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October 15, 2015

VIA E-MAIL AND OVERNIGHT MAIL

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Re: Comments on the Draft Environmental Impact Report for Revisions to the 2016 California Plumbing Code to Allow the Use of Perfluoroalkoxy in Dialysis Branch Lines and Plastic Pipe in Plumbing Applications in OSHPD Facilities

Dear Mr. Gall:

On behalf of the Coalition for Safe Building Materials ("Coalition"), this letter provides comments on the August 2015 Draft Environmental Impact Report, Revisions to the 2016 California Plumbing Code to Allow the Use of Perfluoroalkoxy in Dialysis Branch Lines and Plastic Pipe in Plumbing Applications in OSHPD 1, 2, 3, and 4 Facilities, State Clearinghouse Number 2015042077 ("Draft EIR").

The Draft EIR reviews the potential environmental impact of regulations proposed for adoption by the California Office of Statewide Health Planning and Development ("OSHPD") that would modify Sections 604.1, 701.1.2.1, 903.1.2.1 and 1101.3.1 of the California Plumbing Code to permit the use of chlorinated poly-vinyl chloride ("CPVC") potable water pipe and polyvinyl chloride ("PVC") and acrylonitrile butadiene styrene ("ABS") plastic drain, waste and vent ("DWV") pipe in hospitals, nursing homes and other health care facility buildings under OSHPD's jurisdiction (hereafter "the Project"). Under current California Plumbing Code

regulations, OSHPD prohibits the use of CPVC potable water pipe and PVC and ABS DWV pipe for these buildings.

As explained more fully below, the Draft EIR does not comply with the requirements of the California Environmental Quality Act ("CEQA").[1] The proposed regulations may not be approved or adopted until an adequate Draft EIR is prepared and circulated for public review and comment.

I. INTRODUCTION

The proposed Project will result in a large expansion of CPVC, PVC and ABS plastic pipe use. OSHPD has prepared the Draft EIR as the lead agency under CEQA. OSHPD is the agency responsible for proposing building standards for medical clinics, hospitals, nursing homes, and other healthcare facilities in California. Based on OSHPD developed standards, the California Building Standards Code (the "State Code") currently prohibits the installation and use of CPVC drinking water pipe; and PVC and ABS plastic DWV pipe in all health and nursing care facilities in California. These State Code standards provide important environmental benefits, and were developed and adopted to protect the health and safety of patients, building occupants and the general public.

As a result of the Coalition's long-standing advocacy, California now applies a precautionary approach to the adoption of building standards by requiring CEQA review of the public health and environmental consequences of potentially hazardous new building materials and methods prior to allowing their use in homes, offices and other buildings throughout the state.[2] With respect to new plastic drinking water pipe in particular, this pre-approval review has enabled Californians to escape the health hazards and disastrous product failures that have occurred elsewhere.

Over the past twenty-five years, plastic pipe manufacturers and trade associations have proposed that various types of plastic materials be approved to carry drinking water in California homes and other buildings. In each case, the

[1] Pub. Resources Code § 21000 *et seq*.
[2] *Plastic Pipe and Fitting Association v. California Building Standards Commission* (2004) 24 Cal.App.4th 1390; see also *Building Code Action v. Energy Resources Conservation and Development Commission* (1980) 102 Cal.App.3d 577 and *Cuffe v. California Building Standards Commission* (1997) San Francisco Superior Court No. 977657 (Wm. Cahill, J.).

manufacturers argued that CEQA review was unwarranted because their products already met private industry standards intended to regulate performance and safety. Despite industry assertions that an independent evaluation was unnecessary, the state agency assessments revealed numerous undisclosed hazards associated with many of the proposed products, including leaching of toxic and carcinogenic chemicals into drinking water, significant exposure of pipe installers to chemical solvents, and widespread mechanical failure.[3]

The pre-approval CEQA reviews conducted in California resulted in manufacturers changing some of their product formulas to reduce hazardous leaching of chemicals, and the regulatory agencies imposing restrictions and conditions on use of these products to protect the health and safety of workers and consumers. [4] Moreover, as a result of this State's public review process, Californians were spared the millions of dollars in property damage that occurred when polybutylene plastic plumbing pipe failed across the United States in jurisdictions that did not require a pre-approval health and safety review.

