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October 12, 2009

VIA HAND DELIVERY

Dave Walls
Executive Director
California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833

Re: *CPVC Potable Water Pipe and PVC & ABS Drain, Waste and Vent Pipe*; OSHPD Notice of Proposed Changes to the California Plumbing Code: 2009 Annual Code Adoption Cycle: Opposition to Proposed Amendment of CPC §§ 604.1, 701.1.2.1, 903.1.2.1, 1101.3.1

Dear Mr. Walls:

The following comments are respectfully submitted on behalf of the Coalition for Safe Building Materials ("Coalition") in opposition to the proposed California Plumbing Code amendment that would remove the current prohibition on the installation of Chlorinated Poly-Vinyl Chloride ("CPVC") drinking water pipe and polyvinyl chloride ("PVC") and acrylonitrile butadene styrene ("ABS") plastic drain, waste and vent ("DWV") pipe in buildings under the jurisdiction of the Office of Statewide Health Planning and Development ("OSHPD") ("the Project"). The Coalition members include the California Pipe Trades Council, the California Professional Firefighters, the Sierra Club, the Planning and Conservation League, the Consumer Federation of California and Center for Environmental Health. The environmental, consumer, public health and labor organizations that make up the Coalition represent literally millions of Californians concerned about the safety of new building materials.

The California Building Standards Commission ("CBSC" or "Commission") is currently reviewing proposed building standard code submittals as part of its 2009 Annual Code Adoption Cycle. Included in the submittals currently under review are regulations proposed by OSHPD that would amend California Plumbing Code

sections 604.1 to allow the installation of CPVC potable water pipe within hospitals, nursing homes and all other health care facilities and other buildings under OSHPD's jurisdiction. In addition OSHPD has proposed amending California Plumbing Code sections 701.1.2.1, 903.1.2.1 and 1101.3.1 to allow the installation of PVC and ABS DWV pipe within buildings under its jurisdiction.

Under the current California Plumbing Code regulations, OSHPD prohibits the use of CPVC, PVC and ABS plastic pipe in buildings under its jurisdiction. The removal of this prohibition is likely to increase the amount of CPVC, PVC and ABS pipe installed in new buildings and replaced in existing buildings ("re-pipings").

There is substantial evidence that the installation of CPVC, PVC and ABS plastic pipe may result in significant public health and environmental impacts. Accordingly, the proposed regulations approving these products may not be adopted until these potential impacts have been fully disclosed, evaluated and mitigated in an environmental impact report ("EIR"), as required by the California Environmental Quality Act ("CEQA"). OSHPD, however, has proposed adoption of these proposed regulations without any compliance with CEQA whatsoever.

OSHPD's failure to comply with CEQA in proposing these code changes is surprising in that the Department of Housing and Community Development ("HCD") just recently prepared an EIR to evaluate 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.[1]

The record of the State of California's past environmental reviews of CPVC, PVC and ABS plastic pipe contains extensive evidence that the installation of CPVC, PVC and ABS pipe may result in significant public health and environmental impacts. These potential impacts include:

[1] See California Plumbing Code § 604.1.1 and California Plumbing Code Appendix I, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, §§ 1.2, 1.2.1, 1.2.2.

- **Air Quality Impacts**
  - Widespread use of CPVC, PVC and ABS solvents and cements will result in Volatile Organic Compound ("VOC") emissions, resulting in increased ozone and smog pollution.
- **Worker Health & Safety Impacts**
  - 1989 Department of Health Services Study concluded that workers installing CPVC, PVC and ABS plastic pipe in buildings were regularly exposed to toxic chemicals such as tetrahydrofuran ("THF"), methyl ethyl ketone ("MEK"), cyclohexanone ("CHX") and acetone ("ACE") at levels exceeding established workplace standards.
  - Worker exposure occurs through inhalation and dermal absorption.
  - Most gloves offer no protection against dermal absorption of any of these chemicals. The use of gloves may actually make the problem worse.
- **Contamination of drinking water**
  - CPVC pipe leaches chemicals such as THF, MEK, ACE, CHX and organotins (including tributyltin) that may contaminate drinking water, exposing the public to hazardous chemicals through consumption and through inhalation and skin exposure during bathing.
  - CPVC and PVC pipe leach chemicals, such as organotins, that may pollute receiving waters. Organotins (and particularly tributyltin) are toxic to many aquatic animals. Most water treatment plants leave significant amounts of organotins in the effluent discharged into receiving waters.
- **Manufacturing Impacts**
  - CPVC, PVC and ABS pipe, fittings, cements and solvents are manufactured in California.
  - Increased manufacturing of these products will result in significant air quality and worker health and safety impacts.
  - The manufacture of CPVC and PVC pipe and fittings results in the release of dioxins and other highly toxic chemicals.

- **Solid Waste Impacts**
  - CPVC, PVC and ABS pipes are made from virgin materials, are only marginally recyclable and create disposal difficulties.
  - The metal pipes that CPVC, PVC and ABS pipes replace have an almost 100% recycling rate and are almost entirely made from recycled materials.
  - CPVC and PVC pipe are considered contaminants in the waste stream and disposal may result in the release of dioxins, vinyl chloride and other highly dangerous substances.
- **Fire Hazard Impacts**
  - CPVC, PVC and ABS pipe increase fire risks from toxic smoke, cancer-causing dioxins and fire spread.
  - These concerns are particularly acute in health care facilities where patients may lack mobility to quickly evacuate buildings.
- **Premature Mechanical Failure Impacts**
  - CPVC, PVC and ABS pipe may prematurely rupture, contaminating walls and occupied spaces with raw sewage.
  - CPVC, PVC and ABS pipe are more likely to rupture during earthquake events, increasing the risk of water contamination and disease outbreak.

The proposed regulations authorizing the installation of CPVC, PVC and ABS plastic pipe in OSHPD-regulated buildings 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 regulations or, in the alternative, table the proposal pending further study. Adoption of these proposed regulations prior to completion of this review would violate state law.

