July 1998) at pp 34-48.
[35] Schillinger, California Diabetes Program, Diabetes in California Counties (July 9, 2012), http://www.caldiabetes.org/content_display.cfm?contentID=1160 [Accesssed March 15, 2013] [Appendix 82].
[36] Lin, California Watch, Californians Growing Heavier, More Obese and Diabetic (September 1, 2010), http://californiawatch.org/print/4405 [accessed March 30, 2013] [Appendix 83].
[37] Jewett, California Watch, *Asthma Hits State's Poor the Hardest* (Dec. 17, 2010) http://californiawatch.org/dailyreport/asthma-hits-states-poor-hardest-7539, [accessed March 15, 2013] [Appendix 84].

with the statewide mean of nearly 15%.[38] Furthermore, "asthma is most common in Central Valley and in Northern California counties" and asthma-related health complications requiring medical care are substantially more likely for low-income populations.[39]

Accordingly, the Proposed Amendments will reduce protections against the spread of airborne infectious pathogens in clinics that are intended to serve the very populations most at risk from these pathogens.

III. THE STAKEHOLDER MEETING AND PUBLIC COMMENT PERIOD FOR THE PROPOSED AMENDMENTS HAVE BEEN A SHAM

OSHPD initially put forward the Proposed Amendments last year as part of the normal 2013 Building Standards Code triennial update adoption process. After the Joint Committee on Energy and Environmental Policy and the California State Pipe Trades Council submitted comments objecting to the failure to comply with CEQA's requirement to review potential environmental and public health impacts, OSHPD withdrew the entire OSHPD 3SE exemption proposal. At the Commission's December 11, 2012 meeting, the Building Standards Commissioners advised OSHPD to hold additional stakeholder workshops to address stakeholder concerns before bringing these proposals back. OSHPD is now trying to fast track approval of these standards for late inclusion in the 2013 Building Standards Code without addressing or investigating any of the issues raised in the prior public comments.

While OSHPD held one additional stakeholder meeting on February 6, 2013, OSHPD demonstrated that they had no intention of evaluating or investigating any of the concerns raised at the meeting. Instead, at the very end of the meeting, OSHPD informed the participants that OSHPD had only until the next day to make any revisions to the Proposed Amendments. The current 45 day public comment period is also a sham. OSHPD informed the Coalition's attorney that there would be no time to amend the proposal regardless of what comments are received during this period.

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[38] California Health Interview Survey, Lifetime Childhood Asthma Prevalence (2009), http://www.centralcalasthma.org/index.php?id=58, [accessed March 15, 2013] [Appendix 85].
[39] Jewett, California Watch, *Asthma Hits State's Poor the Hardest* (Dec. 17, 2010) http://californiawatch.org/dailyreport/asthma-hits-states-poor-hardest-7539, [accessed March 15, 2013] [Appendix 84].

IV. CEQA APPLIES TO THE PROPOSED CHANGES TO OSHPD 3SE OCCUPANCIES

A. CEQA Applies to the Proposed Action

The Commission's adoption of the Proposed Amendments that would exempt OSHPD 3SE buildings from certain currently applicable HVAC and plumbing system requirements is a discretionary action that triggers CEQA. The law is well-settled on this point.

An agency action is subject to CEQA if it: (1) is a discretionary action undertaken by a public agency, and (2) may cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[40] The adoption of regulations is considered "discretionary" under CEQA if any application of judgment is required.[41]

The courts have uniformly held that the adoption of building standards meets this definition and is subject to environmental review under CEQA. In the case *Building Code Action v. Energy Resources Conservation and Development Commission*, the court held that adoption of energy conservation regulations establishing double-glazing standards for new residential construction was subject to CEQA review since it could result in a significant impact on air quality as a result of increased glass production.[42]

Moreover, the courts have specifically required compliance with CEQA prior to approval of potentially hazardous plumbing systems and materials, including CPVC pipe itself. In 1997, the San Francisco Superior Court overturned a decision of HCD and the Commission to approve CPVC without first completing CEQA review.[43] Similarly, in the 2004 case *Plastic Pipe and Fitting Association v. California Building Standards Commission,* the Court of Appeal held that

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[40] Pub. Resources Code §§ 21065, 21080; Cal. Code Regs., tit. 14 ("CEQA Guidelines") §§ 15061, 15357, 15358, 15378.
[41] *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 206 (holding that CEQA applies to the enactment of regulations).
[42] *Building Code Action v. Energy Resources Conservation and Development Commission* (1980) 102 Cal.App.3d 577.
[43] *Cuffe v. California Building Standards Commission* (1997) San Francisco Superior Court No. 977657 (Wm. Cahill, J.).

environmental review under CEQA must be conducted prior to the approval of building code amendments that may have a significant impact on the environment.[44] The material at issue in that case was cross-linked polyethylene ("PEX"), another plastic drinking water pipe. The Court of Appeal held that the approval of new building standards is a discretionary act and that no statutory or categorical exemptions from CEQA apply to the adoption of building standards.[45]

In reviewing whether a government action may cause a physical change in the environment, the "fair argument standard" is applied.[46] Under this standard, CEQA review occurs "whenever it can be fairly argued on the basis of substantial evidence" that the project may cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment.[47] "'Substantial evidence' . . . means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached."[48] The CEQA Guidelines define substantial evidence as including "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."[49] As a matter of law, "substantial evidence includes . . . expert opinion."[50]

The substantial evidence required to make the initial determination to apply CEQA is, necessarily, minimal.[51] A reviewing court's decision as to whether an activity is a "project" need only be based on the most preliminary of investigations, rather than based on an initial study or other environmental document. As one court observed, "[t]he existence of a project cannot depend on the outcome of the

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[44] *Plastic Pipe and Fitting Association v. California Building Standards Commission* (2004) 24 Cal.App.4th 1390.
[45] *Id.* at p. 1413.
[46] *Dunn-Edwards v. Bay Area Air Quality Management District ("BAAQMD")* (1992) 9 Cal.App.4th 644, 654-656; *Castaic Lake Water Agency v. City of Santa Clarita* (1995) 41 Cal.App.4th 1257, 1264-1265.
[47] *Dunn-Edwards v. BAAQMD, supra*, 9 Cal.App.4th at p. 655.
[48] *Castaic Lake Water Agency v. City of Santa Clarita*, *supra*, 41 Cal.App.4th at pp. 1264-1265.
[49] CEQA Guidelines, § 15064, subd. (f)(5).
[50] Pub. Resources Code § 21080, subd. (e)(1); CEQA Guidelines, § 15064, subd. (f)(5).
[51] See *Simi Valley Recreation and Park District v. Local Agency Formation Commission* (1975) 51 Cal.App.3d 648, 663; *Davidon Homes v. City of San Jose* (1997) 54 Cal.App.4th 106, 118.

inquiry which the act contemplates only after the existence of a project is established."[52]

In the case at hand, substantial evidence that OSHPD's approval of the Proposed Amendments may result in reasonably foreseeable indirect physical changes in the environment is presented herein, and in the attached expert comments and appendices. Because the fair argument standard applies, this evidence conclusively establishes that CEQA applies regardless of whether other contrary evidence is presented.

B. An EIR Must Be Prepared Prior to the Adoption of the Proposed Building Standards

If an action is subject to CEQA, then an initial study must be prepared to determine the next required step.[53] An initial study is a preliminary analysis used to determine whether an EIR or negative declaration must be prepared.[54]

The courts have repeatedly recognized that the EIR is the "heart of CEQA."[55] CEQA requires that a public agency prepare an EIR on any activity it undertakes or approves which may have a significant impact on the environment. The EIR aids an agency in identifying, analyzing, disclosing, and, to the extent possible, avoiding a project's significant environmental effects through implementing feasible mitigation measures.[56] The EIR thus acts as an "environmental 'alarm bell' whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return."[57]

In certain limited circumstances, a negative declaration may be prepared instead of an EIR. A negative declaration is permitted when, based upon the initial study, a lead agency determines that a project "would not have a significant effect on the environment."[58] However, such a determination may be made only if "[t]here

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[52] *Simi Valley Recreation and Park District v. Local Agency Formation Commission, supra,* 51 Cal.App.3d at p. 663.
[53] CEQA Guidelines, § 15063.
[54] CEQA Guidelines, §§ 15063, 15365.
[55] *The Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 926.
[56] Pub. Resources Code § 21002.1, subd. (a); CEQA Guidelines, § 15002, subd. (a), (f).
[57] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220.
[58] *Id.*; Pub. Resources Code § 21080, subd. (c).

is no substantial evidence in light of the whole record before the lead agency" that such an impact may occur.[59]

When determining if an EIR must be prepared, the "fair argument" standard applies. Under this standard, a public agency must prepare an EIR whenever *any* substantial evidence supports a fair argument that a proposed project "may have a significant effect on the environment."[60] Significant effect on the environment "means a substantial, or potentially substantial, adverse change in the environment."[61] If the record contains substantial evidence supporting a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR, even though it may also be presented with other contrary evidence that the project will not have a significant effect.[62]

In the case at hand, the record contains extensive evidence, including the attached expert comments and appendices, that establish that the proposed approval of the Project may have a significant impact on the environment. Accordingly, preparation of an EIR is required prior to approval of these regulatory changes.

V. SUBSTANTIAL EVIDENCE ESTABLISHES A FAIR ARGUMENT THAT THE REDUCTION IN REQUIREMENTS FOR DUCTWORK, PLENUM RETURNS, FILTRATION, VENT AND INTAKE LOCATIONS MAY RESULT IN SIGNIFICANT ENVIRONMENTAL IMPACTS

Numerous airborne infectious particles have been shown to be transported between spaces by ventilation systems, including TB, measles, Varicella zoster, and some fungal spores.[63] Accordingly, the importance of conservatively designed HVAC systems in healthcare occupancies cannot be overstated. In its foreword to

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[59] *Id.*
[60] *Id.* at p. 927; Pub. Resources Code §§ 21100, 21151, 21080.
[61] Pub. Resources Code § 21068; *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[62] Pub. Resources Code § 21151, subd. (a); *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[63] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 130, § 12.2.3 [Appendix 77].

ANSI/ASHRAE/ASHE Standard 170-2008, *Ventilation of Health Care Facilities*, ASHRAE states:

> Ventilation systems and designs for health care facilities are intended to provide a comfortable environment for patients, health care workers, and visitors while diluting, capturing and exhausting airborne contaminants including potentially infectious airborne agents such as M. tuberculosis. Without high-quality ventilation in health care facilities, patients, health care workers, and visitors can become exposed to contaminants through normal respiration of particles in the air. Poorly ventilated health care facilities may increase the concentration of airborne contaminants including fungi or mold, which may cause allergic responses in even healthy workers and occupants. Some patients are profoundly immunosuppressed for prolonged periods and if exposed, are highly susceptible to infection from fungi. For such patients, fungal spores become invasive pathogens and lead to high rates of severe morbidity and mortality. For all these reasons, and considering the various occupancies and patient populations, great care must be taken in the design of health care ventilation systems.[64]

The evidence in the record overwhelmingly demonstrates that OSHPD's proposal to exempt OSHPD 3SE occupancies from currently applicable filter bank requirements, chase and plenum restrictions, flexible duct restrictions and plumbing vent location restrictions may increase health and safety risks, increase fire safety risks and increase energy consumption. This evidence includes the attached expert comments of indoor air quality and healthcare ventilation expert Dr. James Woods,[65] along with the numerous additional studies, reports and other documents contained in the appendices to this letter.

Dr. Woods is an Indoor Environments Consultant, registered professional mechanical engineer and the former Executive Director of the Building Diagnostics Research Institute.[66] In 1997, he retired as the William E. Jamerson Professor of Building Construction at Virginia Polytechnic Institute and State University. Previously, he served as Senior Engineering Manager and Senior Staff Scientist at

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[64]ASHRAE Standing Standard Project Committee 170 (SSPC 170), Ventilation of Health Care Facilities, Foreword (revised May 28, 2011) http://sspc170.ashraepcs.org/ [accessed March 15, 2013] [Appendix 86].
[65] See Dr. Woods Comments [Appendix 74].
[66] See Curriculum Vitae of Dr. James Woods [Appendix 75].

Honeywell (1983-1989). From 1974 to 1983, he was a Professor of Mechanical Engineering and Architecture at Iowa State University, where he established the Building Energy Utilization Laboratory and the Center for Advancement of Building Technologies. He has over 49 years experience in energy and environmental analyses, and has been responsible for more than 30 research projects and 250 investigations related to indoor environmental quality, energy utilization, and human responses in residences, office buildings, public assembly and monumental buildings, hospitals, schools, laboratories, and commercial aircraft. His body of work includes the publication of forty invited papers, fifty-five peer reviewed papers, fifty-one other articles and presentations, and six books that address the interactions between environmental control, system performance, and economic performance of buildings.

Dr. Woods is Fellow and Life Member of the American Society of Heating Refrigerating, and Air Conditioning Engineers ("ASHRAE"). He is a former member of the ASHRAE Board or Directors and has chaired and served on numerous ASHRAE committees related to indoor air quality, environmental health, building energy utilization, industrial air conditioning, physiology and human environment, thermal conditions for human occupancy, and ventilation and infiltration requirements. Dr. Woods was the principle investigator for an ASHRAE sponsored project on ventilation requirements in hospital operating rooms. Dr. Woods was also the principle investigator on a project on hospital ventilation requirements that was sponsored by the American Hospital Association. He has also participated in numerous projects and chaired several committees for the National Institute of Building Sciences.

Dr. Woods reviewed the Proposed Amendments, the documents that have been relied upon by OSHPD and undertook a current literature review pertaining to the issues raised in this letter.[67] Based on this review and upon his own past research and experience with these issues, Dr. Woods has determined that:

- There is no assurance that patients at OSHPD 3SE clinics will be less immune compromised, or less likely to be carriers of airborne infectious diseases than those who visit OSHPD 3 clinics;

[67] Dr. Woods Comments [Appendix 74].

- No studies or reports have been submitted to suggest that 1) OSHPD 3SE clinics within existing facilities pose smaller risks to patients than in freestanding clinics, or 2) the risks to the general population in the existing facility would not be increased due to the integration with an OSHPD 3SE clinic and its HVAC system;

- Reducing the filter requirements in OSHPD 3SE clinics from a MERV 8 filter bank *and* a MERV 14 filter bank to just one MERV 8 filter bank will increase health and safety risks to patients, and to other occupants throughout the building;

- Removing the restrictions on use of chases and plenums in OSHPD 3SE clinics will increase health and safety risks to building occupants, increase fire safety risks, and increase energy costs;

- Removing the restrictions on the length of flexible duct will increase the risk of airborne infection, decrease the fire protection and the performance of the HVAC system, and increase the building energy waste;

- Reducing the distance between plumbing vents and air intakes from 25 feet to 10 feet will increase health and safety risks to building occupants; and

- The cumulative effect of these changes is likely to further increase the potential for health and safety impacts and energy waste.