Despite this history, OSHPD has resisted CEQA review of its proposal to remove the current prohibitions on CPVC, PVC and ABS plastic pipe. In 2013, in a remarkably brazen violation of state law, OSHPD refused to perform any CEQA analysis of its proposed California Plumbing Code amendments that removed the prohibition of CPVC, PVC and ABS plastic pipe for certain medical clinic occupancies.[5] OSHPD took this action in the face of a record containing overwhelming evidence of a potential for significant impacts, OSHPD's own admission that all prior state agency reviews of these plastic plumbing materials

[3] See *Plastic Pipe and Fitting Association v. California Building Standards Commission* (2004) 24 Cal.App.4th 1390; *Cuffe v. California Building Standards Commission* (1997) San Francisco Superior Court No. 977657 (Wm. Cahill, J.).
[4] See Cal. Code Regs., tit. 24, Part 6, §§ 604.1.1, 604.1.2, 605.4.2, and Appendix I, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, §§ 1.2, 1.2.1, 1.2.2.
[5] Verified Petition for Writ of Mandate, *Coalition for Responsible Building Standards v. California Building Standards Commission* (2013) Alameda Superior Court, No RG13681364 (F. Roesch, J.).

have identified significant impacts requiring CEQA review,[6] and prior court decisions holding that CEQA applied to virtually identical regulatory proposals.[7]

After the Building Standards Commission adopted the 2013 proposal, the Coalition sued and secured a settlement that required OSHPD to rescind the regulatory change with a commitment to comply with CEQA prior to adopting any future regulations that would remove the restriction on the installation of the pipes in healthcare facilities.[8]

During the scoping period for this Draft EIR, we commended OSHPD for finally agreeing to complete an environmental impact report ("EIR"). We stated that we hoped the document would address the concerns that we had raised, fully evaluate and disclose the Project's potential impacts, and be an open, impartial decisionmaking document based on real science.

Unfortunately, the Draft EIR fails in all these respects. As explained in detail in each of the sections that follow, the combined deficiencies in the Draft EIR result in a document that fails to meet the basic informational and public disclosure requirements of CEQA. The Draft EIR fails to include an accurate or complete Project description, misrepresents the Project setting, arbitrarily declines to evaluate a number of Project impacts, and inadequately addresses others. It focuses on irrelevant issues and fails to disclose or evaluate evidence of potential impacts that had been submitted on this issue. The document fails to provide substantial evidence to support its findings regarding potential environmental effects and lacks foundation for its ultimate conclusions.

The gross inadequacy of the Draft EIR is both baffling and frustrating. The coalition and numerous other interested parties have previously provided OSHPD with extensive comments and numerous studies and other supporting documents

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[6] OSHPD, Memorandum on Withdrawal of OSHPD 3SE Proposals due to Adams Broadwell Joseph & Cardozo Comments ("the state has conducted CEQA reviews of various plastic piping materials since 1982" and *"[a]ll such reviews have concluded that installation of plastic piping has the potential for significant environmental effects that require mitigation efforts*").

[7] *Plastic Pipe and Fitting Association v. California Building Standards Commission* (2004) 24 Cal.App.4th 1390; see also *Cuffe v. California Building Standards Commission* (1997) San Francisco Superior Court No. 977657 (Wm. Cahill, J.).

[8] Verified Petition for Writ of Mandate, *Coalition for Responsible Building Standards v. California Building Standards Commission* (2013) Alameda Superior Court, No RG13681364 (F. Roesch, J.); Stipulated Judgment, *Coalition for Responsible Building Standards v. California Building Standards Commission* (2013) Alameda Superior Court, No RG13681364 (F. Roesch, J.).

that provided a road map of the impacts and evidence that needed to be evaluated in the EIR. For the most part, the Draft EIR ignores this evidence as if it didn't exist. OSHPD continues to resist a meaningful analysis of the issues that have been identified and presented in exhausting detail during past proceedings.