The proposed approval of CPVC, PVC and ABS plastic pipe must also be denied because the Proposed Express Terms and Initial Statement of Reasons ("ISOR") for the Project 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 nine-point criteria.

OSHPD's proposed approval of CPVC, PVC and ABS plastic pipe would not meet at least two of the nine-point criteria: (1) the requirement that the adoption of standards be in the public interest, and (2) the requirement that the adoption of standards would not be unreasonable, arbitrary or unfair. Because the proposed approval of CPVC, PVC and ABS plastic pipe prior to the completion of an EIR would violate state law and would potentially result in numerous public health, safety and environmental impacts, adoption of these standards would be contrary to the public interest and unreasonable, arbitrary and unfair.

It is critical to the health and safety of the California public that the potential impacts of CPVC potable water pipe and PVC and ABS DWV pipe be fully disclosed, evaluated and mitigated before these materials are approved for use throughout the state. The proper forum for such evaluation is an EIR. OSHPD's failure to prepare an EIR to evaluate the potential impact of these regulations violates CEQA and the nine-point criteria of the California Building Standards Law.

I. CEQA APPLIES TO THE PROPOSED APPROVAL OF CPVC, PVC AND ABS PLASTIC PIPE

A. CEQA Applies to the Adoption of the Proposed Building Standards

CEQA compliance prior to removing OSHPD's current prohibition on the installation of CPVC, PVC and ABS plastic pipe is not only prudent, but is legally required. The purpose of CEQA is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made.[2] Thus, CEQA "protects not only the environment but also informed self-government."[3] The Supreme Court has held that CEQA is "to be interpreted … to afford the fullest possible protection to the environment within the reasonable scope of the statutory language."[4]

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

[2] Pub. Resources Code §§ 21063 & 21100.
[3] *Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal.App.4th 98, 108.
[4] *Laurel Heights Improvement Assoc. v. Regents of Univ. of Calif.* (1988) 47 Cal.3d 376, 390; *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 110.

environment.[5] The adoption of regulations is considered "discretionary" under CEQA if any application of judgment is required.[6]

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.[7]

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.[8]

More recently in *Plastic Pipe and Fitting Association v. California Building Standards Commission,* the Court of Appeal held that environmental review under CEQA must be conducted prior to the approval of building code amendments that may have a significant impact on the environment.[9] 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 promulgation of building standards.[10]

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[5] Pub. Resources Code §§ 21065, 21080; Cal. Code Regs., tit. 14 ("CEQA Guidelines") §§ 15061, 15357, 15358, 15378.
[6] *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 206 (holding that CEQA applies to the enactment of regulations).
[7] *Building Code Action v. Energy Resources Conservation and Development Commission* (1980) 102 Cal.App.3d 577.
[8] *Cuffe v. California Building Standards Commission* (1997) San Francisco Superior Court No. 977657 (Wm. Cahill, J.).
[9] *Plastic Pipe and Fitting Association v. California Building Standards Commission ("PPFA v. CBSC")* (2004) 24 Cal.App.4th 1390.
[10] *Id.* at p. 1413.

In reviewing whether a government action may cause a physical change in the environment, the "fair argument standard" is applied.[11] 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.[12]

"'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."[13] The CEQA Guidelines define substantial evidence as including "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."[14] As a matter of law, "substantial evidence includes . . . expert opinion."[15]

CEQA places the burden of environmental investigation on government agencies and project proponents rather than the public.[16] As a result, an agency is not "allowed to hide behind its own failure to gather relevant data."[17] "If the lead agency has failed to study an area of possible environmental impact, a fair argument may be based on the limited facts in the record. Deficiencies in the record may actually enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences."[18]

The substantial evidence required to make the initial determination to apply CEQA is, necessarily, minimal.[19] 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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[11] *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.
[12] *Dunn-Edwards v. BAAQMD, supra*, 9 Cal.App.4th at p. 655.
[13] *Castaic Lake Water Agency v. City of Santa Clarita*, *supra*, 41 Cal.App.4th at pp. 1264-1265.
[14] CEQA Guidelines, § 15064, subd. (f)(5).
[15] Pub. Resources Code § 21080, subd. (e)(1); CEQA Guidelines § 15064, subd. (f)(5).
[16] *Gentry v. City of Murietta* (1995) 36 Cal.App.4th 1359, 1378-1379, citing *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.
[17] *Id.*
[18] *Id.*
[19] 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."[20]

In the case at hand, substantial evidence that OSHPD's approval of CPVC, PVC and ABS plastic pipe 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

The evidence presented herein is more than enough to meet the minimal standard of evidence required to trigger the requirement to comply with CEQA. Moreover, this same evidence establishes a fair argument that the proposed approval of CPVC, PVC and ABS plastic pipe may result in significant environmental impacts and thus requires the preparation of an EIR.

If an action is subject to CEQA, then an initial study must be prepared to determine the next required step.[21] An initial study is a preliminary analysis used to determine whether an EIR or negative declaration must be prepared.[22]

The courts have repeatedly recognized that the EIR is the "heart of CEQA."[23] 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.[24] 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."[25]

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[20] *Simi Valley Recreation and Park District v. Local Agency Formation Commission, supra,* 51 Cal.App.3d at p. 663.
[21] CEQA Guidelines § 15063.
[22] CEQA Guidelines §§ 15063, 15365.
[23] *The Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 926.
[24] Pub. Resources Code § 21002.1, subd. (a); CEQA Guidelines § 15002, subd. (a), (f).
[25] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220.