A. A Fair Argument Exists that the Proposal to Reduce Filter Bank Requirements in OSHPD 3SE Clinics Will Increase Health and Safety Risks to Patients, and to Other Occupants throughout the Building

Currently, Table 4-B in Chapter 4 of the 2010 California Mechanical Code requires "patient care rooms" and "areas providing direct patient service or clean supplies such as sterile and clean processes" to provide 2 filter banks, one MERV 8 with 30% efficiency and one MERV 14 with 90% efficiency. OSHPD proposes amending the 2013 California Mechanical Code to allow "patient care rooms" and "areas providing direct patient service or clean supplies such as sterile and clean processes" in OSHPD 3SE clinics to provide just one filter bank with MERV 8 and

30% efficiency.[68] This proposal also effectively exempts OSHPD 3SE occupancies from compliance with California Mechanical Code section 407.4.1.5, which requires that "[a]ir from a patient room, exam room, treatment room shall not be transferred to another similar room without first having passed through air filters as required by Table 4-B or Table 4-C."

In his attached expert comments, Dr. Woods testifies that this reduction in filtration requirements is likely to increase health and safety risks to patients and other building occupants.[69] Moreover, this increased health and safety risk will be further exacerbated if the OSHPD 3SE clinic is located in an existing building.[70]

Airborne infectious diseases such as TB, chicken pox and measles, can spread through HVAC ventilation systems, especially if the return air is recirculated through low efficiency filters.[71] TB can remain airborne indefinitely in water droplets of 5 µm size or less and spread from room to room through the HVAC system.[72] Moreover, as few as one to ten TB bacilli can be infectious for humans.[73] A TB infected person can produce up to 249 bacilli per hour;[74] meaning just one patient could spread an epidemic of TB through a building's ventilation system.

The combination of MERV 8 and MERV 14 filters will capture, during each air cycle through the system, approximately 90% of the upstream airborne particles in the size range of 1.0-3.0 µm, which includes bacteria the size of TB.[75] A MERV 8 filter, by itself, however, will only capture in each cycle approximately 50-70% of airborne particles in the larger size range of 3.0-10.0 µm, which includes pollen and

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[68] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at p. 3 (CMC, Table 4-B).
[69] Dr. Woods Comments [Appendix 74].
[70] *Id.*
[71] Dr. Woods Comments [Appendix 74]; see also Friedman & Petersen, APIC, *Infection Control in Ambulatory Care* (2004) at pp. 6, 56 [Appendix 81]; ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 130, § 12.2.3 [Appendix 77].
[72] Dr. Woods Comments [Appendix 74].
[73] Dr. Woods Comments [Appendix 74]; see also HPAC Engineering, Airborne Respiratory Diseases and Mechanical Systems for Control of Microbes (July 1998) at p. 37 [Appendix 87].
[74] *Id.*
[75] Dr. Woods Comments [Appendix 74].

mold spores.[76] The capture efficiency of smaller particulates, such as TB, is much less than 50%.[77]

OSHPD acknowledges that the proposed reduction in filtration requirements for OSHPD 3SE clinics "has a direct relationship on the amount of airborne pathogens."[78] Air systems can distribute pathogens from an internal source to a susceptible person nearly anywhere in the distribution system if there is inadequate filtration.[79] Without the second bank of MERV 14 filters, TB or other airborne infectious agents can spread from exam room to other rooms in the clinic and throughout the building.[80]

If a patient with TB or other airborne infectious disease is examined at a clinic, the risk of having the airborne infectious agents spread through the HVAC system will be higher in OSHPD 3SE facilities with only one MERV 8 filter bank, when compared to OSHPD 3 clinics with two filter banks of MERV 8 and MERV 14.[81] Because OSHPD 3SE buildings are not limited in size and are likely to be located in larger commercial or office buildings, the population at risk from the spread of airborne infectious agents may be significant.[82]

Dr. Woods testifies that a fair argument exists that the proposal to allow OSHPD 3SE clinics to have just one MERV 8 filter bank, instead of two filter banks of MERV 8 and MERV 14, will increase health and safety risks to patients, and to other occupants throughout an existing building.[83] This risk triggers CEQA and requires OSHPD to evaluate and disclose this proposed risk in an EIR.

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[76] *Id.*
[77] *Id.*
[78] OSHPD, Response to October 3, 2012 Jeffery Peipert comment [Appendix 78].
[79] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 130, § 12.2.4 [Appendix 77].
[80] Dr. Woods Comments [Appendix 74].
[81] *Id.*
[82] *Id.*
[83] *Id.*

B. A Fair Argument Exists that the Proposal to Allow the Use of Chases and Plenums Instead of Ducts in OSHPD 3SE Clinics Will Increase Health and Safety Risks, Increase Fire Safety Risks and Increase Energy Use

Currently, the 2010 California Mechanical Code § 407.4.1.4 prohibits healthcare clinics (and all other healthcare facilities under OSHPD's building standards jurisdiction) from using the space above a ceiling as an outside-air, relief-air, supply-air, exhaust air, or return-air plenum. In addition, the 2010 California Mechanical Code § 602.1 prohibits healthcare clinics (and all other healthcare facilities under OSHPD's building standards jurisdiction) from using concealed spaces or independent construction within buildings as ducts or plenums. OSHPD proposes amending the 2013 California Mechanical Code to exempt OSHPD 3SE clinics from both of these prohibitions, allowing the use of concealed spaces or independent construction within buildings as ducts or plenums.[84]

These exemptions are likely to increase health and safety risks to patients and other building occupants, especially if the 3SE clinic is located in an existing building.[85] These exemptions may also result in increased fire safety risks, increased energy consumption and reduced patient privacy.[86]

Furthermore, the proposal to eliminate the requirement for ducted HVAC systems in OSHPD 3SE clinics is contrary to national guidelines. Section 3.1-8.2.4.1 of the Facility Guideline Institute ("FGI"), *Guidelines for the Design and Construction of Health Care Facilities*, for example, does not allow return air plenums; it requires that "for patient care areas, return air shall be via ducted systems." [87] The ASHRAE HVAC Design Manual for Hospitals and Clinics explains that ducted returns are necessary to protect the airstream from direct exposure to such potential plenum conditions as accumulated dust, microbes or odors generated

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[84] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at pp. 3, 4 (CMC §§ 407.4.1.4 & 602.1).
[85] Dr. Woods Comments [Appendix 74].
[86] *Id.*
[87] Dr. Woods Comments [Appendix 74]; Facility Guideline Institute, *Guidelines for the Design and Construction of Health Care Facilities* (2010) at p. 234, § 3.1-2.2.4.1 (Return Air Systems) [Appendix 88].

by wet materials (from piping leaks, roof leaks, or floor leaks in multi-story facilities), rodent droppings, fibers from deteriorated flame proofing or equipment, and smoke from smoldering wiring insulation or other sources during a fire.[88]

Dr. Woods testifies that HVAC systems that rely on plenums rather than ducts are more likely to suffer from indoor air quality problems and have a higher risk of spreading airborne infectious diseases.[89] While ductwork has a singular function of transporting supply, return, or exhaust air with minimum differences in thermal or contaminant conditions between their points of connection (e.g., between the HVAC equipment and the occupied spaces), plenums and chases (e.g., concealed building spaces) have multiple functions: distribution of electrical services; electronic signals; domestic, hydronic and process water; condensate and wastewater; specialty gases; and supply and return air. As a result, unducted supply or return air in plenums and chases is usually mixed with air from other pathways that contain thermal or contaminant sources.[90]

Return air plenums adjacent to exterior walls or roofs are likely to incur moisture transfer and air leakage, which increases the risks of amplification of microorganisms and infection. Because of the difficulty with regard to access, contamination that may occur in common return plenums (e.g., microbial growth, friable asbestos and man-made insulation) can be removed only with great difficulty.[91]

In addition, room-side elements of exterior walls (e.g., drywall) and demising walls typically are not sealed to the deck above a return air plenum, and become "concealed spaces" and pathways through which moisture and microorganisms (e.g., aspergillus sp.) can be transported to the return air plenums. This increases the risk of airborne pathogen exposure to patients and other occupants, especially in existing buildings.[92]

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[88] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 97, § 9.5.2 [Appendix 77].
[89] Dr. Woods Comments [Appendix 74].
[90] *Id.*
[91] *Id.*
[92] *Id.*

Contaminated return air plenums and chases have been identified as sources of illness and infections to patients and building occupants.[93] For example, aspergillosis fungi are common health-care-acquired pathogens that are often traced to absorbent building materials such as ceiling tiles, false ceilings, or fireproofing materials, all of which are exposed in plenums.[94] Return air plenums located above ceilings and in concealed spaces or chases, especially in existing buildings, are also contaminated with dusts, mold spores, rodent droppings and microorganisms from dead pests and other sources, which are readily aerosolized into the return air of the HVAC system or directly into the occupied spaces.[95] Above-ceiling plenums are also more prone to disturbance by maintenance activities that could release opportunistic fungi or allergens into a return airstream, including opportunistic microbes such as *Aspergillus* that are a frequent component of building dust.[96]

The return air plenum in the ceiling, and concealed spaces or chases that connect with the plenum can thus become sources or amplification sites for pathogens. [97] If the return air plenum and chases or risers are common to other areas within an existing building, the risk of infection throughout the facility is likely to increase, especially if the plenums throughout the building have not been cleaned. This risk of transporting contaminants from the plenum directly into occupied areas of the building will be further heightened if fan-powered variable air volume terminal units are installed in the return air plenum.[98]

In addition to an increased risk of airborne pathogens, the removal of the requirement for fully ducted HVAC systems will likely result in greater energy demand and costs.[99] The heat transfer from exterior plenum walls and roofs

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[93] Dr. Woods Comments [Appendix 74].
[94] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)*, (2003) at pp. 6-7 & Table 2, http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf [accessed March 25, 2013] [Appendix 80].
[95] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 97 § 9.5.2 [Appendix 77].
[96] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at pp. 97-98, §§ 9.5.2, 9.5.3 [Appendix 77].
[97] Dr. Woods Comments [Appendix 74].
[98] *Id.*
[99] *Id.*

typically imposes additional thermal loads, which require additional heating and cooling capacities of the HVAC system and demand larger rates of energy consumption.[100]

The removal of the requirement for fully ducted HVAC systems may also result in noise impacts.[101] "Noise control is of high importance in the health care environment because of the negative impact of high noise levels on patients and staff and because of the need to safeguard patient privacy."[102] Compared to ducted return air, plenums reduce noise attenuation and increase acoustic bridging between patient exam rooms and adjacent spaces.[103] Accordingly, a fair argument exists that the proposed use of plenums may result in a loss of patient privacy. The ASHRAE, HVAC Design Manual for Hospitals and Clinics thus recommends ducted returns to minimize "cross-talk" wherein audible conversations are transmitted between rooms via open return connections, particularly when room partitions do not extend above the ceilings.[104]

Fire safety risks will also increase due to the un-ducted HVAC system's transfer of a continuous supply of oxygenated outside air into the plenum environment.[105] Plenums contain substantially more flammable material than ducts. When combined with increased airflow from the HVAC system, the risk of fire and smoke spread is increased.[106] Moreover, plenums in existing buildings are more likely to contain cables that do not meet the UL 910/NFPA 262 flame spread and smoke tests. Studies have shown that for the 9 years starting in 1988 and ending in 1996, the percentage of cables failing the UL 910/NFPA 262 test increased from 10% to over 50%.[107] By allowing the introduction of a steady stream of outside air into plenum spaces, the risk of fire in these areas is increased over clinics that are entirely ducted.

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[100] *Id.*
[101] *Id.*
[102] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 42, § 4.8.2 [Appendix 77].
[103] Dr. Woods Comments [Appendix 74].
[104] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 97, § 9.5.2 [Appendix 77].
[105] See Dr. Woods Comments [Appendix 74].
[106] See ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 97, § 9.5.2 [Appendix 77] (recommending ducted returns because plenums can spread smoke from smoldering wiring insulation or other sources during a fire).
[107] Stanitis & Dohmann, The Evolution of Plenum Cable Fire Standards and the Impact of those Standards on Material Specification, A History of Plenum Cable Fire Safety Issues, http://www.wireville.com/news/news01.html [accessed March 30, 2013] [Appendix 89].

Based on the available information and the expert comments of Dr. Woods, a fair argument exists that the proposal to allow the use of chases and plenums, instead of ducts in OSHPD 3SE clinics, may increase health and safety risks to building occupants, increase fire safety risks, decrease patient privacy and increase energy costs.

C. A Fair Argument Exists that the Proposal to Exempt OSHPD 3SE Clinics from Current Restrictions on the Installation of Flexible Duct Will Increase Energy Waste and Health and Safety Risks

Currently, the 2010 California Mechanical Code § 602.3.1 restricts the use of flexible ducts in healthcare clinics (and all other healthcare facilities under OSHPD's building standards jurisdiction) as follows:

> *In hospital building projects and all other health-care facilities, including clinics and correctional treatment centers, flexible ducts of not more than 10 feet (3048 mm) in length may be used to connect supply, return or exhaust-air terminal devices to rigid duct systems. Where constant volume, variable volume or mixing boxes are utilized, flexible duct of not more than 10 feet (3048mm), may be used on the inlet side for alignment. An internal impervious liner shall be provided to isolate insulation material from conditioned air.*

OSHPD proposes amending the 2013 California Mechanical Code to exempt OSHPD 3SE clinics from this restriction, allowing the use of flexible duct without any restrictions related to length, use or impervious lining.[108] The removal of these restrictions on the use of flexible duct will likely decrease the performance of the HVAC system, increase building energy waste and increase the risk of airborne infection.[109] Furthermore, the proposed elimination of flex duct restrictions in OSHPD 3SE clinics is arbitrary. OSHPD has failed to identify any evidence that energy efficiency and poor performance issues from use of flexible air ducts would be different in OSHPD 3SE clinics than in other OSHPD clinics.

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[108] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at p. 4 (CMC § 602.3.1).
[109] Dr. Woods Comments [Appendix 74].

Dr. Woods testifies in his attached expert comments that the use of flexible duct in OSHPD 3SE clinics is highly likely to result in increased energy waste and costs.[110] Flex is cheap and easy, but because of its spiral wire helix construction, flex duct has the highest friction loss when compared to Sheet Metal Duct or Fiberglass Duct Board. The inner core of flex changes shape with compression and bending, which increases turbulence and friction loss.[111]

At ideal (i.e., fully stretched, straight and horizontal") test conditions, flex the pressure drop is approximately the same as rigid galvanized sheet metal duct. [112] However, at even just the minimum 4% compression, the pressure drop will increase approximately two times what would occur in duct conditions.[113] At a moderate compression of 15%, the pressure drop increases approximately four times compared to the stretched conditions.[114] At 30% compression, the pressure drop increases approximately ten times.[115]

In real world applications, flex duct installations are almost never installed at 4% compression. Rather, installed compression ratios have been observed to vary from 10% compression to over 50% compression.[116] Moreover, the California Building Standards Code does not require flex duct installations to be installed at a maximum compression of 4% or even 15%. Nor is there any accurate way to measure the compression once it is installed in the building.

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[110] Dr. Woods Comments [Appendix 74].
[111] Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow_is_Critical.pdf [Appendix 90].
[112] Abushakra, et al, Lawrence Berkeley National Laboratory, *Compression Effects on Pressure Loss in Flexible HVAC Ducts* (2002) http://www.escholarship.org/uc/item/0d76400v [accessed 20 March 2013] [Appendix 91].
[113] Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow is Critical.pdf [Appendix 90].
[114] Dr. Woods Comments [Appendix 74]; Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow is Critical.pdf [Appendix 90].
[115] *Id.*
[116] ASHRAE, HVAC Flexible Duct Pressure Loss Measurements, ASHRAE RP-1333, Final Report (March 2011) at p. 10 [Appendix 92].