OSHPD's findings in this Draft EIR also directly conflict with the findings of the related 2006 Environmental Impact Report ("2006 CPVC EIR") on the approval of CPVC in residential occupancies that fall under the jurisdiction of the Department of Housing and Community Development ("HCD").[9] The 2006 CPVC EIR determined that the installation and use of CPVC in HCD occupancies may result in several significant impacts, including worker health and safety impacts, water contamination impacts, and air quality impacts. As a result, the Commission imposed significant mitigation to address and reduce these impacts. These mitigation measures include: (a) requiring a one-week flushing regimen after installation to reduce water contamination; (b) requiring compliance with worker safety requirements, including safety training, ventilation and glove use requirements; and (c) requiring the use of low-VOC one-step cement to reduce air quality impacts.[10] OSHPD not only ignores these prior findings in its Draft EIR, it also fails to require even the minimum environmental, public health and worker safety mitigation measures that HCD imposed after its review of the impact of approving CPVC in residential occupancies.

The evidence in the record, along with the expert comments and studies included as exhibits to this letter, overwhelmingly demonstrate that the Project may have significant effects on the environment that have not been adequately disclosed or evaluated in the Draft EIR. As discussed in more detail later in this document, these impacts include:

- **Air Quality Impacts**

    - CPVC, PVC and ABS solvents and cements emit air pollutants that cause ozone and smog pollution.

[9] California Department of Housing and Community Development, Recirculated Draft Environmental Impact Report, Adoption of Regulations Permitting Statewide Residential Use of Chlorinated Polyvinyl Chloride (CPVC) Plastic Plumbing Pipe Without First Making a Finding of Potential Premature Metallic Pipe Failure Due to Local Water or Soil Conditions, November 2006, SCH #20060120444 ("2006 CPVC RDEIR").

[10] Cal. Code Regs., tit. 24, Part 6, §§ 604.1.1, 605.4.2, and Appendix I, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, §§ 1.2, 1.2.1, 1.2.2.

- o The manufacture of CPVC, PVC and ABS pipe, fittings, cements and solvents in California will also emit air pollutants.

- **Fire Hazard Impacts**

  - o CPVC, PVC and ABS pipe increase fire risks from toxic smoke, cancer-causing dioxins and fire spread.

  - o These concerns are particularly acute in health care facilities where patients may lack mobility to quickly evacuate buildings.

- **Worker Health & Safety Impacts**

  - o A 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.

  - o HCD requires specific worker safety mitigation measures for the installation of CPVC in residential occupancies, but OSHPD has declined to propose similar protective measures for workers installing CPVC, PVC or ABS plastic pipe in its occupancies.

- **Premature Mechanical Failure Impacts**

  - o CPVC, PVC and ABS pipe are more likely to rupture during earthquake events, increasing the risk of water contamination and disease outbreak.

  - o CPVC, PVC and ABS pipe may prematurely rupture when exposed to commonly encountered substances such as rubbing alcohol, termiticides, plasticized PVC, or amines from antimicrobial lined metal pipes.

- **Water Contamination**

  - o CPVC pipe leaches chemicals that may contaminate drinking water.

  - o CPVC and PVC pipe leach chemicals that are toxic to many aquatic animals.

- **Solid Waste Impacts**

  - o CPVC, PVC and ABS pipes are made from virgin materials and are only marginally recyclable.

  - o The metal pipes that CPVC, PVC and ABS pipes replace have an almost 100% recycling rate and are almost entirely made from recycled materials.

  - o 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.

OSHPD's failure to evaluate objectively the health, safety and environmental impacts of its proposal renders the Draft EIR legally inadequate. Because the Draft EIR fails to comply with the requirements of CEQA, it may not be used as the basis for approving the Project. The Draft EIR must be revised to evaluate these deficiencies and recirculated for public review and comment.

II. INTEREST OF THE COALITION FOR SAFE BUILDING MATERIALS

The Coalition for Responsible Building Standards is a coalition of environmental, consumer, public health, and labor organizations that have long advocated for effective, safe and environmentally-friendly building standards. The members of the Coalition include the California State Pipe Trades Council, California Professional Firefighters, the Center for Environmental Health, and the Joint Committee on Energy and Environmental Policy, among others.