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."[26] However, such a determination may be made only if "[t]here is no substantial evidence in light of the whole record before the lead agency" that such an impact may occur.[27]

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."[28] Significant effect on the environment "means a substantial, or potentially substantial, adverse change in the environment."[29] 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.[30]

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

II. 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

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[26] *Id.*; Pub. Resources Code § 21080, subd. (c).
[27] *Id.*
[28] *Id.* at p. 927; Pub. Resources Code §§ 21100, 21151, 21080.
[29] Pub. Resources Code § 21068; *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.
[30] Pub. Resources Code § 21151, subd. (a); *The Pocket Protectors v. City of Sacramento, supra*, 124 Cal.App.4th at p. 927.

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.[31]

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.[32] 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.[33] 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

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[31] See *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 154.
[32] 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] [Appendix 73].
[33] 1982 HCD Initial Study [Appendix 1].

legal exposure limits.[34] Preliminary leaching studies also showed the persistence of toxic and carcinogenic compounds in the drinking water carried by CPVC.[35]

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.[36] As a result of this directive, the 1989 EIR was abandoned and left incomplete.

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.[37] 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.[38]

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.[39] Despite the objections of numerous stakeholders, the Commission then adopted HCD's proposed regulations.[40] 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*.[41] The court vacated the CPVC approval and ordered HCD and CBSC

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[34] DHS, California Occupational Health Program, "Plastic Pipe Installation: Potential Health Hazards for Workers (April 1989) at p. 19 (1989 DHS Study) [Appendix 3].
[35] Reid Memo re Plastic Pipe (Feb. 15, 1988) [Appendix 4].
[36] SPI Letter to HCD to Terminate Work on 1989 EIR (Aug. 9, 1994) [Appendix 5].
[37] BFGoodrich letter to Governor Pete Wilson re CEQA Compliance (Sept. 1, 1995) [Appendix 6].
[38] Governor Wilson letter directing HCD to Adopt Emergency Regulations Approving CPVC (Oct. 12, 1995) [Appendix 7].
[39] HCD Finding of Emergency HCD Approval re Approval of Proposed Regulations to Approve CPVC (10-26-95) [Appendix 8].
[40] *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].
[41] *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].

to take no further action to approve CPVC without first completing an Initial Study and either an EIR or a negative declaration.[42]

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."[43] Based upon the record of the prior proceedings and other evidence before it, the 1997 Initial Study concluded that the proposed statewide approval of CPVC would result in potentially significant impacts on air quality, water quality, solid waste, worker health and safety, public health, and fire hazards.[44]

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.[45]

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.[46]

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,

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[42] *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].
[43] HCD Initial Study (Aug. 1997) [Appendix 11].
[44] *Id.*
[45] Letter of Settlement Terms, p. 1, art. 2 [Appendix 12].
[46] See 2000 MND [Appendix 13]; 2006 CPVC DEIR at p. 16 [Appendix 14]; 2006 CPVC RDEIR at p. 50 [Appendix 15].

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 CBSC 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.[47] The record 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.[48] 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 will 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

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[47] *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 155.
[48] *Id.* at 155-156.

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.[49] Even if OSHPD were to disagree with these prior findings, such a disagreement would not diminish their significance as substantial evidence.[50]

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

As with CPVC, the state has also previously determined that approval of ABS and PVC DWV 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 DWV Pipe may result in significant effects on the environment.[51]

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 DWV pipe would potentially result in numerous significant effects on the environment and would require the preparation of an EIR.[52] The 1982 Initial Study examined the evidence before it and concluded that the expanded approval of ABS and PVC DWV pipe might have numerous, significant effects on the environment including: worker exposure to toxic solvents; increased air emissions; and increased fire hazards.[53] Based upon these findings, the Initial Study held that an EIR was required prior to the expanded approval of ABS and PVC DWV pipe.[54]

The abandoned 1989 Draft EIR that evaluated the proposed approval of CPVC also evaluated the proposed approval of ABS and PVC DWV pipe. The DHS

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[49] 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).
[50] *Id.*
[51] *Stanislaus Audubon Society, Inc. v. County of Stanislaus, supra*, 33 Cal.App.4th at 154.
[52] HCD, Plastic Pipe Initial Study (1982) [Appendix 1].
[53] *Id.*
[54] The 1982 Initial Study also examined the proposed statewide approval of CPVC and PE plastic pipe.

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 occurring when CPVC potable water pipe was also being installed in the same building.[55]

In 2006, HCD again proposed expanding the approval of ABS and PVC DWV 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."[56]

The 1982 Initial Study and 1989 DHS Study, individually and collectively, create a fair argument that OSHPD's approval of ABS and PVC DWV Pipe may result in significant effects on the environment.[57] Under established case law, these prior findings are determinative and require environmental review under CEQA.[58]

IV. 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 DWV 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; (7) increased solid waste disposal impacts from the replacement of recyclable materials with CPVC, PVC and ABS pipe.

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[55] 1989 DHS Study [Appendix 3].
[56] HCD, Revised Express Terms, 2006 UPC/2007 CPC (Nov. 21, 2006) at p. 7. [Appendix 57]
[57] 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.
[58] *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.[59] 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.[60]

Sections of CPVC, PVC and ABS pipe are joined using fittings or connectors. The pipe is chemically fused to the connector using a process call "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.[61] 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 DWV pipe.[62] The highest THF exposures occurred during the concurrent installation of CPVC potable water pipe and PVC DWV pipe.[63] Three of the six samples in which THF exposures exceeded the short-term exposure limits were for workers installing PVC DWV pipe.[64] The study found that THF, CHX,

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[59] 1989 DHS Study [Appendix 3].
[60] *Id.*
[61] *Id.*
[62] *Id.*
[63] *Id.*
[64] *Id.*

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."[65]

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.[66]

Even at levels lower than recommended exposure limits, MEK and ACE produce irritation of the eyes, nose and throat.[67] Indeed a substantial percentage of plumbers report experiencing irritation during the installation of these plastic pipes.[68] DHS has stated clearly that short-term irritation is a material impairment to health.[69] Furthermore repeated irritation may contribute to chronic illness.[70]

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.[71]