In addition, these pressure drop loss numbers for moderately compressed flex duct are based upon tests where flex duct is on a flat surface with no bends, scenarios that are highly unlikely to occur in the real world.[117] The number of bends, the number or degrees in each bend and the amount of sag allowed between support joists will have serious effects on system performance due to the increased resistance each introduces.[118]

When flex duct is hung, even minimum sag will result in an additional 60% increase in pressure loss at 15% compression and a 75% increase in loss at 30% compression.[119] Where inadequate supports create more sag, this additional pressure loss increases accordingly.[120] Furthermore, splices in flexible air ducts, required for long-length runs, are likely to cause air leaks.[121] Additional fan power, as well as energy consumption for additional heating and cooling of the replacement air will be required to compensate for the leaks and the pressure drops due to crimps and coils in the installed flexible duct.[122]

Accordingly, calculations based upon an assumption of just 4% compression with no sag or turns are known to substantially underestimate the pressure losses incurred in real world installations and are not consistent with the range of installation permitted under code.[123]

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[117] Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow_is_Critical.pdf ("The problem is that flex is rarely installed in a straight line and stretched as in the prescribed test method") [Appendix 90].
[118] *Id.*
[119] ASHRAE, HVAC Flexible Duct Pressure Loss Measurements, ASHRAE RP-1333, Final Report (March 2011) at p. 24 [Appendix 92].
[120] *Id.*
[121] Dr. Woods Comments [Appendix 74].
[122] *Id.*
[123] Dr. Woods Comments [Appendix 74]. Abushakra, et al, Lawrence Berkeley National Laboratory, *Compression Effects on Pressure Loss in Flexible HVAC Ducts* (2002) http://www.escholarship.org/uc/item/0d76400v [accessed 20 March 2013] [Appendix 91]; Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow is Critical.pdf [Appendix 90].

Moreover, "flex duct is almost never installed correctly" in either existing buildings or new construction.[124] The most common problems encountered with flex are:[125]

- Kinks and sharp turns.
- Duct runs that are long and not supported well.
- Radial systems with too many ducts coming off the plenum and the takeoffs too close together.
- Extra duct length that should have been cut off.
- Poorly fastened and sealed connections.
- Butt joints that are just taped together.

These installation errors further exacerbate the energy waste resulting from the use of flex ducts.

As a result of these problems, ASHRAE and numerous other experts have held that flex duct should be limited to "relatively short runs in a trunk-and-branch system, not entire air distribution systems."[126] The ASHRAE HVAC Design Manual for Hospitals and Clinics notes that "[m]ost designers recommend fully ducted installations, using all metal duct construction, due to their inherently superior sanitary characteristics."[127] ASHRAE's Advanced Energy Design Guides

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[124] Allison A. Bailes III, Ph.D., Green Building Advisor, Should Flex Duct Be Banned? (Nov. 28, 2012), http://www.greenbuildingadvisor.com/book/export/html/26079 [accessed March 29, 2013] [Appendix 93].
[125] *Id.*
[126] Allison A. Bailes III, Ph.D., Green Building Advisor, Should Flex Duct Be Banned? (Nov. 28, 2012), http://www.greenbuildingadvisor.com/book/export/html/26079 [accessed March 29, 2013] [Appendix 93]; ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at pp. 96-97, § 9.5.1 [Appendix 77] ("Flexible duct use should be limited due to its higher pressure losses, particularly when crimped or coiled, and its greater susceptibility to abuse or damage."); Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow_is_Critical.pdf [Appendix 90] (citing Air Diffusion Council's recommendation to not only install duct fully extended, but to also avoid using excess lengths).
[127] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 97, §§ 9.5.1, 9.5.2 [Appendix 77].

for *"Small Office Buildings"*, "*Retail Buildings"* and "*K-12 School Buildings"* recommend that flex ducts should be:

- Limited to connections between duct branch and diffusers.
- Limited to connections between duct branch and VAV terminal units.
- Limited to 5 ft (fully stretched length) or less.
- Installed without any kinks.
- Installed with a durable elbow support when used as an elbow.
- Installed with no more that 15% compression from fully stretched length.

By moving in the opposite direction from these industry recommendations, the proposed flexible duct regulations for OSHPD 3SE clinics will result in increased energy waste. Moreover, while the use of flex duct will result in increased profits for clinic developers, it will likely result in a duct system that reduces equipment efficiency and costs the clinic operator hundreds of dollars more per year and thousands of dollars over the life of the system in higher utility bills.[128] Annual operating costs of HVAC systems, including both energy consumption and maintenance materials and manpower, constitute a significant portion of overall building costs.[129] Accordingly, the ASHRAE, HVAC Design Manual for Hospitals and Clinics states that "operational cost," not installation cost, "should be a primary consideration in the selection of major HVAC systems and equipment."[130]

In addition to increased energy waste, the expanded use of flexible duct will also increase health and safety risks to patients and building occupants. Poor air flow from flexible duct runs create ventilation hazards associated with increased potential of airborne disease transmission.[131] "Decreased performance of

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[128] Chris Van Rite, M&M Manufacturing Co., *Airflow Is Critical To HVAC System Performance*, http://www.energyvortex.com/files/Airflow_is_Critical.pdf [Appendix 90]; see also ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 32, § 4.5 [Appendix 77] ("annual operating costs of HVAC systems, including both energy consumption and maintenance materials and manpower, constitute a significant portion of overall building costs").

[129] ASHRAE, HVAC Design Manual for Hospitals and Clinics (2003) at p. 32, § 4.5 [Appendix 77].

[130] *Id.*

[131] Dr. Woods Comments [Appendix 74]; U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)*, (2003) at pp. 13-21, http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf [accessed March 25, 2013] [Appendix 80].

healthcare facility HVAC systems, improper installation, and poor maintenance can contribute to the spread of health-care–associated airborne infections."[132]

Furthermore, the corrugated aluminum or multi-ply metalized/polyester cores of flex duct protrude into the airflow volume. This creates niches for microbial growth, especially when the humidity of the supply air exceeds 70%RH.[133] Section 602.3.1 currently requires that "an impervious liner shall be provided to isolate insulation material from conditioned air." The exception for OSHPD 3SE clinics would remove this requirement, reducing microbial resistance. This exception thus increases the risk of introducing microorganisms into the supply air where it will be directed into patient areas.[134]

Dr. Woods concludes that, based on the available information, a fair argument exists that the proposal to allow OSHPD 3SE clinics to use HVAC systems with more than 10 feet of flexible duct may increase energy use and increase the risk of poorly performing HVAC systems, which can increase the risk of spread of airborne infectious diseases. A comprehensive evaluation of this risk should be prepared by OSHPD prior to approving these regulations.

D. A Fair Argument Exists that the Proposal to Reduce the Minimum Distance between Outdoor Air Intakes and Plumbing Vents Further Increases Health and Safety Risks to Patients and Other Building Occupants

Currently the 2010 California Mechanical Code § 407.2.1 and the 2010 California Plumbing Code § 906.2.1 requires healthcare clinics (and all other healthcare facilities under OSHPD's building standards jurisdiction) to locate exhaust outlets, including plumbing vents, at least twenty-five feet from any air intake or vent shaft. OSHPD proposes amending the 2013 California Plumbing Code § 906.2.1 to exempt OSHPD 3SE clinics from this requirement as it applies to

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[132] Dr. Woods Comments [Appendix 74]; U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)*, (2003) at p. 13, http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf [accessed March 25, 2013] [Appendix 80].
[133] Dr. Woods Comments [Appendix 74].
[134] Dr. Woods Comments [Appendix 74].

plumbing vents.[135] As a result, plumbing vents in OSHPD 3SE clinics will now be subject to the requirements of California Plumbing Code section 906.2: "Each vent shall terminate not less than ten (10) feet (3,048 mm) from, or not less than three (3) feet (914 mm) above, any openable window, door, opening, air intake, or vent shaft, or not less than three (3) feet (914 mm) in every direction from any lot line, alley and street excepted."

This reduction in distance between intakes and plumbing vents is arbitrary and not supported by any evidence. A Public Records Act request for all documents supporting this proposal produced no technical or medical studies or other reports or evidence that conclude that emissions from plumbing vents pose less of a risk to patients and building occupants than emissions from other vents or that demonstrate that a ten foot separation between HVAC intakes and plumbing vents is a safe distance in OSHPD 3SE occupancies.

To the contrary, substantial evidence demonstrates that effluents from nearby plumbing vents that enter the HVAC outdoor air intake will degrade indoor air quality and are likely to pose health and safety risks.[136] Sewer gas in building plumbing systems may pose serious risks to public health from toxic gases, including hydrogen sulfide gas, methane, carbon dioxide and ammonia, and also from airborne pathogens, including tuberculosis, coxsackie A&B, dysentery, rotavirus, echovirus, cholera, common cold, hepatitis A, typhoid, polio and SARS.[137]

In addition, airborne pathogens are known to have been transmitted much longer distances than 10 feet.[138] ASHRAE's HVAC Design Manual for Hospitals and Clinics warns that 25 to 30 feet should be the minimum distance between intakes and vents, and that even that distance "may be insufficient separation from

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[135] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at p. 7 (CPC § 906.2.1).
[136] Dr. Woods Comments [Appendix 74]; Gary M. Hutter, Ph.D, P.E. CSP, Meridian Engineering and Technology, *Reference Data Sheet on Sewer Gas (Hydrogen Sulfide, Carbon Dioxide, Methane, Ammonia, Biological Agents)* (Nov. 1993) http://www.meridianeng.com/sewergas.html [accessed March 14, 2013] [Appendix 94]; Declaration of Dr. Phyllis Fox, Ph.D., P.E., In the Matter of Air Admittance Valves, IAPMO Docket # 1138-06 (Nov. 1, 2005) [Appendix 95].
[137] *Id.*
[138] ASHRAE, *HVAC Design Manual for Hospitals and Clinics* (2003) §§ 4.7.2, 9.3.2 [Appendix 77].

a given contaminant source given the source's concentration and nature, the direction of prevailing winds and the building geometry."[139]

This reduction of the minimum distance between outdoor intakes for HVAC systems and plumbing vents from twenty-five feet to just three to ten feet away is thus likely to increase health and safety risks to patients and other building occupants.[140] These risks will be exacerbated by the concurrent proposal to reduce the filtration requirements in OSHPD 3SE clinics.[141] When filtered by high efficiency filtration, as is currently required, outside air can be virtually free of microorganisms and particulates.[142] By also removing the requirement for high efficiency filtration in OSHPD 3SE clinics, the Proposed Amendments are further increasing the risk posed by OSHPD's decision to reduce the protective distance between air intakes and plumbing vents.

Moreover, the reduction in the minimum distance between HVAC intakes and plumbing vents violates all the major national standards and guidelines for healthcare facilities. The FGI *Guidelines for the Design and Construction of Health Care Facilities*, *ASHRAE 170-2008* and other national standards and references require at least a 25 foot distance between HVAC air intakes and plumbing vents due to the greater likelihood that patients in health care facilities carry infectious diseases, or may be highly susceptible to exposures of aeroallergens or other toxic or noxious contaminants.[143] None of these standards make an exception for plumbing vents, as is made in the new OSHPD 3SE regulations.

Accordingly, Dr. Woods concludes that a fair argument exists that reducing the distance between air intakes and plumbing vents from 25 feet to 10 feet will increase health and safety risks to building occupants.[144] This increased risk must

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[139] *Id.*
[140] Dr. Woods Comments [Appendix 74].
[141] *Id.*
[142] ASHRAE, *HVAC Design Manual for Hospitals and Clinics* (2003) § 4.7 [Appendix 77].
[143] Facility Guideline Institute, *Guidelines for the Design and Construction of Health Care Facilities* (2010) at p.234, § 3.1-5.4.2.2(5) [Appendix 88]; ANSI/ASHRAE/ASHE, Standard 170-2008, *Ventilation of Health Care Facilities* (2008) at p. 4, § 6.3 (Outdoor Air Intakes and Exhaust Discharges); ASHRAE Handbook, *HVAC Applications* (2011) at p. 8.2 (Chapter 8 - Health-Care Facilities); ASHRAE, *HVAC Design Manual for Hospitals and Clinics* (2003) §§ 4.7.2, 9.3.2 [Appendix 77].
[144] Dr. Woods Comments [Appendix 74];

be evaluated pursuant to CEQA before the OSHPD 3SE regulations may be adopted.

E. The Proposed Amendments May Have a Significant Cumulative Impact on Health and Safety

In addition to the potential impacts of the individual provisions of the OSHPD 3SE proposal, the cumulative effect of these provisions may have an even greater impact on health and safety of the patients and on energy waste. CEQA requires agencies to evaluate the whole of a project, including both the incremental direct impacts of the project or project components and any indirect or cumulative impacts of the project or project components.[145] Cumulative impacts can result from the combination of actions that may have only individually minor impacts, but which have collectively significant impacts when looked at as a whole.[146]

When considered together as a system, the four changes discussed above are likely to have a cumulatively significant effect by incrementally amplifying the risk of infectious agents being exposed to patients in OSHPD 3SE clinics and occupants in OSHPD 3SE buildings compared to the risk of exposure in OSHPD 3 or 3SE clinics without the proposed changes.[147]

The air from the ceiling plenum and concealed chases, which is recirculated to the mix air stream of the HVAC system, is likely to be more contaminated than air recirculated from ducted returns.[148] The reduced distances between the HVAC system air intakes and building plumbing vents will result in an additional increased risk that air circulated by the HVAC system will contain pathogens.[149] The supply air distributed through long lengths of compressed flexible air duct to the terminal devices in the patient areas is likely to amplify infectious agents due to the niches provided by the ridges compared to rigid galvanized sheet metal ducts.[150]

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[145] CEQA Guidelines §15378; Pub. Resources Code § 21083, subd. (b); see also CEQA Guidelines, §§ 15130, subd. (b) & 15355, subd. (b).
[146] Kings *County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-721 (the proper standard for a cumulative impacts analysis is whether the impacts are "collectively significant"); see also CEQA Guidelines § 15355.
[147] Dr. Woods Comments [Appendix 74].
[148] *Id.*
[149] *Id.*
[150] *Id.*

Accordingly, the combination of allowing HVAC systems to run air through plenums and concealed chases, allowing plumbing vents to be located closer to HVAC intakes and allowing the use of flexible duct will result in a cumulative increase in the risk of pathogens contaminating air circulated by OSHPD 3SE HVAC systems and will increase the risk of these pathogens being amplified within the HVAC system prior to exposing patients and occupants.[151] Moreover, these risks will be further exacerbated by the proposed reduction in filtration requirements, which will no longer effectively remove these contaminants before they enter into occupied spaces.[152]

A meaningful evaluation of this cumulative risk must be prepared by OSHPD in compliance with the requirements of CEQA prior to approving these regulations.