The environmental, consumer, public health, and labor organizations that make up the Coalition represent thousands of Californians concerned about the safety and effectiveness of new building standards. The Coalition and its members have a long history of participating in proceedings of the California Building Standards Commission to advocate for pre-approval review of environmentally hazardous, potentially unsafe and substandard plumbing materials. The tragic history of lead, asbestos, and other hazardous building materials entering the marketplace without consideration of their health and safety effects demonstrates that CEQA review of potentially hazardous building standards is sound public policy.

Petitioners' past advocacy has resulted in environmental review of many plastic plumbing materials. These reviews have demonstrated that many of the proposed materials have presented a danger to the public from toxic chemicals leaching into drinking water and from their flammability, a health risk to workers from exposure to chemical solvents in the cements and glues and a hazard to the environment from solvent emissions. They have also shown that some of the materials fail catastrophically, causing water damage to buildings and economic losses to building owners. As a result of these reviews, industry standards have been strengthened and restrictions or mitigation requirements have been adopted to better protect, workers, occupants and the general public from potential impacts related to the installation of plastic plumbing pipe in buildings.

III. LEGAL STANDARD

CEQA is designed to inform decision-makers and the public about the potential, significant environmental effects of a project.[11] "CEQA's fundamental goal [is] fostering informed decision-making."[12] "The purpose of CEQA is not to generate paper, but to compel government at all levels to make decisions with environmental consequences in mind."[13]

An EIR is "the heart of CEQA,"[14] and "serves as the informational tool to facilitate informed decision-making."[15] The EIR acts as an "environmental 'alarm

[11] 14 Cal. Code Regs. ("CEQA Guidelines") § 15002, subd. (a)(1).
[12] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 402.
[13] *Bozung v. LAFCO* (1975) 13 Cal.3d 263, 283.
[14] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[15] *Dusek v. Anaheim Redevelopment Agency* (1985) 173 Cal.App.3d 1029, 1037.

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."[16] 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.[17] The EIR also serves "to demonstrate to an apprehensive citizenry that the [agency] has analyzed and considered the ecological implications of its action."[18] Thus, an EIR "protects not only the environment but also informed self-government."[19]

To fulfill this function, the discussion of impacts in an EIR must be detailed, complete, and "reflect a good faith effort at full disclosure."[20] CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.[21] Additionally, the agency is required to make findings "with respect to each significant effect" that are based on substantial evidence in the record.[22]

An EIR must disclose to the public and to decision-makers whether an impact is significant, so that the public may have an opportunity to review and comment on the severity of the impact and the adequacy of mitigation measures. Failure to disclose a significant impact in an EIR would deprive "the public, who relied on the EIR's representations, of meaningful participation . . . ."[23] "In reviewing an EIR a paramount consideration is the right of the public to be informed in such a way that it can intelligently weigh the environmental consequences of any contemplated action and have an appropriate voice in the formulation of any decision."[24]

CEQA thus "contemplates serious and not superficial or pro forma consideration of the potential environmental consequences of a project."[25] Mere conclusory pronouncements are not sufficient.[26] "To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions

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[16] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220.
[17] Pub. Resources Code § 21002.1(a); CEQA Guidelines § 15002(a), (f).
[18] *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 86.
[19] *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.
[20] CEQA Guidelines § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.
[21] Pub. Resources Code § 21100, subd. (b)(1); CEQA Guidelines § 15126.2, subd. (a).
[22] Pub. Resources Code §§ 21081, subd. (a), 21081.5.
[23] *Mira Monte Homeowners Assn. v. County of Ventura* (1985) 165 Cal.App.3d 357, 365.
[24] *Karlson v. City of Camarillo* (1980) 100 Cal.App.3d 789, 804.
[25] *Leonoff v. Monterey County Bd. of Supervisors* (1990) 222 Cal.App.3d 1337, 1347-48.
[26] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 404.