Furthermore, new data or testing is required to adequately evaluate this impact.[72] New formulations of primers and cements have entered the market since the completion of the 1989 DHS Study. Low-VOC solvents have changed their formulations to reduce their contribution to ozone pollution. One-step cements have

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

also entered the market. While these formulations have reduced the amount of some chemicals, they have increased the amount of other chemicals.[73]

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 have actually result in *higher* combined exposures than were observed in the 1989 DHS Study.[74] 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."[75] In addition, the 2007 CPVC EIR found that new low-VOC adhesives actually increase the amount of Acetone in primers and cements.[76] Moreover, the acceptable workplace exposure limits for ACE have been significantly lowered since the 1989 DHS Study.[77] 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.[78] For example, unreacted monomers from impact modifiers may contain butadiene or acrylonitrile, which are carcinogens.[79]

In addition, the 1989 DHS study did not evaluate the installation of CPVC, PVC and ABS pipe in hospitals and other health care facilities that contain a significantly higher number of pipe joints and significantly larger pipes. A single large hospital may contain well over 63,000 CPVC and PVC (or ABS) glue joints, with pipes as large as 10 inches in diameter.[80] The amount of glue and solvent for this type of large pipe installation and the worker exposure to the fumes would be

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[73] 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].
[74] Dr. Bellows DEIR Comments re CPVC Pipe Use for Potable Water Piping in Residential Buildings (Aug. 27, 1998), pp. 18-20 [Appendix 19].
[75] *Id.* at p. 20.
[76] 2006 CPVC DEIR at p. 63 [Appendix 14].
[77] Dr. Bellows Comments (Sept. 8, 2006) [Appendix 52]; see also CPVC 2006 DEIR at p. 65 [Appendix 14].
[78] Reid Comments (Sept. 13, 2006) p. 6 [Appendix 23]
[79] *Id.*
[80] Lescure, ABS and CPVC in Hospitals letter (Oct. 7, 2009) [Appendix 56].

much higher than evaluated in the 1989 DHS study.[81] The unique exposure risks to workers installing CPVC, PVC and ABS pipe in hospital and healthcare facility settings must be further evaluated under CEQA.

The installation of large bore (6 inch to 10 inch) CPVC, PVC and ABS pipe in hospitals would also pose a significant risk of plastic explosion related injuries and deaths. Because of the expansion and thrust capabilities of plastic pipe, large bore PVC pipe are made for and safest in underground situations.[82] When large bore PVC pipe are subject to high pressures they have been known to explode, killing and injuring workers.[83] Pipe installed underground resists such high pressure explosions due to the counter pressure from surrounding dirt.[84] No such counter pressure would exist if large bore PVC pipe was installed in walls and overhead ceilings in Hospital and medical facilities.

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.[85] As a result, the manufacture of CPVC and PVC pipe and fittings can result in significant worker exposures to toxic and carcinogenic chemicals.[86] 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.[87] In addition, workers are exposed to a wide range of other toxic chemicals, including THF, MEK and CHX.[88] The Vinyl Chloride industry in particular has a very disturbing record of manufacturers knowingly exposing workers to serious and life-threatening

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[81] *Id.*
[82] *Id.*
[83] *Id.*
[84] *Id.*
[85] Dr. Pless Comments (Sept. 12, 2006) [Appendix 20]; Dr. Fox Comments, §II.B [Appendix 21].
[86] Dr. Fox Comments (Apr. 22, 2005), §II.B [Appendix 21].
[87] *Id.*
[88] *Id.*

workplace conditions.[89] 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.[90]

Because the Project will increase the demand for CPVC, PVC and ABS pipe in California, this is likely to increase the manufacture of these products at factories within the state. As a result, the proposed action to expand the approved use of CPVC and PVC in the California Plumbing Code may increase the risk to workers in the CPVC pipe and solvent manufacturing industry. This is a potentially significant adverse impact that must be reviewed under CEQA.

B. Water Quality Impacts

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

OSHPD's approval of CPVC, PVC and ABS 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, PVC and ABS pipe and solvents.[91]

Even in low doses, these chemicals may pose significant health risks when they contaminate drinking water.[92] THF, for example, is potentially carcinogenic.[93] THF may also cause depression of central nervous system functions.[94] MEK causes irritation and central nervous system depression even in low doses.[95] In higher doses, MEK may be embryotoxic, fetotoxic and potentially teratogenic.[96] Chronic irritation is associated with skin cancer. Subchronic toxicity studies of MEK show

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[89] 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].
[90] Rossi et al., San Francisco Department of the Environment Plastic Pipes Alternative Assessment (Feb. 11, 2005) p. 4 [Appendix 48].
[91] Reid Comments (Sept. 13, 2006) [Appendix 23]; Reid comments (Oct. 18, 2006) [Appendix 58].
[92] *Id.*
[93] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at pp. 7, 8 [Appendix 18].
[94] 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].
[95] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at p. 23 [Appendix 18].
[96] *Id.* at p. 9.

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.[97] Peripheral neuropathy may be caused by the combined exposure of MEK and THF.[98] Furthermore, MEK and ACE may cause polyneuropathy when found together.[99] MEK, ACE and possibly THF also have the ability to potentiate the toxic effects of other chemicals including common contaminants of tap water.[100]

Organotins such as diorganotins and triorganotins, are irritants to the skin and eyes and are powerful metabolic inhibitors.[101] Diorganotins are hepatoxic and can cause damaging effects on the liver and bile duct, immunotoxicity, reproductive toxicity and developmental toxicity.[102] Triorganotins, such as tributyltin, are highly toxic to the central nervous system.[103]

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."[104] 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.[105] The EPA concluded that the toxicology and leaching of organotins required further in-depth evaluation.[106] 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.[107] The

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[97] *Id.* at pp. 9-10, 13-14.
[98] *Id.*
[99] *Id.*
[100] Smith-Lopipero Comments on CPVC DEIR (Aug. 1998) at p. 13 [Appendix 18].
[101] *Id.* at pp. 15-17.
[102] *Id.*
[103] *Id.*
[104] 63 Federal Register 10282 (Mar. 2, 1998).
[105] *Id.*
[106] *Id.*
[107] Reid Comments (Sept. 13, 2006) pp. 9-12 [Appendix 23].