VI. THE STATE'S PRIOR REVIEW OF CPVC ESTABLISHES A FAIR ARGUMENT THAT ANY EXPANSION OF ITS APPROVAL IN THE CALIFORNIA PLUMBING CODE MAY RESULT IN SIGNIFICANT ENVIRONMENTAL AND HEALTH AND SAFETY IMPACTS

Prior CEQA reviews of CPVC by the State of California have determined that the expanded approval of CPVC in the California Plumbing Code may result in numerous potentially significant effects on the environment. These prior reviews include a 1982 Initial Study, a 1989 California Department of Health Services technical study ("1989 DHS Study"), a 1997 Initial Study, a 2000 Mitigated Negative Declaration ("MND") and a 2007 Supplemental EIR. The potential impacts identified in these prior reviews include contamination of drinking water, worker exposure to toxic solvents, increased air emissions, manufacturing, solid waste impacts and increased fire hazards. Under established judicial precedent, these prior state agency findings constitute substantial evidence of potential impacts under CEQA.[153]

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[151] *Id.*

[152] *Id.*

[153] See *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 154.

The approval of CPVC pipe as a new material to deliver drinking water was first proposed to be included in the California Plumbing Code in 1982.[154] The proposal was based on the inclusion of CPVC in the 1982 Uniform Plumbing Code, the privately published model code upon which the California Plumbing Code is based.

A 1982 Initial Study was then prepared by HCD, which determined that the approval of CPVC would present a potential for numerous significant effects on the environment and thus required the preparation of an EIR.[155] The potentially significant effects identified in the 1982 Initial Study included premature mechanical failure, increased air emissions, deterioration of existing aquatic habitat, increased fire hazards, contamination of drinking water from chemicals leaching from CPVC pipe and solvents, and worker health hazards resulting from exposure to chemical solvents through dermal absorption and inhalation during the manufacture and installation of plastic pipe.

A Draft EIR was prepared in 1989, but was never completed. Although the 1989 Draft EIR failed to address a wide range of issues and was deficient in its examination of other impacts, the preliminary studies prepared in conjunction with the Draft EIR nonetheless identified potentially significant impacts on human health and the environment with CPVC use. For example, at the request of HCD, the Department of Health Services ("DHS") prepared a study finding that workers installing CPVC pipe would be regularly exposed to toxic substances in excess of legal exposure limits.[156] Preliminary leaching studies also showed the persistence of toxic and carcinogenic compounds in the drinking water carried by CPVC.[157]

Faced with the mounting evidence of potential hazards associated with plastic pipe use and the need for additional study, the plastic industry withdrew its funding and directed HCD to terminate all work on the 1989 EIR.[158] As a result of this directive, the 1989 EIR was abandoned and left incomplete.

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[154] See 1982 HCD Initial Study [Appendix 1]; See BSC Meeting (Jul. 27, 2006) [Appendix 2]; see CPVC Environmental Review of Proposed Expanded EIR Use of Plastic Pipe (Mar. 1983) [Appendix 101].
[155] 1982 HCD Initial Study [Appendix 1].
[156] DHS, California Occupational Health Program, "Plastic Pipe Installation: Potential Health Hazards for Workers (April 1989) at p. 19 (1989 DHS Study) [Appendix 3].
[157] Reid Memo re Plastic Pipe (Feb. 15, 1988) [Appendix 4].
[158] SPI Letter to HCD to Terminate Work on 1989 EIR (Aug. 9, 1994) [Appendix 5].

In 1995, BFGoodrich asked then-Governor Wilson to approve CPVC in the California Plumbing Code "by edict," *without any further compliance with CEQA*. BFGoodrich executives made this request at a fundraiser in Ohio during Wilson's presidential campaign and subsequently in writing.[159] A month after receiving the BFGoodrich request, Wilson directed HCD to adopt emergency regulations approving CPVC without completing the 1989 EIR and without requiring any measures to protect workers or consumers.[160]

On October 26, 1995, the Department approved proposed regulations authorizing the statewide approval of CPVC *without completion* of the previously abandoned 1989 EIR or any other compliance with CEQA.[161] Despite the objections of numerous stakeholders, the Commission then adopted HCD's proposed regulations.[162] The Commission's approval of CPVC without compliance with CEQA was quickly overturned by the court in the case *Cuffe, et al. v. California Building Standards Commission and California Department of Housing and Community Development*.[163] The court vacated the CPVC approval and ordered HCD and the Commission to take no further action to approve CPVC without first completing an Initial Study and either an EIR or a negative declaration.[164]

In response to the court's order, HCD prepared a new initial study in 1997. The new initial study again found that statewide approval of CPVC "may have a significant effect on the environment, and an Environmental Impact Report is required." [165] Based upon the record of the prior proceedings and other evidence before it, the 1997 Initial Study concluded that the proposed statewide approval of

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[159] BFGoodrich letter to Governor Pete Wilson re CEQA Compliance (Sept. 1, 1995) [Appendix 6].
[160] Governor Wilson letter directing HCD to Adopt Emergency Regulations Approving CPVC (Oct. 12, 1995) [Appendix 7].
[161] HCD Finding of Emergency HCD Approval re Approval of Proposed Amendments to Approve CPVC (10-26-95) [Appendix 8].
[162] *Cuffe, et al. v. California Building Standards Commission and California Department of Housing and Community Development* (Sup. Ct. San Francisco County, 1997) No. 977657, Peremptory Writ of Mandate (03-13-97) [Appendix 9].
[163] *Cuffe, et al. v. California Building Standards Commission and California Department of Housing and Community Development* (Sup. Ct. San Francisco County, 1997) No. 977657, Judgment Granting Peremptory Writ of Mandate, filed April 9, 1997 [Appendix 10].
[164] *Cuffe, et al. v. California Building Standards Commission and California Department of Housing and Community Development, supra,* judgment granting peremptory writ of mandate filed April 9, 1997 [Appendix 10].
[165] HCD Initial Study (Aug. 1997) [Appendix 11].

CPVC would result in potentially significant impacts on air quality, water quality, solid waste, worker health and safety, public health, and fire hazards.[166]

In 1998, HCD prepared an EIR for the statewide approval of CPVC again and certified it. While the 1998 EIR contained almost no new analysis from the abandoned 1989 EIR and was eventually rescinded and deemed incomplete by HCD, the 1998 EIR nonetheless recognized that CPVC use may have significant effects on human health and the environment.[167]

Eventually, HCD completed and certified two CEQA documents evaluating the potential impacts of CPVC in residential settings: a Mitigated Negative Declaration ("MND") certified in 2000 for the limited approval of CPVC and a 2007 Supplemental EIR on the expanded approval of CPVC in residential buildings. The 2000 MND and 2007 Supplemental EIR found that use of CPVC posed potentially significant impacts on worker health and safety, contaminated drinking water, and air quality impacts. As a result, HCD adopted mitigation measures that required CPVC to be installed using one-step, low-voc cement, to undergo a one-week flushing regimen before being used for human consumption, and comply with certain glove and ventilation installation requirements to protect worker health and safety.[168]

As the above discussion illustrates, HCD has generated over 25 years of relevant information regarding the impacts of approving CPVC. The 1982 Initial Study, 1989 Draft EIR, 1997 Initial Study, 2000 MND, and 2007 Supplemental EIR, as well as the preliminary studies on which the documents relied, contained facts, reasonable assumptions based on facts, and expert opinion specifically about the effects of installing CPVC pipes.

CEQA case law requires OSHPD and the Commission to recognize these prior findings as substantial evidence triggering the requirements for compliance with CEQA and for preparation of an EIR. In *Stanislaus Audubon Society v. County of Stanislaus*, the County's Planning Department prepared an initial study that concluded that the project at issue might have a significant impact.[169] The record

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[166] *Id.*
[167] Letter of Settlement Terms, p. 1, art. 2 [Appendix 12].
[168] See 2000 MND [Appendix 13]; 2006 CPVC DEIR at p. 16 [Appendix 14]; 2006 CPVC Recirculated DEIR at p. 50 [Appendix 15].
[169] *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 155.

also contained a study prepared by Tuolumne County that considered a project similar to the project at issue and determined that the similar project would have a significant effect on the environment.[170] The court found that both the Planning Department's conclusion and the Tuolumne County study were substantial evidence that the County could not ignore. The court ruled that the County must prepare an EIR.

Like the County in *Stanislaus*, OSHPD may not ignore HCD's twenty-five years of analyses and fact-based conclusions that approval of CPVC pipe may have a significant impact on the environment. The fact that this information was generated by an agency other than OSHPD is irrelevant according to the *Stanislaus* decision. Because HCD came to fact-based conclusions based on its findings in the 1982 Initial Study, 1989 Draft EIR, 1997 Initial Study, 2000 MND, and 2007 Supplemental EIR, there is substantial evidence supporting a fair argument in favor of preparation of an EIR prior to CPVC approval.

Moreover, OSHPD may not ignore preliminary studies like the one conducted by DHS that found that workers installing CPVC pipe would be regularly exposed to toxic substances in excess of legal exposure limits. Like the Tuolumne Study in *Stanislaus*, the DHS Study and other preliminary studies relied on by HCD in preparation of its environmental documents analyzed a project similar to the one proposed by OSHPD. Previous studies conducted on similar projects constitute substantial evidence. Thus, the DHS Study creates a fair argument that approval of CPVC may have a significant impact.

Under the court's holding in *Stanislaus Audubon Society, Inc. v. County of Stanislaus*, the State of California's prior findings that the expanded approval of CPVC pipe in California buildings may result in significant environmental impacts is determinative and requires environmental review under CEQA. The conclusions from the1982 and 1997 Initial Studies, the 1989 DHS Study, and the 2000 MND and 2007 Supplemental EIR, individually and collectively, create a "fair argument" that installation of CPVC may cause significant impacts on the environment.[171]

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[170] *Id.* at 155-156.

[171] See *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 154; *Gentry v. Murietta* (1995) 36 Cal.App.4th 1359 (petitioner may rely on statements made in initial study to establish fair argument, even in the face of contradictory evidence).

Even if OSHPD were to disagree with these prior findings, such a disagreement would not diminish their significance as substantial evidence.[172]

VII. THE STATE'S PRIOR DETERMINATION THAT EXPANDED APPROVAL OF ABS AND PVC DRAINAGE PIPE MAY RESULT IN SIGNIFICANT IMPACTS RAISES A FAIR ARGUMENT THAT OSHPD'S PROPOSED APPROVAL OF ABS AND PVC PIPE MAY ALSO RESULT IN SIGNIFICANT IMPACTS

As with CPVC, the state has also previously determined that approval of ABS and PVC drainage pipe in the California Plumbing Code may result in numerous potentially significant effects on the environment. Under CEQA, this prior state agency finding constitutes substantial evidence that approval of ABS and PVC drainage pipe may result in significant effects on the environment.[173]

In the same 1982 Initial Study that determined CPVC potable water pipe may result in significant impacts, the state also found that the expanded approval of ABS and PVC drainage pipe would potentially result in numerous significant effects on the environment and would require the preparation of an EIR.[174] The 1982 Initial Study examined the evidence before it and concluded that the expanded approval of ABS and PVC drainage pipe might have numerous, significant effects on the environment including: worker exposure to toxic solvents; increased air emissions; and increased fire hazards.[175] Based upon these findings, the Initial Study held that an EIR was required prior to the expanded approval of ABS and PVC drainage pipe.[176]

The abandoned 1989 Draft EIR that evaluated the proposed approval of CPVC also evaluated the proposed approval of ABS and PVC drainage pipe. The DHS worker health and safety study prepared as part of the 1989 Draft EIR found that workers installing ABS and PVC pipe would be regularly exposed to toxic substances in excess of legal exposure limits, with the most significant exposures

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[172] *Id.*
[173] *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 154.
[174] HCD, Plastic Pipe Initial Study (1982) [Appendix 1].
[175] *Id.*
[176] The 1982 Initial Study also examined the proposed statewide approval of CPVC and PE plastic pipe.

occurring when CPVC potable water pipe was also being installed in the same building.[177]

In 2006, HCD again proposed expanding the approval of ABS and PVC drainage pipe. After comments were submitted regarding the requirement for CEQA review, HCD withdrew the proposal on the grounds that it was "unable to complete an adequate review due to a lack of necessary information."[178]

The 1982 Initial Study and 1989 DHS Study, individually and collectively, create a fair argument that OSHPD's approval of ABS and PVC drainage Pipe may result in significant effects on the environment.[179] Under established case law, these prior findings are determinative and require environmental review under CEQA.[180]

VIII. ADDITIONAL SUBSTANTIAL EVIDENCE FURTHER ESTABLISHES A FAIR ARGUMENT THAT APPROVAL OF CPVC, PVC AND ABS PIPE MAY RESULT IN SIGNIFICANT ENVIRONMENTAL IMPACTS

The evidence in the record, including the expert comments, studies and other documents contained in the appendices to this letter, overwhelmingly demonstrates that OSHPD's proposed approval of CPVC potable water pipe and PVC and ABS drainage pipe may have significant effects on the environment. These potential impacts include: (1) worker exposure to toxic chemicals at levels exceeding established workplace standards; (2) contamination of drinking water from chemicals leached from the CPVC pipe and solvents; (3) contamination of receiving waters from chemicals leached from CPVC, PVC and ABS pipe; (4) air quality impacts from CPVC, PVC and ABS solvent emissions; (5) increased risk of fire hazard from toxic smoke and fire spread; (6) increased risk of rupture and failure of plumbing pipes; and (7) increased solid waste disposal impacts from the replacement of recyclable materials with CPVC, PVC and ABS pipe.

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[177] 1989 DHS Study [Appendix 3].
[178] HCD, Revised Express Terms, 2006 UPC/2007 CPC (Nov. 21, 2006) at p. 7. [Appendix 57]
[179] See *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 154; *Gentry v. Murietta* (1995) 36 Cal.App.4th 1359.
[180] *Id.*

A. Worker Health and Safety Impacts

1. Risk to Workers Installing CPVC, PVC or ABS Pipe

Past studies have demonstrated that without effective mitigation measures, workers installing CPVC, PVC or ABS pipe will be regularly exposed to levels of harmful chemicals exceeding established workplace standards. The most comprehensive study on this subject was conducted in the 1989 DHS Study.[181] In that study, the California Department of Health Services examined worker exposure to the chemical solvents in the primers and cements used to join the pipes.[182]

Sections of CPVC, PVC and ABS pipe are joined using fittings or connectors. The pipe is chemically fused to the connector using a process called "solvent welding" or "cementing." This process uses chemicals (cleaners, primers and cements) which are applied to the end of the pipe and the inside of the fitting socket. The pipe ends and fittings are first cleaned, primer is applied to soften the pipe, and cement is applied to bond the pipe and fitting. These cleaners, primers and cements are made with solvents that contain potentially harmful chemicals such as tetrahydrofuran ("THF"), methyl ethyl ketone ("MEK"), cyclohexanone ("CHX") and acetone ("ACE").

The 1989 DHS Study found that workers installing CPVC, PVC or ABS pipe were regularly exposed to these harmful chemicals at levels exceeding established workplace standards.[183] The likelihood of overexposure above the full-shift exposure limit was estimated to be 10% for a typical workday. The likelihood of overexposure above the short-term exposure limit at least once in a typical eight-hour workday was estimated to be 68%. The highest MEK exposures occurred during the installation of ABS drainage pipe.[184] The highest THF exposures occurred during the concurrent installation of CPVC potable water pipe and PVC drain, waste and vent pipe.[185] Three of the six samples in which THF exposures exceeded the short-term exposure limits were for workers installing PVC drainage

[181] 1989 DHS Study [Appendix 3].
[182] *Id.*
[183] *Id.*
[184] *Id.*
[185] *Id.*

pipe.[186] The study found that THF, CHX, ACE and MEK enter the bloodstream of workers through vapors, solvent skin contact and through permeation of gloves and clothes.