or opinions."[27] A legally adequate EIR must contain "sufficient detail to help ensure the integrity of the process of decision-making by precluding stubborn problems or serious criticism from being swept under the rug."[28]

CEQA also imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.[29] If an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures and alternatives sufficient to minimize these impacts.[30]

Preparing an EIR requires research and information gathering. Lead agencies must thoroughly investigate potential project impacts. The burden of this environmental investigation is placed on the government rather than the public.[31] "The agency should not be allowed to hide behind its own failure to gather relevant data."[32] The agency "must use its best efforts to find out and disclose all that it reasonably can."[33]

The process of analyzing a project's impacts must be an interactive one between the public and the lead agencies. The process "must be open to the public, premised upon a full and meaningful disclosure of the scope, purposes, and effect of a consistently described project, with flexibility to respond to unforeseen insights that emerge from the process."[34]

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[27] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 404; See *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 568.
[28] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 733.
[29] Pub. Resources Code §§ 21002-21002.1; CEQA Guidelines § 15002, subds. (a)(2)-(3); see also, *Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564; *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 400.
[30] Pub. Resources Code §§ 21002.1, subd. (a), 21100, subd. (b)(3).
[31] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.
[32] *Id.*; *see also* p. 361 (sparseness of record suggests existence of significant issues).
[33] CEQA Guidelines § 15144.
[34] *County of Inyo v. City of Los Angeles* (1984) 160 Cal.App.3d 1178, 1185.

IV. THE DRAFT EIR REPRESENTS AN ATTEMPT BY OSHPD TO CIRCUMVENT CEQA THROUGH GRUDGING AND PRO FORMA COMPLIANCE DESIGNED TO SECURE PROJECT APPROVAL "QUICKLY AND EFFICIENTLY"

It is clear from the prior refusal to comply with CEQA and the conclusory and cursory nature of the analysis in the Draft EIR that OSHPD had no intent to comply with the above standards and prepare a meaningful and objective EIR. OSHPD's reluctant preparation of an EIR and its seeming determination to approve the Project without any modification has undermined the integrity of the environmental review process.

The courts have emphasized that the integrity of the environmental review process depends upon a genuine, objective and complete assessment of a project's potential environmental effects before the agency has decided to approve a project.[35] The Supreme Court explained the policy rationale for this requirement in *Laurel Heights*:

> A fundamental purpose of an EIR is to provide decision makers with information they can use in deciding *whether* to approve a proposed project, not to inform them of the environmental effects of projects that they have already approved. If post-approval environmental review were allowed, EIR's would likely become nothing more than *post hoc* rationalizations to support action already taken. We have expressly condemned this use of EIR's. [Citation omitted].[36]

The courts have given particular consideration to "how a public agency must approach the environmental planning and approval process the second time around when its original actions have been declared violative of CEQA."[37] In *Laurel Heights*, for example, the Supreme Court put the lead agency on notice that its prior approval of the project would not excuse anything less than full and complete compliance with CEQA requirements:

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[35] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 394, *Mira Monte Homeowners Assn. v. County of Ventura* (1985) 165 Cal.App.3d 357, 366, *County of Inyo v. City of Los Angeles* (1984) 160 Cal.App.3d 1178, 1185.
[36] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 394; original emphasis.
[37] *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1989) 209 Cal.App.3d 1502, 1522-1523.

> The [lead agency] must begin anew the analytic process required under CEQA. We will not accept *post hoc* rationalizations for actions already taken, particularly in light of the fact that those activities were begun in violation of CEQA, even if done so in good faith. To do so would tarnish the integrity of the decision making process required by CEQA . . . .[38]
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> The courts will not countenance a "grudging and pro forma compliance" with environmental review requirements.[39] The "assessment of environmental impacts . . . must be genuine [and] open to the public, premised upon a full and meaningful disclosure of the scope, purposes, and effect of a project."[40]

"[A] *post hoc* rationalization of a decision already made" defeats the fundamental informational and public disclosure objectives of CEQA.[41] "Only by requiring the [lead agency] to fully comply with the letter of the law can a subversion of the important public purposes of CEQA be avoided . . . ."[42]

As discussed in detail below, the Draft EIR reflects little more than a *post hoc* rationalization of the Department's prior decision to approve the Project rather than to evaluate thoroughly and objectively the potential environmental and public health dangers of these materials. It has resulted in an assessment that is not genuine or objective, that lacks foundation, and that has given short shrift to the serious public health and environmental issues associated with the installation and use of CPVC, PVC and ABS plumbing pipe.