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.[108]

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.[109] For an infant, the maximum exposure level under the German recommendation would be about 4.9 ug/L a day.[110]

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).[111]

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").[112] 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.[113]

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.[114] Other studies have shown organotin leaching from pipes at levels up to 140 ug/L.[115] 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.

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[108] *Id.*
[109] Reid Comments re DEIR: Adoption of CPVC without Finding of Potential Metallic Pipe Failure Due to Local Water or Soil Conditions (Sept. 13, 2006) [Appendix 23].
[110] *Id.*
[111] *Id.*
[112] *Id.*
[113] *Id.*
[114] *Id.*
[115] 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].

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

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.[116]

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.[117] 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.[118] Moreover, the majority of organotin compounds, 60% to 70%, are commercially used to stabilize the PVC and CPVC resins.[119] 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.[120] 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.[121]

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

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[116] See CEQA Guidelines § 15065(a)(3).
[117] 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].
[118] *Id.*
[119] *Id.*
[120] *Id.*
[121] *Id.*

agencies as endangered and threatened. Organotin compounds can be extremely toxic to aquatic life. The early developmental stages of aquatic organisms are particularly sensitive to organotin compounds.[122]

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.[123] Extremely low levels of tributyltin cause deformities in oysters and a wide range of adverse reproductive and developmental effects in fish.[124] In addition to their inherent toxicity, 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.[125] 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.[126]

Other forms of organotins are also toxic to aquatic life.[127] The California Department of Toxic Substances Control has recommended that dibutyltin, for example, be included in developing cleanup criteria.[128]

The state's water quality agencies have long recognized the serious dangers posed by tributyltin discharges to the waters of the state.[129] Organotins, and in particular tributyltin, are commonly regulated by the Regional and State Boards throughout the state.[130] 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.[131] The additional tributyltin resulting from the proposed Project will exacerbate that existing threat.

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[122] *Id.* at pp. 13-14.
[123] *Id.* at p. 14.
[124] *Id.* at pp. 13-17.
[125] *Id.* at p. 15.
[126] *Id.*
[127] *Id.* at pp. 15-16.
[128] *Id.*
[129] *Id.* at p. 16.
[130] *Id.* at pp. 8-13.
[131] *Id.* These include, for example, the Los Angeles' Hyperion Wastewater Treatment Plant (WDRs Order No. 2005-0020, p. 19; *Id.*, Table R1-1 (reasonable potential analysis)); Central Contra Costa County Sanitary District (WDRs Order No. 01-068, p.12); Olivehurst Public Utility District WTP -Yuba County (WDRs Order No. R5-2005-0094, p. 12), Sonoma Valley County Sanitation District (WDRs, Order No. R2-2002-0046, p. 16, Table 1); South Bayside System Authority WTP, Redwood City, San Mateo County (WDRs Order No. 01-012, p. 8, 13).

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.[132]

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.[133] Ozone pollution is a principal component of smog and is a major source of respiratory illness in California.[134]

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

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[132] *Id.* at p. 18.
[133] Dr. Pless Comments (Oct. 8, 2009) [Appendix 31].
[134] *Id.*

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.[135] The South Coast Air Quality Management District ("SCAQMD"), where most of the hospital and health facility growth is occurring, has the highest ozone levels in the United States.[136] Any increase in ozone in an area that significantly exceeds ozone ambient air quality standards should be considered significant.

The Project may result in significant direct and cumulative VOC emissions. Hospital and health care facilities contain a tremendous number of plumbing piping and would require hundreds of gallons of cement, primer and cleaners if CPVC, PVC or ABS were used. Just one large hospital project would require over 22,000 CPVC glue joints and over 41,000 PVC or ABS glue joints.[137] Moreover, these joints would range in size up to 10 inches in diameter. The solvent, glue and cleaners necessary to assemble these systems would be in the hundreds of gallons. As a result significant VOC emissions may occur from the construction of even one project. Or course, in many air basins, multiple hospital and health care facility projects may be built concurrently

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."[138] 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.[139]

In particular, the Project must be looked at in context with the California Plumbing Code's current limited approval of CPVC potable water pipe and PVC and ABS DWV pipe in other occupancies, such as residential buildings.

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[135] *Id.*

[136] Two air districts are classified as "extreme" ozone nonattainment areas -- SCAQMD and SJVAPCD. Extreme nonattainment is a formal classification under the Clean Air Act for areas that have the highest 1-hour ozone levels.

[137] Lescure, ABS and CPVC in Hospitals letter (Oct. 7, 2009) [Appendix 56].

[138] *Communities for a Better Environment v. Calif. Resources Agency*, *supra*, 103 Cal.App.4th at p. 114, fns. omitted.

[139] Pub. Resources Code § 21083, subd. (b), CEQA Guidelines §§ 15130, subd. (b) & 15355, subd. (b).

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.[140] 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.[141] As a result, a statement of overriding considerations was adopted as part of the project approval.[142]

Because OSHPD's proposed regulations would further expand the approved use of CPVC, PVC and ABS pipe in the California Plumbing Code, it will further exacerbate what the Commission 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.[143]

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.[144] 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.

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[140] 2006/2007 CPVC FEIR at pp. 5-6 [Appendix 51].
[141] *Id.* at p. ___.
[142] *Id.*
[143] *Kings Co. Farm Bureau v. Hanford* (1990) 221 Cal.App.3d 692 at 717; CEQA Guidelines § 15064, subd. (d) & Appendix G.
[144] *Building Code Action v. Energy Resources Conservation and Development Comm.* (1980) 102 Cal.App.3d 577.