In 1998, DHS again reviewed the potential for worker health and safety impacts from the installation of CPVC, PVC and ABS plastic pipe and concluded that: "Case reports point to the likelihood that overexposure related to poor ventilation has already led to illness in pipe workers."[187]

Dr. Martyn Smith, Professor of Toxicology in the School of Public Health at the University of California, Berkeley, and Peggy Lopipero, M.P.H., have reviewed the potential adverse health impacts for worker exposure to THF, MEK and ACE. Their report concluded that exposure to these chemicals may cause significant health effects, and that THF was potentially carcinogenic.[188]

Even at levels lower than recommended exposure limits, MEK and ACE produce irritation of the eyes, nose and throat.[189] Indeed a substantial percentage of plumbers report experiencing irritation during the installation of these plastic pipes.[190] DHS has stated clearly that short-term irritation is a material impairment to health.[191] Furthermore repeated irritation may contribute to chronic illness.[192] In addition, all four solvents used in CPVC, PVC and ABS primers and cements – THF, MEK, CHX and ACE – may lead to the depression of central nervous system functions. Dizziness was the second most common symptom of ill health reported by workers participating in the 1989 DHS Study, followed by headaches.[193]

New data or testing is required to adequately evaluate this impact.[194] New formulations of primers and cements have entered the market since the completion

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[186] *Id.*
[187] Comments of Elizabeth Katz, MPH, Acting Chief, Hazard Identification System and Information Service, Department of Health Services (June 11, 1998) [Appendix 29].
[188] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998), pp. 1-2, 23. [Appendix 18].
[189] *Id.*
[190] *Id.*
[191] Dr. Bellows, DEIR Comments re CPVC Pipe Use for Potable Water Piping in Residential Buildings (Aug. 27, 1998) at p. 25 [Appendix 19].
[192] *Id.*
[193] *Id.* at p. 36.
[194] See *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421.

of the 1989 DHS Study.[195] Low-VOC solvents have changed their formulations to reduce their contribution to ozone pollution. One-step cements have also entered the market. While these formulations have reduced the amount of some chemicals, they have increased the amount of other chemicals.[196]

Dr. James Bellows, one of the primary authors of the 1989 DHS Study, reviewed these new formulas in his follow-up 1998 report. Dr. Bellows found that the introduction of low-VOC primer and cement formulations has actually resulted in *higher* combined exposures than were observed in the 1989 DHS Study.[197] The typical low-VOC primer and cements contain almost ten times the amount of MEK, resulting in "ten-fold higher airborne concentrations as the primer and cement evaporate."[198] In addition, the 2007 CPVC EIR found that new low-VOC adhesives actually increase the amount of Acetone in primers and cements.[199] Moreover, the acceptable workplace exposure limits for ACE have been significantly lowered since the 1989 DHS Study.[200] Accordingly, the use of new low-VOC primer and cements will likely result in significantly greater leaching impacts of certain chemicals than revealed in the 1989 DHS Study.

Furthermore, plastic pipe expert Thomas Reid has found that additives in new formulations may pose leaching issues not evaluated in the earlier 1989 DHS Study.[201] For example, unreacted monomers from impact modifiers may contain butadiene or acrylonitrile, which are carcinogens.[202]

In addition, the 1989 DHS study did not evaluate the installation of CPVC, PVC and ABS pipe in health care facilities that may contain a significantly higher

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[195] See 2006 CPVC DEIR at p. 63 (low-VOC solvents contain increased amounts of ACE) [Appendix 14]; Dr. Bellows Comments (Aug. 27, 1998) at pp. 18-20 (finding that low-VOC solvents may contain up to ten times the levels of MEK found in the solvents evaluated in the 1989 DHS Study) [Appendix 19].
[196] *Id.*
[197] Dr. Bellows DEIR Comments re CPVC Pipe Use for Potable Water Piping in Residential Buildings (Aug. 27, 1998), pp. 18-20 [Appendix 19].
[198] *Id.* at p. 20.
[199] 2006 CPVC DEIR at p. 63 [Appendix 14].
[200] Dr. Bellows Comments (Sept. 8, 2006) [Appendix 52]; see also CPVC 2006 DEIR at p. 65 [Appendix 14].
[201] Reid Comments (Sept. 13, 2006) p. 6 [Appendix 23]
[202] *Id.*

number of pipe joints and significantly larger pipes than other occupancies.[203] The amount of glue and solvent for these types of installations and the worker exposure to the fumes could be much higher than evaluated in the 1989 DHS study.[204] The unique exposure risks to workers installing CPVC, PVC and ABS pipe in healthcare facility settings must be further evaluated under CEQA.

The 1989 DHS Study, Dr. Bellow's 1998 and 2006 comments letters, and the 1998 Smith and Lopipero report constitute substantial evidence that the approval of CPVC, PVC and ABS pipe may, individually and cumulatively, result in serious violations of workplace chemical exposure standards. This significant impact must be disclosed and evaluated under CEQA.

2. Risk to Workers Manufacturing CPVC and PVC Pipes

Throughout the manufacture of CPVC and PVC, dioxins, furans, PCBs and hexachlorobenzene are unavoidably produced.[205] As a result, the manufacture of CPVC and PVC pipe and fittings can result in significant worker exposures to toxic and carcinogenic chemicals.[206] In her 2005 Comments, Dr. Phyllis Fox calculated that dioxin emissions alone may expose workers to a cancer risk of over five per million – five times above relevant significance thresholds.[207] In addition, workers are exposed to a wide range of other toxic chemicals, including THF, MEK and CHX.[208] The Vinyl Chloride industry in particular has a very disturbing record of manufacturers knowingly exposing workers to serious and life-threatening workplace conditions.[209] When evaluated in relation to other plastics used to make pipe, PVC (including CPVC) is considered "worst in class" for use of harmful substances and earned a recommendation of "avoid" in the Plastic Pipe Alternatives Assessment produced by the San Francisco Department of the Environment.[210]

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[203] Lescure, ABS and CPVC in Hospitals letter (Oct. 7, 2009) [Appendix 56].
[204] *Id.*
[205] Dr. Pless Comments (Sept. 12, 2006) [Appendix 20]; Dr. Fox Comments, §II.B [Appendix 21].
[206] Dr. Fox Comments (Apr. 22, 2005), §II.B [Appendix 21].
[207] *Id.*
[208] *Id.*
[209] Jim Morris, Staff Houston Chronicle, The Chemical Industry's Secrets/High-Level Crime/Italy Develops a Case for Manslaughter Because Workers Breathed Vinyl Chloride [Appendix 47].
[210] Rossi et al., San Francisco Department of the Environment, Plastic Pipes Alternative Assessment (Feb. 11, 2005) p. 4 [Appendix 48].

Because the Project will contribute to increased demand for CPVC, PVC and ABS pipe in California, it is likely to increase the manufacture of these products at factories within the state. As a result, the proposed action may incrementally increase the cumulative risk to workers in the CPVC pipe and solvent manufacturing industry.

B. Water Quality Impacts

1. Substantial Evidence Exists That Toxic Chemicals Leach Directly From CPVC Pipe and Solvents and May Contaminate Drinking Water

OSHPD's approval of CPVC plastic pipe may cause significant impacts due to the leaching of toxic chemicals into drinking water. Past studies demonstrate organic chemicals such as THF, MEK, ACE, and organotins have been found to leach into drinking water from CPVC pipe and solvents.[211]

Even in low doses, these chemicals may pose significant health risks when they contaminate drinking water.[212] THF, for example, is potentially carcinogenic.[213] THF may also cause depression of central nervous system functions.[214] MEK causes irritation and central nervous system depression even in low doses.[215] In higher doses, MEK may be embryotoxic, fetotoxic and potentially teratogenic.[216] Chronic irritation is associated with skin cancer. Subchronic toxicity studies of MEK show that it causes liver damage. MEK also potentiates the toxic effects of other common contaminants, including such common primer and cement leachates as THF and ACE.[217] Peripheral neuropathy may be caused by the combined exposure of MEK and THF.[218] Furthermore, MEK and ACE may cause polyneuropathy when found together.[219] MEK, ACE and possibly THF also have

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[211] Reid Comments (Sept. 13, 2006) [Appendix 23]; Reid comments (Oct. 18, 2006) [Appendix 58].
[212] *Id.*
[213] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at pp. 7, 8 [Appendix 18].
[214] Dr. Bellows DEIR Comments re CPVC Pipe Use for Potable Water Piping in Residential Buildings (Aug. 27, 1998) at, p. 36 [Appendix 18] [Appendix 19].
[215] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at p. 23 [Appendix 18].
[216] *Id.* at p. 9.
[217] *Id.* at pp. 9-10, 13-14.
[218] *Id.*
[219] *Id.*

the ability to potentiate the toxic effects of other chemicals including common contaminants of tap water.[220]

Organotins such as diorganotins and triorganotins, are irritants to the skin and eyes and are powerful metabolic inhibitors.[221] Diorganotins are hepatoxic and can cause damaging effects on the liver and bile duct, immunotoxicity, reproductive toxicity and developmental toxicity.[222] Triorganotins, such as tributyltin, are highly toxic to the central nervous system.[223]

The United States Environmental Protection Agency ("EPA") has corroborated that leaching of organotins from PVC and CPVC pipe may be a public health concern. In 1998, the EPA published a Federal Register notice stating that "organotins, including mono- and di-organotins which are used as heat stabilizers in PVC and chlorinated polyvinyl-chloride (CPVC) pipes, are of sufficient concern to warrant further investigation."[224] The EPA cited in support of this conclusion numerous reports demonstrating that new CPVC systems have the potential to contaminate drinking water with organotin compounds for a significant period of time after installation.[225] The EPA concluded that the toxicology and leaching of organotins required further in-depth evaluation.[226] This conclusion by the EPA is substantial evidence that leaching of organotins from CPVC may significantly affect drinking water.

In September 2003, the Agency for Toxic Substances and Disease Registry ("ASTDR"), an agency of the U.S. Department of Health and Human Services, recommended Minimal Risk Levels ("MRLs") for organotin compounds.[227] The ASTDR recommendations for tributyltin corresponded to a drinking water concentration of 10.5 mg/L for an adult and 5.9 ug/L for an infant.[228]

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[220] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at p. 13 [Appendix 18].
[221] *Id.* at pp. 15-17.
[222] *Id.*
[223] *Id.*
[224] 63 Federal Register 10282 (Mar. 2, 1998).
[225] *Id.*
[226] *Id.*
[227] Reid Comments (Sept. 13, 2006) pp. 9-12 [Appendix 23].
[228] *Id.*

A study by the German Federal Institute for Health Protection of Consumers and Veterinary Medicine has recommended an even lower maximum exposure level of 8.75 ug/L per day for an adult.[229] For an infant, the maximum exposure level under the German recommendation would be about 4.9 ug/L a day.[230]

The Project's contribution to cumulative exposure to organotins must also be evaluated. There are many other sources of organotin compounds, including packaged foods (leached from plastic containers), seafood (highly bioaccumulated), bottled drinks (leached from plastic containers), and swimming in contaminated waters (many receiving waters in California have elevated levels).[231]

For dibutyltin compounds, the standard setting organization NSF International factors in cumulative exposure to organotins into its leaching standards by multiplying the maximum allowable exposure level by 20% to come up with a single product allowable concentration ("SPAC").[232] Using the same approach, the SPAC for dibutyltin, based on the German TDI value would be 1.75 ug/L for an adult and 0.59 ug/L for an infant.[233]

The leaching data reported by the U.S. EPA (0.8 – 2.6 ug/L) and by the 1987 Cooper study (33 ug/L) indicate that dibutyltin levels in drinking water in CPVC-piped systems can exceed these levels, for both adults and infants.[234] Other studies have shown organotin leaching from pipes at levels up to 140 ug/L.[235] Accordingly, a fair argument exists that CPVC pipe may leach organotins at levels sufficient to result in cumulative health and safety impacts on adults and infants.

2. Substantial Evidence Exists that Toxic Chemicals Leaching from CPVC and PVC Pipe May Contribute to the Contamination of State Water Bodies

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[229] Reid Comments (Sept. 13, 2006) [Appendix 23].
[230] *Id.*
[231] *Id.*
[232] *Id.*
[233] *Id.*
[234] *Id.*
[235] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 5 [Appendix 59]; *see also* Lozeau, Baykeeper comments (Apr. 25, 2005) [Appendix 60].

The Project must also be evaluated under CEQA because it may result in the discharge of greater amounts of organotins into waters of the State of California that are already degraded by organotins and toxicity. Where a water body already is degraded by the existing cumulative levels of organotins or other pollutants, irrespective of their source, increased discharges of organotins result in additional cumulative effects to that already degraded waterbody.[236]

Substantial evidence exists that the leaching of organotins from PVC and CPVC may be a significant contributor to organotin contamination in municipal wastewater effluents. High concentrations of organotin compounds have been widely reported in treated sewage effluents, including in California, *e.g.*, Hyperion, Oceanside, San Jose, San Diego, and Yuba County.[237] One source that has been implicated for these high levels is leaching of organotin compounds from PVC and CPVC pipe. Concentrations of organotin compounds detected in PVC and CPVC leachates have been found to be similar to those measured in the municipal effluents.[238] Moreover, the majority of organotin compounds, 60% to 70%, are commercially used to stabilize the PVC and CPVC resins.[239] Studies have directly implicated the "normal leaching and weathering of PVC pipes used for potable and wastewater" as principal sources of organotin contamination in municipal wastewater.[240] Canadian researchers have concluded:

> It is likely that new CPVC water distribution systems would contaminate the supplied water with organotins for some time after installation. PVC and CPVC plumbing installations may, therefore, be a significant source of the monobutyltin and dibutyltin found in municipal wastewater.[241]

The leaching of organotins from CPVC and PVC pipes may have significant impacts on fish and wildlife, including wildlife listed by state and federal wildlife agencies as endangered and threatened. Organotin compounds can be extremely

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[236] See CEQA Guidelines, § 15065(a)(3).
[237] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 6 [Appendix 59]; *see also* Lozeau, Baykeeper comments (Apr. 25, 2005) [Appendix 60].
[238] *Id.*
[239] *Id.*
[240] *Id.*
[241] *Id.*

toxic to aquatic life. The early developmental stages of aquatic organisms are particularly sensitive to organotin compounds.[242]

Tributyltins are the most toxic of the organotins and have been identified as a serious and widespread contaminant of marine and fresh water habitats in California.[243] Extremely low levels of tributyltin cause deformities in oysters and a wide range of adverse reproductive and developmental effects in fish.[244] In addition, tributyltin and the other organotins bioconcentrate in the aquatic environment. Because they bioconcentrate, the impact of persistent sources of organotins will be magnified over time and may thus affect anglers who catch and eat contaminated fish.[245] Tributyltin has also been implicated in adverse impacts to sea otters, a species listed as a threatened species under the federal Endangered Species Act and which feeds near the top of the food chains in the coastal waters off of Central California.[246]

Other forms of organotins are also toxic to aquatic life.[247] The California Department of Toxic Substances Control has recommended that dibutyltin, for example, be included in developing cleanup criteria.[248]

The state's water quality agencies have long recognized the serious dangers posed by tributyltin discharges to the waters of the state.[249] Organotins, and in particular tributyltin, are commonly regulated by the Regional and State Boards throughout the state.[250] The state's water quality agencies have determined that levels of tributyltin found in many sewage treatment plants threaten to violate the state's water quality standards.[251] The additional tributyltin resulting from the proposed Project will exacerbate that existing threat.