CEQA requires that both primary or direct and secondary or indirect consequences of a project be evaluated.[145] The NSF's product database and other sources indicate that CPVC, PVC and ABS cement, and primers are manufactured in California.[146] The California Air Resources Board ("CARB") website reports VOC emissions for two of these facilities in 2000. The IPS facility in Gardena (SCAQMD) emitted 18.2 ton/yr of VOCs (100 lbs/day).[147] The Oatey facility in Newark (BAAQMD) emitted 16.7 ton/yr of VOCs (91.5 lb/day).[148] The BAAQMD reported emission data for the Oatey facility of 26.78 ton/yr (145 lb/day) as of January 16, 2003.[149] 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.[150]

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.[151] 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.[152] 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.[153]

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[145] CEQA Guidelines § 15064, subd. (d).
[146] NSF Product and Service Listing (Apr. 19, 2005) [Appendix 26].
[147] Dr. Fox Comments (Apr. 22, 2005), §C [Appendix 21].
[148] *Id.*; see also www.arb.ca.gov/ei/emissiondata.htm (as of April 18, 2005).
[149] *Id.*
[150] *Id.*
[151] 2006 PVC/ABS Dr. Pless Comments at p. 15 [Appendix 33].
[152] 1982 HCD Initial Study [Appendix 1].
[153] *Id.* §III.2.a.

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 Also Increase Emissions of Dioxin and Other Toxic Emissions from Manufacturing Plants

CPVC and PVC manufacturing emits toxic chemicals that can cause significant health impacts, including dioxins, organotins, including tributyltin, and solvents.[154]

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 (including infertility, endometriosis, micropenis, and others), diabetes, and hormonal abnormalities at extremely low levels.[155]

The dioxin emissions during extrusion may result in a significant cancer inhalation risk to both workers and the public.[156] 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 5 cancers per million.[157] 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.[158] The CPVC Project exceeds these thresholds by a factor of five and would therefore be significant.[159]

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

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[154] Dr. Fox Comments (Apr. 22, 2005), §II.B [Appendix 21]; Rossi, et al., Plastic Pipe Alternatives Assessment (Feb. 11, 2005) pp. 3, 4, 8-13 [Appendix 48].
[155] Dr. Fox Comments (Apr. 22, 2005), §II.B.1 [Appendix 21].
[156] *Id.*
[157] *Id.*
[158] *Id.*, citing, CARB, *Risk Management Guidelines for New and Modified Sources of Toxic Air Pollutants* (July 1993).
[159] *Id.*

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.[160]

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 DWV systems.[161] These pipes, which transport waste and gases through a building, are large in diameter, hollow and combustible.[162] 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.[163] Because DWV 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 DWV pipe systems may also contribute to the spread of the fire because they provide a ready source of outside oxygen for the fire. [164]

A report by fire engineer Thomas J. Klem and Massachusetts Institute of Technology professor of engineering Dr. Thomas Eagar found that there was a serious concern whether a sufficient range of pipe size assemblies was readily available for ABS and PVC DWV piping to ensure that properly designed and installed fire rated construction assemblies existed for high-rise buildings.[165] The report also noted 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.[166]

Even where firestopping material is correctly applied, the use of CPVC, PVC and ABS DWV pipe may have cumulative impacts on the spread of fire. It is

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[160] *Id.*
[161] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 15 [Appendix 22]; see also KBS, Specifier's Handbook [Appendix 27].
[162] KBS, Specifier's Handbook [Appendix 27].
[163] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 16 [Appendix 22].
[164] *Id.*
[165] Klem, et al, Safety of Firewall Penetrations in High-Rise Building (2004) [Appendix 41].
[166] *Id.*

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.[167] Such assemblies will have other piping present and/or electrical components and possibly insulation and other components for data transmission.[168] The cumulative effect of all of these components along with the CPVC, PVC and ABS DWV pipe may impact the performance of these walls if a serious fire occurs.[169]

In addition, the use of plastic pipe in hospitals and medical facilities pose a heightened fire spread risk because the bulk of piping in these occupancies are horizontal on each floor in the ceiling.[170] According, to a leading hospital 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.[171] The plastic horizontal CPVC, PVC or ABS has a flame spread that would go unchecked in these ceiling spaces. Accordingly, new fire wall or fire break code would need to be developed to minimize this spread rating.[172]

CPVC, PVC and ABS also 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 which present acute and chronic hazards to firefighters, building occupants, and the surrounding community. These substances include hydrogen chloride gas and dioxin.[173] 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,

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[167] Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 28 [Appendix 22].
[168] *Id.* at pp. 28-29.
[169] *Id.* at p. 29.
[170] Lescure, ABS and CPVC in Hospitals letter ()ct. 7, 2009) [Appendix 56].
[171] *Id.*
[172] *Id.*
[173] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48 [Appendix 28].

it creates hydrochloric acid and can cause severe respiratory damage.[174] Exposure to a single CPVC or PVC fire can cause permanent respiratory disease.[175]

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.[176] By the time actual combustion begins, they lose over 60% of their weight in the generation of hydrochloric acid and other chemicals.[177] The toxic gases generated during this pre-combustion period are particularly dangerous as there is no flame to warn firefighters and occupants.[178]

For this reason, some firefighter associations are working to educate the public about the hazards of PVC building materials and are supporting municipal and state level policies to reduce its use.[179] 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.[180]

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.[181]

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[174] *Id.*
[175] *Id.*
[176] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 35].
[177] 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].
[178] *Id.*
[179] 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].
[180] 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).
[181] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 [Appendix 35].

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.[182] 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."[183]

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.[184] 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.[185] Dioxin is a known human carcinogen and has been linked to reproductive disorders, immune suppression, and endometriosis, and other diseases in laboratory animals.[186] 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.[187]

ABS pipe also releases toxic gases when burned, including acrolein, hydrogen cyanide and styrene.[188] Like hydrogen chloride, hydrogen cyanide begins forming before combustion and is toxic at low levels.[189] ABS pipe is also significantly more flammable than PVC pipe.[190]

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

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[182] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48 [Appendix 23] [Appendix 28].
[183] *Id.*
[184] *Id.*
[185] *Id.*
[186] *Id.*
[187] *Id.* at p. 49.
[188] 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].
[189] Reid Comments (Oct. 18, 2006) [Appendix 58].
[190] KBS, Specifier's Handbook [Appendix 27].

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 piping materials. 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 hospitals, nursing homes and other 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

Substantial evidence exists that CPVC, PVC and ABS pipes may prematurely fail when exposed to commonly encountered materials. Failure of DWV systems may result in unsanitary and unsafe conditions from the release of raw sewage and sewer gas. When DWV 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 hospitals, nursing homes and other multi-occupancy health facilities.

ABS DWV pipe has already experienced extensive failures, leading to numerous consumer lawsuits and class action claims for damages.[191] 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 DWV 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

[191] See Thompson, ABS and PB Failures in California [Appendix 37].

reduce the lifetime of ABS pipe.[192] Because such materials are commonly flushed down drains in buildings, a fair argument exists that some installations of ABS DWV pipe may prematurely fail as a result of such exposure. Isopropyl-alcohol is particularly likely to be commonly flushed down drains in hospitals, nursing homes and 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).[193] 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.[194] Nothing in the building code, however, prohibits 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.[195] 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 recent report by Plastic Failures Labs indicates that the failure rate of CPVC pipes and fittings has been increasing.[196] The same report found that more than 80% of the failures have been due to contamination by incompatible substances.[197] 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.[198]

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[192] CraftTech Industries, Inc., Chemical Resistance Guide [Appendix 38].
[193] 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].
[194] CMHC, Research Report on Incompatible Building Materials, p. 40 [Appendix 39].
[195] Declaration of John Hall [Appendix 43].
[196] 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].
[197] *Id.* at pp. 2, 8-10.
[198] *Id.*

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 hospitals and other 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 cast iron pipe requires less support, the chances of failures of the support in seismic events is greatly reduced. In addition, plastic pipe requires 2 1/2 times more support. As a result, the chance of failure is substantially higher. Moreover Cast Iron Pipe uses a gasketed joint that is flexible allowing it to move without the danger of breaks or separations. While CPVC, PVC and ABS piping materials are considered flexible thermoplastic materials, they must be joined with a rigid joint that may separate or break if any deflection or movement occurs.[199] 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.[200] Such heightened protection from seismic events is particularly critical if hospitals and healthcare facilities are to remain functional in an earthquake emergency.[201]

Moreover, 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.[202] In a large hospital, this could result in over 100,000 pipe supports and hangers.[203] Because cast iron pipe requires less support, the chances of failures of the support in seismic events is greatly reduced.[204] CPVC, PVC and ABS plastic pipes use solvent cemented joints that are rigid and any movement could result in separation or breaks.[205]

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[199] LeVan Declaration, Cast Iron Soil Pipe and Fittings Compared to PVC and ABS DWV Pipe and Fittings in Seismic Events [Appendix 44]
[200] *Id.*
[201] *Id.*; see also Lescure, ABS and CPVC in Hospitals (Oct. 7, 2009) [Appendix 56].
[202] LeVan Declaration, Cast Iron Soil Pipe and Fittings Compared to PVC and ABS DWV Pipe and Fittings in Seismic Events [Appendix 44]
[203] Lescure, ABS and CPVC in Hospitals (Oct. 7, 2009) [Appendix 56].
[204] LeVan Declaration, Cast Iron Soil Pipe and Fittings Compared to PVC and ABS DWV Pipe and Fittings in Seismic Events [Appendix 44]
[205] *Id.*

The potential increased risk of plumbing pipe failure in hospitals and 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 DWV 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.

Recent reports on PVC and CPVC have stated bluntly, "there is no safe way to get rid of it, and no good way to recycle it."[206] 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 plastics.[207] Of an estimated 7 billion pounds of PVC thrown away in the U.S., only 18 million – barely one quarter of 1% – is recycled.[208] Because of its higher chlorine content, CPVC is recycled even less than PVC. The American Association of

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[206] 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].
[207] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1 [Appendix 46].
[208] *Id.*

Postconsumer Plastics Recyclers has declared efforts to recycle PVC and CPVC a failure.[209] It further declared that it would henceforth view PVC and CPVC products as unrecyclable contaminants in the municipal waste stream.[210]

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.[211] It also found that CPVC and PVC posed disposal problems because they are the only plastic pipes on the market that have OSPAR[212] Chemicals for Priority Action (organotins, lead and possibly cadmium) in the final product itself.[213]

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.[214] Like CPVC and PVC, ABS has highly hazardous manufacturing intermediates, including carcinogens, and is difficult to recycle.[215] 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. Levels 1 and 2 are the most harmful and level 5 is the least harmful. ABS was rated the second most harmful plastic, just behind PVC.[216] ABS received this rating due to the toxic intermediate compounds used to produce ABS and the difficulty in recycling ABS.[217]

Moreover, because CPVC and PVC are considered contaminants in the plastic recycling waste stream, increased amounts of PVC waste may actually interfere

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[209] Joe Thorton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 55 [Appendix 28].
[210] *Id.*
[211] Rossi, et al., Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at pp. 3, 15 [Appendix 48].
[212] Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic ("OSPAR"). Chemicals on the OSPAR list are of high concern for water toxicity.
[213] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at p. 3 [Appendix 48].
[214] *Id.* at p. 16.
[215] Jamie Harvie, et al., PVC-Free Pipe Purchasers' Report (Nov. 1, 2002) at p. 2 [Appendix 49].
[216] 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].
[217] *Id.*

with recycling of other plastics.[218] Efforts to recycle other types of plastics may be ruined by contamination with even small amounts of CPVC or PVC.[219] This makes strict segregation of CPVC and PVC from the plastics waste stream essential. However, such segregation is often difficult to achieve in practice.[220] The potential impact of increased CPVC potable water pipe waste and PVC DWV 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.[221] 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 DWV pipe also have a much shorter lifespan than cast iron DWV pipe. Cast iron pipe has an estimated lifespan of over 100 years and has been known to last 200 to 400 years.[222] 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, presents a significant burden in terms of the demand for landfill space.[223] Second, the release of additives in the plastics may contaminate groundwater.[224] 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.[225]