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[242] *Id.* at pp. 13-14.
[243] *Id.* at p. 14.
[244] *Id.* at pp. 13-17.
[245] *Id.* at p. 15.
[246] *Id.*
[247] *Id.* at pp. 15-16.
[248] *Id.*
[249] *Id.* at p. 16.
[250] *Id.* at pp. 8-13.
[251] *Id.*

The Project would also result in the discharge of elevated concentrations of MEK, CHX, THF and ACE. These chemicals are also known to cause aquatic toxicity.[252]

Because the leaching of organotins and other chemicals from CPVC and PVC pipe may contribute to cumulative impacts on aquatic life, OSHPD's proposed expansion of the approved use of CPVC and PVC in California buildings may cause a reasonably foreseeable indirect physical change in the environment. The potential impact of this leaching on receiving waters must thus be evaluated under CEQA.

C. Air Quality Impacts

1. VOC Emissions from Solvents Used to Install CPVC, PVC and ABS Solvents May Be Cumulatively Significant

Substantial evidence demonstrates that the Project may result in significant air quality impacts, both individually and in concert with the prior limited approvals of CPVC, PVC and ABS pipe in the California Plumbing Code. These air quality impacts result mainly from the cements, primers and cleaners necessary to install CPVC, PVC and ABS plastic pipe. The cleaners, primers, and cements used to join these pipes contain high concentrations of solvents (85% - 100%) that are volatile organic compounds. These VOCs are evaporated during the transfer, drying, surface preparation, and cleanup, resulting in VOC emissions.

VOCs are ozone precursor compounds. The VOCs are converted into ozone and fine particulate matter in the atmosphere, causing or contributing to violations of ambient air quality standards and attendant health effects.[253] Ozone pollution is a principal component of smog and is a major source of respiratory illness in California.[254]

The proposed expanded approval of CPVC, PVC and ABS pipe will increase the use of CPVC, PVC and ABS cleaners and cement and, therefore, will increase

[252] *Id.* at p. 18.
[253] Dr. Pless Comments (Oct. 8, 2009) [Appendix 31].
[254] *Id.*

emissions of VOCs. As a result, the expanded use of these solvents may have direct and cumulatively significant impacts on air quality.

The U.S. Environmental Protection Agency and California have both set ambient air quality standards on ozone to protect public health and welfare. These standards are exceeded throughout much of California.[255] The South Coast Air Quality Management District ("SCAQMD"), where most of the health facility growth is occurring, has the highest ozone levels in the United States.[256] Any increase in ozone in an area that significantly exceeds ozone ambient air quality standards should be considered significant.

The Project's cumulative air quality impacts must be reviewed under CEQA and evaluated in an EIR. Cumulative impacts result from individually minor but collectively significant projects taking place over a period of time. Because of this potential additive effect, "the full environmental impact of a proposed project cannot be gauged in a vacuum."[257] For these reasons, CEQA requires that an EIR discuss a project's potential cumulative impacts when combined with past, present, and reasonably anticipated future projects.[258] In particular, the Project must be looked at in context with the California Plumbing Code's limited approval of CPVC, PVC and ABS pipe in other occupancies, such as residential buildings.

The 2006 CPVC EIR evaluated this issue in detail and concluded that the expanded approval of CPVC in residential occupancies may have significant adverse impacts on air quality.[259] The 2006 CPVC EIR imposed significant mitigation to reduce this impact, including the use of low-VOC, one-step cements; yet found that HCD's approval of CPVC would still result in a significant impact even with the imposed mitigation.[260] As a result, a statement of overriding considerations was adopted as part of the project approval.[261]

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[255] *Id.*
[256] *Id.*
[257] *Communities for a Better Environment v. Calif. Resources Agency*, *supra*, 103 Cal.App.4th at p. 114, fns. omitted.
[258] Pub. Resources Code § 21083, subd. (b), CEQA Guidelines, §§ 15130, subd. (b) & 15355, subd. (b).
[259] 2006/2007 CPVC FEIR at pp. 5-6 [Appendix 51].
[260] *Id.*
[261] *Id.*

Because OSHPD's Proposed Amendments would further expand the approved use of CPVC, PVC and ABS pipe in the California Plumbing Code, they will further exacerbate what has already found to be a significant impact on the environment.

2. VOC Emissions from Increased Manufacturing of CPVC, PVC and ABS Solvents May Also Be Cumulatively Significant

An evaluation of the Project's emissions must also include indirect VOC emissions from manufacture of CPVC, PVC and ABS pipe, fittings, primers and cements. CEQA requires analysis of a project's "indirect" impacts, such as manufacturing that will be caused by the project.[262]

For example, in the case *Building Code Action v. Energy Resources Conservation and Development Commission*, the court addressed a CEQA challenge to an agency decision requiring the use of double-paned glass.[263] The court agreed that the proposed regulation could result in the increased production of glass at various glass factories throughout the state. The court also agreed that there was a fair argument that increased glass production caused by the regulation may have an adverse impact related to increased pollution from glass factories. The court held that CEQA review was required to analyze this impact.

CEQA requires that both primary or direct and secondary or indirect consequences of a project be evaluated.[264] The NSF's product database and other sources indicate that CPVC, PVC and ABS cement, and primers are manufactured in California and that these facilities are significant sources of VOC emissions.[265] The VOC emissions originate from storing and blending solvents in tanks, mixers, and dispensers. Some of the solvents used in these processes may also be manufactured in California, further increasing indirect emissions.[266]

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[262] *Kings Co. Farm Bureau v. Hanford* (1990) 221 Cal.App.3d 692 at 717; CEQA Guidelines, § 15064, subd. (d) & Appendix G.
[263] *Building Code Action v. Energy Resources Conservation and Development Comm*. (1980) 102 Cal.App.3d 577.
[264] CEQA Guidelines, § 15064, subd. (d).
[265] NSF Product and Service Listing (Apr. 19, 2005) [Appendix 26].
[266] *Id.*

The Project will increase the demand for CPVC, PVC and ABS pipe, fittings, and joining chemicals. This is likely to increase manufacturing of these products at factories in the state, thereby causing increased VOC emissions from those factories.[267] When looked at in conjunction with the VOC emissions from the installation of CPVC, PVC and ABS pipe, this is a potentially significant impact that requires review under CEQA.

Moreover, the State of California has already previously identified manufacturing impacts as a potentially significant impact of the expanded approval of plastic pipe.[268] The 1982 Initial Study prepared by HCD stated:

> Should the expanded use of plastic plumbing pipe be approved in California, a significant demand may be produced for additional pipe. This demand may lead to increased production or a general increase in activity at major chemical plants. Increased production may produce an increase in air emissions with a potential decrease in ambient air quality.[269]

The conclusion of the 1982 Initial Study is, itself, substantial evidence that an increase in the demand for CPVC, PVC and ABS pipe, fittings, and joining chemicals may result in significant air quality impacts.

3. Increased Manufacturing of CPVC and PVC Products May Increase Emissions of Dioxin and Other Toxics

CPVC and PVC manufacturing emits toxic chemicals that can cause significant health impacts, including dioxins, organotins and solvents.[270]

Imported CPVC and PVC resin is extruded into plumbing products. The extrusion process emits dioxins (polychlorinated dibenzo dioxins). Dioxins are among the most toxic chemicals known to science and cause adverse health effects, including cancer, birth defects, immune system damage, reproductive dysfunction

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[267] 2006 PVC/ABS Dr. Pless Comments at p. 15 [Appendix 33].
[268] 1982 HCD Initial Study [Appendix 1].
[269] *Id.* §III.2.a.
[270] Dr. Fox Comments (Apr. 22, 2005), §II.B [Appendix 21]; Rossi et al., San Francisco Department of the Environment, Plastic Pipes Alternative Assessment (Feb. 11, 2005) pp. 3, 4, 8-13 [Appendix 48].

(including infertility, endometriosis, micropenis, and others), diabetes, and hormonal abnormalities at extremely low levels.[271]

The dioxin emissions during extrusion may result in a significant cancer inhalation risk to both workers and the public.[272] Relying on laboratory analysis conducted on air in a CPVC extrusion plant, and published scientific data, Dr. Fox calculated that dioxin levels created by CPVC extrusion would create a cancer risk of five cancers per million.[273] The California Air Resource Board and the federal Clean Air Act §112(f) and many air districts establish a significance threshold for cancer risk of one per million.[274] The CPVC Project exceeds these thresholds by a factor of five and would therefore be significant.[275]

Dr. Fox also concludes that the dioxin emissions from extrusion facilities could also pose a significant cancer risk to offsite individuals in commercial or residential areas around the extrusion facility. Thus, by increasing the amount of CPVC that is extruded in California, the Project would increase the risk of cancer from inhalation of dioxins in the workplace and in the areas around the extrusion facilities. This risk is apparently already significant. Thus, the Project would result in a cumulatively significant health impact to both workers and the public.[276]

D. Fire Hazard Impacts

Substantial evidence exists that the expanded use of CPVC, PVC and ABS plastic pipe may increase the risk of fires in multi-story buildings. The fire hazards associated with CPVC, PVC and ABS pipe include increased risk of fire spread and increased risk from toxic smoke or gas.

The plastic piping systems of greatest concern for fire spread are, by far, those for drain, waste and vent systems.[277] These pipes, which transport waste and

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[271] Dr. Fox Comments (Apr. 22, 2005), §II.B.1 [Appendix 21].
[272] *Id.*
[273] *Id.*
[274] *Id.*, citing, CARB, *Risk Management Guidelines for New and Modified Sources of Toxic Air Pollutants* (July 1993).
[275] *Id.*
[276] *Id.*
[277] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 15 [Appendix 22]; see also KBS, Specifier's Handbook [Appendix 27].

gases through a building, are large in diameter, hollow and combustible.[278] If the fire resistance ability of their openings is not properly addressed, they create a pathway for smoke, hot gases and fire to spread through a building.[279] Because drainage pipes are large in diameter, they may create large openings between rooms when they melt or ignite, particularly where firestopping material is misapplied or fails. The venting of drainage pipe systems may also contribute to the spread of the fire because they provide a ready source of outside oxygen for the fire. [280]

A report by fire engineer Thomas J. Klem and Massachusetts Institute of Technology professor of engineering Dr. Thomas Eagar found a significant level of non-compliance with regard to plastic pipe fire stop penetrations and that improper installation is a problem noted by manufacturers of these assemblies.[281] Even where firestopping material is correctly applied, the use of CPVC, PVC and ABS drainage pipe may have cumulative impacts on the spread of fire. It is extremely rare for a fire resistive assembly to be built exactly as it is found in generic form as described in the tables of the model building codes.[282] Such assemblies will have other piping present and/or electrical components and possibly insulation and other components for data transmission.[283] The cumulative effect of all of these components along with the CPVC, PVC and ABS drainage pipe may impact the performance of these walls if a serious fire occurs.[284]

The use of plastic pipe in medical facilities also poses a heightened fire spread risk because the bulk of piping in these occupancies is horizontal on each floor in the ceiling.[285] According to a leading health care facility construction company in California, plastic piping running horizontally in these floor ceilings currently has only a limited measure of fire protection due to the use of metal piping.[286] The plastic horizontal CPVC, PVC or ABS has a flame spread that would

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[278] KBS, Specifier's Handbook [Appendix 27].
[279] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 16 [Appendix 22].
[280] *Id.*
[281] Klem, et al, Safety of Firewall Penetrations in High-Rise Building (2004) [Appendix 41].
[282] Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 28 [Appendix 22].
[283] *Id.* at pp. 28-29.
[284] *Id.* at p. 29.
[285] Lescure, ABS and CPVC in Hospitals letter (Oct. 7, 2009) [Appendix 56].
[286] *Id.*

go unchecked in these ceiling spaces. Accordingly, new fire wall or fire break code would need to be developed to minimize this spread rating.[287]

CPVC, PVC and ABS pipe further increase the risk of fires because they release toxic fumes and chemicals when heated or burned.

When CPVC or PVC burn, they form hazardous substances that present acute and chronic hazards to firefighters, building occupants, and the surrounding community. These substances include hydrogen chloride gas and dioxin.[288] The hydrochloric acid released by burning PVC is potentially lethal to people caught in a burning building, while dioxin's health effects are exerted more slowly and are spread across a larger population. Hydrogen chloride is a corrosive, highly toxic gas that can burn skin on contact. When it comes into contact with the mucous lining of the respiratory tract, it creates hydrochloric acid and can cause severe respiratory damage.[289] Exposure to a single CPVC or PVC fire can cause permanent respiratory disease.[290]

CPVC and PVC are often advertised as "fire resistant," meaning that a fairly high temperature is required to start it burning. However, CPVC and PVC start to smolder and release toxic fumes such as hydrochloric acid at a lower temperature, long before they ignite.[291] By the time actual combustion begins, they lose over 60% of their weight in the generation of hydrochloric acid and other chemicals.[292] The toxic gases generated during this pre-combustion period are particularly dangerous, as there is no flame to warn firefighters and occupants.[293]

For this reason, some firefighter associations are working to educate the public about the hazards of PVC building materials and are supporting municipal

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[287] *Id.*
[288] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48 [Appendix 28].
[289] *Id.*
[290] *Id.*
[291] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 35].
[292] Affidavit of Judith Schreiber before the Supreme Court of the State of New York in the matter of *Resilient Floor Covering Institute v. New York State Department of Environmental Conservation* (2003) [Appendix 35] [Appendix 34].
[293] *Id.*

and state level policies to reduce its use.[294] The International Association of Fire Fighters points out that 165 people died in the Beverly Hills Supper Club Fire of 1977, and 85 people in the MGM Grand Hotel Fire in Las Vegas in 1980—almost all of whom, according to the firefighters, were killed by inhalation of toxic fumes and gases, not by heat, flames, or carbon dioxide. A likely culprit is the hydrochloric acid created by the decomposition of PVC used in building materials.[295]

Medical researchers have found elevated levels of long-term respiratory and other health problems in firefighters who put out fires involving large quantities of PVC and have identified hydrochloric acid – acting alone or in combination with carbon monoxide and soot – as the probable cause of the damages.[296]

The hazards of PVC in fires have prompted action or positions by a number of expert organizations. The U.S. Military has adopted specifications to avoid PVC-jacketed cables in aircraft, space vehicles, and enclosures in which offgassing may occur in the event of fire.[297] In the United Kingdom, the Fire Brigades Union ("FBU") has stated, "The FBU is now particularly concerned about the safety of PVC based building materials that are used in the construction and fitting out of buildings when involved in fire."[298]

In addition to hydrochloric acid, CPVC and PVC create dioxins when burned. Dioxins are released into the air in the thick, choking smoke produced when CPVC and PVC pipe burns. Dioxins are also left behind in the ash and debris from a CPVC or PVC fire.[299] While only small amounts of dioxin may be formed as the result of burning CPVC or PVC, dioxin is one of the most toxic substances known to science.[300] Dioxin is a known human carcinogen and has been linked to reproductive disorders, immune suppression, and endometriosis, and other diseases

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[294] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at pp. 1, 11 [Appendix 24] [Appendix 35].
[295] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 35] (citing International Association of Fire Fighters, AFL-CIO, CLC, "Hazardous Materials: Polyvinyl Chloride" (Washington DC, 1995).
[296] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 35].
[297] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48 [Appendix 23] [Appendix 28].
[298] *Id.*
[299] *Id.*
[300] *Id.*

in laboratory animals.[301] In Germany, after a fire in a kindergarten that contained substantial quantities of PVC, scientists measured dioxin levels in indoor soot at concentrations almost 300 times greater than the German government's health standard.[302]

ABS pipe also releases toxic gases when burned, including acrolein, hydrogen cyanide and styrene.[303] Like hydrogen chloride, hydrogen cyanide begins forming before combustion and is toxic at low levels.[304] ABS pipe is also significantly more flammable than PVC pipe.[305]

The increased use of CPVC, PVC and ABS pipe may thus result in an increased risk of fire propagation and toxic smoke. This is a potentially significant adverse environmental impact that could affect the health of firefighters, building occupants, and neighbors. Because of this risk, both the 1982 Initial Study and 1997 Initial Study found that increased fire hazard was a potentially significant risk of the expanded approval of these pipes. These findings, themselves, constitute substantial evidence triggering the requirement to review this Project under CEQA.