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[218] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at p. 3, 15 [Appendix 48].
[219] *Id.*
[220] *Id.*
[221] See DEIR Reid Comments (Oct. 18, 2006) [Appendix 58].
[222] Cast Iron Soil Pipe Institute, FAQ [Appendix 16].
[223] 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].
[224] *Id.*
[225] *Id.*

CPVC and PVC burning in landfill fires may now be the largest source of dioxin releases to the environment.[226]

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.[227] 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.[228] A 2003 report by the Global Development and Environment Institute has documented numerous efforts worldwide to phase out the use of PVC, including CPVC.[229] In California, the cities of Oakland, San Francisco and Berkeley have adopted resolutions to eliminate dioxin, including PVC use reduction as a broader strategy.[230] A number of U.S. health care institutions and professional societies have adopted resolutions encouraging the elimination of PVC, CPVC and other products that are important contributors to dioxin formation.[231] Denmark, Spain, Germany, Norway, Luxembourg and Sweden have all adopted policies encouraging the phasing out of PVC use, including PVC and CPVC piping.[232] Numerous water bottling companies in Europe are also phasing out the use of CPVC and PVC.[233] OSHPD's proposed expansion of CPVC and PVC use in California runs directly counter to this national and international trend.

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[226] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1 [Appendix 31] [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].

[227] 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 hospitals, 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].

[228] 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).

[229] Ackerman et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at pp. 16, 40-45 [Appendix 35].

[230] *Id.* at p. 40.

[231] *Id.*

[232] *Id.* at pp. 41-42.

[233] *Id.* at p. 42 [Appendix 35].

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

V. THE PROPOSAL TO REMOVE THE RESTRICTIONS ON CPVC, PVC AND ABS PIPE FAILS TO MEET AT LEAST TWO 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. 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.

(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.

The proposal to allow installation of CPVC, PVC and ABS pipe into OSHPD-regulated buildings, however, fails to meet at least two of the nine-point criteria. Accordingly, the Commission may not find that these proposed standards are justified under Section 18930 criteria.

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.[234]

In the case at hand, there is substantial evidence that the proposed approval of CPVC potable water pipe and PVC and ABS DWV pipe, without first preparing an EIR, would be contrary to the public interest and would be unreasonable, arbitrary and unfair. Furthermore, the record lacks substantial evidence to support a contrary finding. Accordingly, OSHPD's proposed approval of CPVC, PVC and ABS pipe lacks justification under at least two elements of the nine-point criteria.

A. Expanded Approval of CPVC, PVC and ABS Pipe without First Complying with CEQA Would Not Be in the Public Interest

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

Removal of the current prohibition on the use of CPVC, PVC and ABS pipe in OSHPD-regulated buildings without first complying with CEQA would not meet the "public interest" element of the nine-point criteria. Health and Safety Code section 18930, subdivision (3), requires agencies to determine if the "public interest requires the adoption of the building standards." In the case at hand, OSHPD's proposed approval of CPVC, PVC and ABS pipe without first evaluating the potential impacts of the proposed regulations under CEQA would violate state law. Approval of building standards in violation of state law would, in itself, be contrary to the public interest. Removal of the current restrictions on the use of CPVC, PVC and ABS pipe in OSHPD-regulated buildings would also be contrary to the public interest due to the numerous potential significant environmental, health and safety impacts associated with these products 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 new 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.[235] CEQA "protects not only the environment but also informed self-government."[236] 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.[237] 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 may result in significant environmental, health, and safety impacts that could adversely affect the public. As detailed above, 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. Approval of CPVC, PVC and ABS pipe without full disclosure, evaluation and mitigation of these

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[235] 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.

[236] *Communities for a Better Environment v. Calif. Resources Agency, supra,* 103 Cal.App.4th at p. 108.

[237] *Id.*; Pub. Resources Code §§ 21063 & 21100.

impacts would not be in the public interest and thus may not be justified under the nine-point criteria.

B. Approval of CPVC, PVC and ABS Pipe without First Preparing an EIR Would Be Unreasonable, Arbitrary and Unfair because It Would Violate State Law

Health and Safety Code section 18930, subdivision (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, authorizing the expanded approval of CPVC, PVC and ABS pipe 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, the proposed approval of CPVC, PVC and ABS pipe is unfair and unreasonable due to the substantial evidence of potential significant impacts associated with these materials. Approval of a building material without first requiring full disclosure, evaluation and mitigation of its potential impacts is unfair to the public. Moreover, a proposal by an agency to have a potentially hazardous building material approved without such disclosure, evaluation and mitigation is unreasonable.

VI. CONCLUSION

The Coalition of Safe Building Materials respectfully requests that the Commission disapprove these proposed amendments or, in the alternative, require further study of the proposals prior to adoption. Substantial evidence exists that OSHPD's proposed approval of CPVC potable water pipe and PVC and ABS DWV pipe 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 regulations. 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 regulations. Adoption of these proposed regulations 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." Because the potential environmental, health and safety impacts of CPVC, PVC and ABS pipe has not been sufficiently evaluated or mitigated, approval of the proposed OSHPD amendments would not be in the public interest. Moreover, the proposed regulations removing OSHPD's restrictions on the use of CPVC, PVC and ABS pipe would be unreasonable, unfair and contrary to the public interest since they would violate the statutory requirements of CEQA.

Sincerely,

Thomas A. Enslow

TAE:cnh
Attachments