The fire spread and toxic smoke hazards associated with CPVC, PVC and ABS pipe are particularly important to consider in health care facilities. Occupants in these types of buildings are much more likely to have limited mobility and may not be able to rapidly evacuate during a fire. With such populations, any increase in the speed of the spread of fire may be deadly. Moreover, such occupants are more likely to be exposed to hydrogen chloride and hydrogen cyanide offgassing from heated CPVC, PVC or ABS while awaiting evacuation.

E. Risk of Mechanical Failure

1. Premature Failure from Exposure to Commonly Encountered Materials such as Isopropyl-Alcohol

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[301] *Id.*
[302] *Id.* at p. 49.
[303] Richard Gann, et al., NIST Technical Note 1439, U.S. Department of Commerce, "International Study of the Sublethal Effects of Fire Smoke on Survivability and Health (SEFS): Phase I Final Report (August, 2001) at p. 110 [Appendix 36].
[304] Reid Comments (Oct. 18, 2006) [Appendix 58].
[305] KBS, Specifier's Handbook [Appendix 27].

Substantial evidence exists that CPVC, PVC and ABS pipes may prematurely fail when exposed to commonly encountered materials. Failure of drainage systems may result in unsanitary and unsafe conditions from the release of raw sewage and sewer gas. When drainage pipe breaks, the walls and occupied space of a building are contaminated by sewage. Such sewage contamination would increase the risk of the spread of infectious diseases in health care facilities.

ABS drainage pipe has already experienced extensive failures, leading to numerous consumer lawsuits and class action claims for damages.[306] These failures were widespread and were not limited to one manufacturer, one extruder or even one kind of pipe. These extensive failures were blamed on a combination of factors, including chemical attack from numerous commonly encountered chemicals.

The ABS drainage pipe that remains on the market today continues to be susceptible to failure from chemical attack on the plastic. ABS is subject to attack by most organic solvents. Chemicals such as isopropyl-alcohol, turpentine, drain cleaners, candle wax and vegetable oils all will decompose, dissolve or substantially reduce the lifetime of ABS pipe.[307] Because such materials are commonly flushed down drains in buildings, a fair argument exists that some installations of ABS drainage pipe may prematurely fail as a result of such exposure. Isopropyl-alcohol is particularly likely to be commonly flushed down drains in health care facilities.

The record also contains substantial evidence that CPVC and PVC pipe are also susceptible to premature failure when exposed to numerous substances commonly encountered in building environments, including termiticides, fungicides, WD-40, oil-based caulk, metal pipe thread sealants, metal piping antimicrobial coatins containing amines, and plasticized PVC (electric wire insulation and plastic grommets).[308] A 2003 Canadian report states that certain types of electrical wire and cable jacketing may contain plasticizers that leach out when in contact with PVC pipe and damage the pipe.[309] Nothing in the building code, however, prohibits

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[306] See Thompson, ABS and PB Failures in California [Appendix 37].
[307] CraftTech Industries, Inc., Chemical Resistance Guide [Appendix 38].
[308] Reid Comments (Oct. 18, 2006) [Appendix 58]; CMHC, Research Report on Incompatible Building Materials, p. 40 [Appendix 39]; Noveon Chemical Resistance Data [Appendix 40] CraftTech Industries, Inc., Chemical Resistance Guide [Appendix 38]; Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, pp. 8-10 [Appendix 42]; Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail* [Appendix 17].
[309] CMHC, Research Report on Incompatible Building Materials, p. 40 [Appendix 39].

placement of electrical wiring adjacent to CPVC or PVC pipe. Furthermore, it is common to install electrical wiring adjacent to CPVC or PVC pipe since the same holes are often used for both plumbing and electrical service.[310] Termiticides, fungicides, WD-40 and caulk are also likely to be applied near or around CPVC or PVC pipe under sinks or where they pass through openings in walls.

A report by Plastic Failures Labs indicates that the failure rate of CPVC pipes and fittings has been increasing.[311] The same report found that more than 80% of the failures have been due to contamination by incompatible substances.[312] The report also found a significant increase in CPVC failures due to the increased use of antimicrobial lined metal pipes. The antibacterial film used in these pipes contains amines which rapidly degrade CPVC pipe.[313]

Because of these risks, the potential for premature failure of CPVC, PVC and ABS pipes must be reviewed and analyzed under CEQA.

2. Increased Risk of Failure due to Earthquakes

OSHPD's proposed approval of CPVC, PVC and ABS pipes in OSHPD 3 health care facilities may also result in a greater number of failures during earthquake events, increasing the likelihood of water contamination and disease outbreak. Because CPVC, PVC and ABS are flexible, they have low beam strength and require two to three times more horizontal and vertical support than rigid piping materials such as cast iron.[314] Because cast iron pipe requires less support, the chances of failures of the support in seismic events are greatly reduced.[315] CPVC, PVC and ABS plastic pipes also use solvent cemented joints that are rigid and any movement could result in separation or breaks.[316] Cast iron pipe, on the other hand, uses a gasketed joint that is flexible allowing it to move in seismic events without the danger of breaks or separations.[317] Such heightened protection

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[310] Declaration of John Hall [Appendix 43].
[311] Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, p. 1 [Appendix 42]; see also Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail* [Appendix 17].
[312] *Id.* at pp. 2, 8-10.
[313] *Id.*
[314] LeVan Declaration, Cast Iron Soil Pipe and Fittings Compared to PVC and ABS DWV Pipe and Fittings in Seismic Events [Appendix 44]
[315] *Id.*
[316] *Id.*
[317] *Id.*

from seismic events is particularly critical if healthcare facilities are to remain functional in an earthquake emergency.[318]

The potential increased risk of plumbing pipe failure in healthcare facilities during seismic events is a potentially significant impact that must be evaluated under CEQA.

F. Solid Waste Impacts

Substantial evidence exists that the expanded approval of CPVC, PVC and ABS pipe may result in significant, increased solid waste disposal impacts. CPVC, PVC and ABS pipe are likely to create significantly greater quantities of construction waste due to the fact that they are essentially not recyclable, will replace plumbing pipe material that has an almost 100% recycling rate, and will generally need to be replaced more often than currently approved plumbing pipe materials. Additionally, CPVC, PVC and ABS contain contaminants that may create hazards when disposed in landfills or incinerators.

Currently, OSHPD requires buildings under its jurisdiction to use iron, copper or steel drainage pipe, materials with extremely high recycling rates and which are made from recycled metals. Potable water pipe installed in hospitals and health care facilities are overwhelmingly copper, which also has an almost 100% recycling rate and is largely made from recycled material. CPVC, PVC and ABS pipe, in contrast, are only marginally recycled and are made almost entirely from virgin materials. By replacing highly recycled materials with materials that are only marginally recyclable and which contain virtually no recycled content, the Project will result in a significant increase of construction waste.

Reports on disposal of PVC and CPVC have stated bluntly, "there is no safe way to get rid of it, and no good way to recycle it."[319] The multitudes of additives required to make CPVC or PVC useful make large scale post-consumer recycling nearly impossible for most products and interfere with the recycling of other

[318] *Id.*; see also Lescure, ABS and CPVC in Hospitals (Oct. 7, 2009) [Appendix 56].
[319] Dr. Sandra Steingraber, Update on the Environmental Health Impacts of Polyvinyl Chloride (PVC) as a Building Material: Evidence from 2000-2004 (April 2, 2004) at p. 17 [Appendix 45]; *see also* PVC Recycling – Solving a Problem or Selling a Poison? [Appendix 55].

plastics.[320] Of an estimated 7 billion pounds of PVC thrown away in the U.S., barely one quarter of one percent is recycled.[321] Because of its higher chlorine content, CPVC is recycled even less than PVC. The American Association of Postconsumer Plastics Recyclers has declared efforts to recycle PVC and CPVC a failure.[322] It further declared that it would henceforth view PVC and CPVC products as unrecyclable contaminants in the municipal waste stream.[323]

A 2005 draft report by the San Francisco Department of the Environment examined the solid waste problem posed by various types of plastic pipe and found that CPVC and PVC posed the most significant problems. The report found that CPVC and PVC are hard to recycle and are considered contaminants by most plastic recycling programs.[324] It also found that CPVC and PVC posed disposal problems because they are the only plastic pipes on the market that contain OSPAR Chemicals for Priority Action (organotins, lead and possibly cadmium).[325]

The same San Francisco report determined that there is only a "small market" for recycled ABS, making it also a plastic of "concern" when evaluated for solid waste impacts.[326] Like CPVC and PVC, ABS has highly hazardous manufacturing intermediates, including carcinogens, and is difficult to recycle.[327] As a result, it is considered only marginally better than PVC environmentally. The Danish EPA has ranked plastic from the most harmful to the least harmful. ABS was rated the second most harmful plastic, just behind PVC.[328] ABS received this

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[320] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1 [Appendix 46].
[321] *Id.*
[322] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 55 [Appendix 28].
[323] *Id.*
[324] Rossi et al., San Francisco Department of the Environment, Plastic Pipes Alternative Assessment (Feb. 11, 2005) at pp. 3, 15 [Appendix 48].
[325] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at p. 3 [Appendix 48]. OSPAR stands for "Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic." Chemicals on the OSPAR list are of high concern for water toxicity.
[326] *Id.* at p. 16.
[327] Jamie Harvie, et al., PVC-Free Pipe Purchasers' Report (Nov. 1, 2002) at p. 2 [Appendix 49].
[328] Michael Belivue, et al., PVC: Bad News Comes In 3's: The Poison Plastic, Health Hazards and the Looming Waste Crisis (December 2004) at p. 48 [Appendix 50].

rating due to the toxic intermediate compounds used to produce ABS and the difficulty in recycling ABS.[329]

Moreover, because CPVC and PVC are considered contaminants in the plastic recycling waste stream, increased amounts of PVC waste may actually interfere with recycling of other plastics.[330] Efforts to recycle other types of plastics may be ruined by contamination with even small amounts of CPVC or PVC.[331] This makes strict segregation of CPVC and PVC from the plastics waste stream essential. However, such segregation is often difficult to achieve in practice.[332] The potential impact of increased CPVC potable water pipe waste and PVC drainage pipe waste on the recycling of other plastics is a potentially significant impact of the Project that requires further review under CEQA.

In addition to not being recyclable, CPVC, PVC and ABS pipe also have shorter lifespans than their copper and cast iron counterparts.[333] The estimated lifespan for CPVC is only 20 to 40 years. Copper pipe, on the other hand, has an estimated lifespan of well over 50 years. PVC and ABS drainage pipe also have a much shorter lifespan than cast iron drainage pipe. Cast iron pipe has an estimated lifespan of over 100 years and has been known to last 200 to 400 years.[334] PVC pipe has an estimated lifespan of 20 to 40 years and ABS has an estimated lifespan of 50 years. As a result, on average CPVC, PVC and ABS plastic pipe will need to be replaced twice as often as their copper pipes and cast iron pipe counterparts, resulting in much greater waste disposal impacts.

The unique hazards associated with the ultimate disposal of CPVC, PVC and ABS plastic pipes must also be evaluated. CPVC, PVC and ABS present significant disposal risks when disposed in landfills or burned in waste incinerators. First, the persistence of CPVC, PVC and ABS, which typically lasts for centuries in a landfill,

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[329] *Id.*
[330] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at p. 3, 15 [Appendix 48].
[331] *Id.*
[332] *Id.*
[333] See DEIR Reid Comments (Oct. 18, 2006) [Appendix 58].
[334] Cast Iron Soil Pipe Institute, FAQ [Appendix 16].

presents a significant burden in terms of the demand for landfill space.[335] Second, the release of additives in the plastics may contaminate groundwater.[336] Third, combustion of CPVC, PVC and ABS in incinerators or landfill fires may release hazardous substances into the air, including dioxins, metals and toxic gases.[337] CPVC and PVC burning in landfill fires may be the largest source of dioxin releases to the environment.[338]

The evidence in the record demonstrates that the current trend is to reduce and replace CPVC and PVC use, not to recycle CPVC and PVC waste.[339] The 2005 San Francisco Department of the Environment report concludes by recommending that CPVC and PVC be "avoided" due to their negative impact on solid waste disposal.[340] A 2003 report by the Global Development and Environment Institute has documented numerous efforts worldwide to phase out the use of PVC, including CPVC.[341] In California, the cities of Oakland, San Francisco and Berkeley have adopted resolutions to eliminate dioxin, including PVC use reduction as a broader strategy.[342] A number of U.S. health care institutions and professional societies have adopted resolutions encouraging the elimination of PVC, CPVC and other

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[335] See Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 56 [Appendix 28]; see also Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) [Appendix 48].
[336] *Id.*
[337] *Id.*
[338] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1 [Appendix 46]; Joe Thornton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 56 ("PVC is the predominant source of dioxin-generating chlorine in these facilities. In municipal waste incinerators, PVC contributes at least 80 percent of the organically-bound chlorine and 50 to 67 percent of the total chlorine (organochlorines plus inorganic chloride) in the waste stream—although it makes up only about 0.5 percent of the trash stream by weight.") [Appendix 28].
[339] Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) [Appendix 35] at pp. 16, 40-45; Dioxin, PVC, and Health Care Institutions and Mark Rossi, PVC & Healthcare [Appendices 53 & 54 (calling for reduction of PVC in health care facilities, including plastic plumbing pipes.); Michael Belivue, et al., PVC: Bad News Comes In 3's: The Poison Plastic, Health Hazards and the Looming Waste Crisis (December 2004) at p. 48 [Appendix 50].
[340] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) Appendix 22 at, pp. 4, 17; *see also* Michael Belivue, et al., PVC: Bad News Comes In 3's: The Poison Plastic, Health Hazards and the Looming Waste Crisis (December 2004) [Appendix 50] (documenting PVC waste crisis).
[341] Ackerman et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at pp. 16, 40-45 [Appendix 35].
[342] *Id.* at p. 40.

products that are important contributors to dioxin formation.[343] Denmark, Spain, Germany, Norway, Luxembourg and Sweden have all adopted policies encouraging the phasing out of PVC use, including PVC and CPVC piping.[344] Numerous water bottling companies in Europe are also phasing out the use of CPVC and PVC.[345] OSHPD's proposed expansion of CPVC and PVC use in California runs directly counter to this national and international public health trend.

Solid waste disposal is a potentially significant adverse environmental impact of the proposed expanded approval of CPVC potable water pipe and PVC and ABS drainage pipe. This significant impact triggers CEQA and must be evaluated in an EIR.

IX. SUBSTANTIAL EVIDENCE ESTABLISHES A FAIR ARGUMENT THAT REMOVAL OF THE REQUIREMENT TO DISINFECT NEW OR REPAIRED POTABLE WATER SYSTEMS PRIOR TO USE MAY RESULT IN SIGNIFICANT HEALTH AND SAFETY IMPACTS

Currently the 2010 California Plumbing Code § 609.9 requires healthcare clinics (and all other healthcare facilities under OSHPD's building standards jurisdiction) to disinfect new or repaired potable water systems prior to use. OSHPD proposes amending the 2013 California Plumbing Code to exempt OSHPD 3SE clinics from this requirement.[346]

This exemption is likely to increase health and safety risks to patients and other clinic occupants. Without this requirement, patients and other clinic occupants may consume water out of new or repaired potable water systems without first flushing out potentially harmful contaminants. Opening potable water systems for repair or construction and subjecting systems to water-pressure changes can result in water discoloration and dramatic increases in the concentrations of Legionella and other pathogens.[347] Accordingly the Center for

[343] *Id.*
[344] *Id.* at pp. 41-42.
[345] *Id.* at p. 42.
[346] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at p. 6 (CPC § 609.9).
[347] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, *Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations of CDC*

Disease Control recommends a thorough flushing of the system before use as a minimum preventative measure in health care facilities.[348] The Center for Disease Control also states that high temperature flushing or hyperchlorination may be appropriate.[349]

Moreover, as discussed above, the lack of post-installation disinfection is a particular concern when combined with the concurrent proposal to allow the use of CPVC pipe in OSHPD 3SE clinics. New and repaired CPVC plastic potable water pipe systems are installed using solvents and glues that contain potentially hazardous chemicals such as THF, MEK, and ACE.[350] These glues and solvents have been found to leach into the drinking water after installation.[351] Even in low doses, these chemicals may pose significant health risks when they contaminate drinking water.[352] THF may cause depression of central nervous system functions.[353] Low doses of MEK causes irritation and central nervous system depression, while higher doses may be embryotoxic, fetotoxic and potentially teratogenic.[354] Peripheral neuropathy may be caused by the combined exposure of MEK and THF and MEK and ACE may cause polyneuropathy when found together.[355] MEK, ACE and possibly THF also have the ability to potentiate the toxic effects of other chemicals including common contaminants of tap water.[356]

Because of the contamination risk posed by new installations of CPVC, the 2007 HCD CPVC EIR found this to be a significant impact and imposed flushing requirements as mitigation before allowing the consumption of water from these systems. By exempting OSHPD 3SE clinics from the California Plumbing Code section 609.9 disinfection requirements and failing to adopt the HCD CPVC mitigation measures, OSHPD now puts patients and other occupants of OSHPD 3SE clinics at risk. These risks may be particularly acute for OSHPD 3SE patients

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and the Healthcare Infection Control Practices Advisory Committee (HICPAC), (2003) at p. 50, http://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf [accessed March 25, 2013] [Appendix _].

[348] *Id.*

[349] *Id.*

[350] Reid Comments (Sept. 13, 2006) [Appendix 23]; Reid comments (Oct. 18, 2006) [Appendix 58].

[351] *Id.*

[352] *Id.*

[353] Dr. Bellows DEIR Comments re CPVC Pipe Use for Potable Water Piping in Residential Buildings (Aug. 27, 1998) at, p. 36 [Appendix 18] [Appendix 19].

[354] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at pp. 9, 23 [Appendix 18].

[355] *Id.* at pp. 9-10, 13-14.

[356] *Id.* at p. 13.

who are immune-compromised and thus may be more sensitive to water contaminated with these chemicals. Accordingly, a fair argument exists that exempting OSHPD 3SE clinics from the California Plumbing Code section 609.9 disinfection requirements may result in significant health and safety impacts.

X. THE PROPOSED AMENDMENTS FAIL TO MEET AT LEAST THREE OF THE NINE-POINT CRITERIA

Before the Commission may adopt a proposed building standard, it must be satisfied that the proposing agency has adequately justified adoption under the nine-point criteria analysis of Health and Safety Code section 18930. Section 18930 requires findings under the nine-point criteria to be supported by substantial evidence. If the Commission finds a factual finding to be arbitrary or capricious or to lack substantial evidence, it shall return the standard back to the proposing agency for reexamination.[357] The nine-point criteria required under Section 18930 to justify proposed building standards are as follows:

(1) The proposed building standards do not conflict with, overlap, or duplicate other building standards.

(2) The proposed building standard is within the parameters established by enabling legislation and is not expressly within the exclusive jurisdiction of another agency.

(3) The public interest requires the adoption of the building standards.

(4) The proposed building standard is not unreasonable, arbitrary, unfair, or capricious, in whole or in part.

(5) The cost to the public is reasonable, based on the overall benefit to be derived from the building standards.

(6) The proposed building standard is not unnecessarily ambiguous or vague, in whole or in part.

(7) The applicable national specifications, published standards, and model codes have been incorporated therein as provided in this part, where appropriate.

[357] Health & Saf. Code § 18930, subd. (d) (1).

(A) If a national specification, published standard, or model code does not adequately address the goals of the state agency, a statement defining the inadequacy shall accompany the proposed building standard when submitted to the commission.

(B) If there is no national specification, published standard, or model code that is relevant to the proposed building standard, the state agency shall prepare a statement informing the commission and submit that statement with the proposed building standard.

(8) The format of the proposed building standards is consistent with that adopted by the commission.

(9) The proposed building standard, if it promotes fire and panic safety, as determined by the State Fire Marshal, has the written approval of the State Fire Marshal.

In the case at hand, there is substantial evidence that approval of the Proposed Amendments would be contrary to the public interest (criteria 3), would be unreasonable, arbitrary and unfair (criteria 4), and would result in regulations that are unnecessarily ambiguous or vague (criteria 6). Accordingly, approval of the Proposed Amendments lacks justification under at least three of the nine-point criteria.

A. Approval of the Proposed Amendments without First Complying with CEQA Would Not Be in the Public Interest

Approval of the Proposed Amendments without first complying with CEQA would not meet the "public interest" element of the nine-point criteria. Health and Safety Code section 18930, subdivision (a)(3), requires agencies to determine if the "public interest requires the adoption of the building standards." In the case at hand, OSHPD's approval of the Proposed Amendments without first evaluating the potential impacts of the Proposed Amendments under CEQA would violate state law. Approval of building standards in violation of state law would be, in itself, contrary to the public interest. Approval of the Proposed Amendments would also be contrary to the public interest due to the numerous potential significant

environmental, health and safety impacts that may directly or indirectly result from these amendments that could adversely affect the public.

As discussed in detail above, it is well settled that the Commission and OSHPD must comply with CEQA prior to adopting or amending building standards that may have a significant impact on the public health, safety or the environment. Furthermore, it is well settled that compliance with CEQA is in the public interest.[358] CEQA "protects not only the environment, but also informed self-government."[359] CEQA informs the public and its responsible officials of the environmental consequences of their decisions before they are made, ensuring consideration of alternatives and requiring imposition of reasonable mitigation measures.[360] Failure to comply with CEQA prior to the adoption of this proposed regulatory change would thus be contrary to the public interest in ensuring informed self-government and in protecting public health, safety and the environment.

Furthermore, substantial evidence exists that approval of the Proposed Amendments may result in significant environmental, health, and safety impacts that could adversely affect the public. As detailed above, the proposed reductions in currently required ventilation, filtration and ducting requirements may result in: (1) increased risk of exposure to airborne infectious diseases and other airborne pathogens; (2) increased fire hazards; (3) increased noise impacts and reduced patient privacy; and (4) reduced energy efficiency. In addition, the expanded approval of CPVC, PVC and ABS pipe may result in: (1) increased worker exposure to toxic solvents; (2) drinking water and receiving water contamination; (3) increased air pollution; (4) increased fire hazards; (5) premature pipe failure; and (6) solid waste impacts.

Adoption of the Proposed Amendments without full disclosure, evaluation and mitigation of these impacts would not be in the public interest and thus may not be justified under the nine-point criteria.

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[358] See *Kane v. Redevelopment Agency of City of Hidden Hills* (1986) 179 Cal.App.3d 899, 905; *People By and Through Dept. of Public Works v. Bosio* (1975) 47 Cal.App.3d 495, 526; see also Pub. Resources Code § 21000.
[359] *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 108.
[360] *Id.*; Pub. Resources Code §§ 21063 & 21100.

B. Approval of the Proposed Amendments Would Be Unreasonable, Arbitrary and Unfair

Health and Safety Code section 18930, subdivision (a)(4), requires proposing agencies to justify their proposed building standards on the grounds that the proposed standard "is not unreasonable, arbitrary, unfair, or capricious, in whole or in part."

In the case at hand, it is manifestly unreasonable, arbitrary and unfair to propose the adoption of building standards that violate state law. As discussed above, adopting the Proposed Amendments without first preparing an EIR or otherwise complying with CEQA would violate state law. Since it would be unreasonable, arbitrary and unfair to approve building standards in a manner contrary to law, such approval may not be justified under the nine-point criteria.

Furthermore, approval of the Proposed Amendments would be unfair and unreasonable due to the substantial evidence of numerous potential significant environmental, health and safety impacts that may directly or indirectly result from the approval of the Proposed Amendments. Approval of the Proposed Amendments without first requiring full disclosure, evaluation and mitigation of their potential direct or indirect impacts is unfair to the public.

Approval of the Proposed Amendments would also be arbitrary because the proposed OSHPD 3SE exemptions are not supported by the stated justifications. The Proposed Amendments justify the creation of special exemptions for OSHPD 3SE clinics on the grounds that the "services provided and the size of the units limit use and occupancy, thereby minimizing hazards and allowing for less stringent standards."[361] OSHPD further claims that "the types of clinics selected for inclusion into 3SE are chosen because the expected occupants are not typically immunosuppressed and the practices performed in those clinics do not expose the patient to pathogen dose high enough to justify hospital-like HVAC and plumbing requirements."[362]

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[361] 45-day Express Terms for Proposed Building Standards of the OSHPD, regarding proposed changes to CMC and CPC, Title 24, Parts 4 and 5 (Feb. 8, 2013) at pp. 1-2 (CMC § 217.0) & 5-6, (CPC § 217.0) (definition of "OSHPD 3SE").
[362] OSHPD, Response to October 3, 2012 Jeffery Peipert comment [Appendix _].

As discussed in Section II (D), *supra*, OSHPD has not been able to identify any technical or medical studies to support the assumption that OSHPD 3SE clinics are unlikely to be an outbreak source for airborne infectious diseases.[363] Because the fundamental justification for the Proposed Amendments is that the expected patients of OSHPD 3SE clinics are unlikely to be immunosuppressed and that the practices performed in those clinics are unlikely to expose persons to dangerous levels of airborne pathogens, the failure to support these claims with any substantial evidence renders the Proposed Amendments arbitrary and capricious.

Moreover, the evidence that is in the record demonstrates that the exact opposite may be true due to the high likelihood that OSHPD 3SE clinics will be located in impoverished, rural or otherwise underserved communities. Patients in these communities are more likely to have undiagnosed airborne infectious diseases such as TB and are more likely to be immune-compromised due to diabetes or asthma, and thus more sensitive to pathogens and contaminants. OSHPD 3SE clinics thus actually may be more likely to see patients who are carriers of, or are more sensitive to, airborne infectious diseases than other OSHPD 3 clinics. Accordingly, rather than corroborating these unsupported assertions, the evidence in the record demonstrates that the Proposed Amendments will actually reduce protections against infectious disease spread and exposure to contaminants for the very populations most at risk.

C. The Proposed Amendments Should Be Denied as Unnecessarily Ambiguous or Vague in Scope

Health and Safety Code section 18930, subdivision (a)(6), prohibits agencies from proposing building standards that are "unnecessarily ambiguous or vague, in whole or in part." As discussed in Section II (A), *supra*, the proposed creation of OSHPD 3SE occupancies that are exempt from certain ventilation, filtration, ducting and plumbing material requirements is ambiguous and vague in scope. The Proposed Amendments fail to accurately or completely define the scope of services that may be performed in OSHPD 3SE clinics. Furthermore, the Proposed Amendments misrepresent the content of other sections of the Building Standards

[363] OSHPD's response to a Public Record Act request for all documents supporting the Proposed Amendments did not include any studies or reports that would support a finding that OSHPD 3SE clinics the assumption that OSHPD 3SE clinics are unlikely to be an outbreak source for airborne infectious diseases.

Code as defining the scope of services allowed, when they do not. The Proposed Amendments are also ambiguous due to internal inconsistencies regarding whether or not OSHPD 3SE clinics may only have exam rooms or may also have treatment or procedure rooms as long as they do not perform services that require negative or positive pressure.

XI. CONCLUSION

The Coalition for Responsible Building Standards respectfully requests that the Commission disapprove the Proposed Amendments or, in the alternative, require further study of the proposals prior to adoption. Substantial evidence exists that OSHPD's proposal to exempt OSHPD 3SE occupancies from currently applicable filter bank requirements, chase and plenum restrictions, flexible duct restrictions, plumbing vent location restrictions, plumbing pipe restrictions and plumbing system disinfection requirements may result in significant health, safety and environmental impacts. As a result, state law requires compliance with CEQA and the preparation of an EIR prior to adoption of these Proposed Amendments. To date, OSHPD has not taken any steps to comply with the requirements of CEQA. Not even an Initial Study has been prepared on these Proposed Amendments. Adoption of these Proposed Amendments prior to compliance with CEQA would violate state law.

Furthermore, adoption of these regulations is not justified under the California Building Standards Law. The California Building Standards Law requires that building standards be justified in terms of the nine-point criteria listed in Health and Safety Code section 18930. Among these criteria are the requirements that adoption of the proposed standards be in the "public interest" and not be "unreasonable, arbitrary, unfair, or capricious" and that the proposed regulations not be "ambiguous or vague, in whole or in part."

Because the potential environmental, health and safety impacts of the Proposed Amendments have not been sufficiently evaluated or mitigated, approval would not be in the public interest. Moreover, the Proposed Amendments would be unreasonable, unfair and contrary to the public interest since they would violate the statutory requirements of CEQA and are based upon unsupported and erroneous

justifications. Finally, the Proposed Amendments are unnecessarily ambiguous or vague because they fail to adequately define the scope of OSHPD 3SE occupancies and rely on erroneous citations to other provisions in the California Building Standards Code.

Sincerely,

Thomas A. Enslow

TAE:ljl
Attachments