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[38] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 425.
[39] *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 742.
[40] *County of Inyo v. City of Los Angeles* (1984) 160 Cal.App.3d 1178,1185; *see also Mira Monte Homeowners Assn. v. County of Ventura* (1985) 165 Cal.App.3d 357, 366.
[41] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 395.
[42] *People v. County of Kern* (1974) 39 Cal.App.3d 830, 842; *Mira Monte Homeowners v. County of Ventura* (1985) 165 Cal.App.3d 357, 366; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 71-72.

V. THE DRAFT EIR PROVIDES AN INADEQUATE AND MISLEADING PROJECT DESCRIPTION

The Draft EIR is legally deficient because it fails to accurately describe the Project. The failure to provide an accurate and consistent project description renders an EIR legally deficient.[43] CEQA Guidelines require that a project definition include "the whole of the action, which has a potential for resulting in a physical change in the environment, directly or ultimately."[44]

The definition of the project under review is critically important since it informs the public and governmental decision-makers of the nature of the proposed activity and determines the scope and content of the analysis that follows. The courts have repeatedly held that "an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR."[45]

The policy behind the requirement for a clear, accurate and complete project definition was cogently stated in *County of Inyo v. City of Los Angeles*:

> A curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the 'no project' alternative) and weigh other alternatives in the balance.[46]

As another court noted, the failure to include all components of a project in the project description defeats CEQA's mandate for full public disclosure and consideration of potential impacts: "Because of this omission, some important ramifications of the proposed project remained hidden from view at the time the project was being discussed and approved. This frustrates one of the core goals of CEQA."[47]

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[43] CEQA Guidelines §15124; *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.
[44] CEQA Guidelines § 15378.
[45] *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.
[46] *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193; see *also City of Santee v. County of San Diego City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1450-1455.
[47] *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 830.

In the case at hand, the failure to fully describe all aspects of the Project has resulted in an incomplete and inaccurate evaluation of the Project's impacts in the Draft EIR and frustrates the core goals of CEQA.

A. The Draft EIR Fails to Adequately Disclose the Size of the Project

The Draft EIR is inadequate because it fails to adequately describe the scope of the Project. The Draft EIR states that the Project will eliminate current restrictions on the installation of CPVC, PVC and ABS plumbing pipe in healthcare occupancies under the jurisdiction of OSHPD, but fails to disclose the potential number of new CPVC, PVC and ABS plumbing pipe installations that may result from this proposed regulatory change.

"An accurate and complete project description is necessary for an intelligent evaluation of the potential environmental impacts of the agency's action."[48] Without an accurate description on which to base an EIR's analysis, CEQA's objective of furthering public disclosure and informed environmental decision-making would be impossible and consideration of mitigation measures and alternatives would be rendered useless.[49] If key Project features are not described, then the related direct, indirect and cumulative impacts cannot be evaluated; mitigation measures cannot be imposed; and alternatives cannot be effectively evaluated.

The failure to disclose the potential number of new CPVC, PVC and ABS plumbing pipe installations violates CEQA's informational disclosure requirements and is a failure to proceed in the manner required by law.[50]

The Draft EIR also inaccurately describes the amount of plumbing pipe that is installed in a healthcare facility as "an extremely small amount."[51] This incorrect statement deliberately minimizes the potential impact of the Project. The Draft EIR must be revised to disclose that healthcare facilities actually install substantially more pipe per square feet than other occupancies. The recent Kaiser Permanente Antioch Medical Center, for example, contains 29 miles of pipe that if

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[48] *City of Redlands v. County of San Bernardino* ("*City of Redlands*") (2002) 96 Cal.App.4th 398, 406.
[49] *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192-193, 197-198, 203.
[50] *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App. 4th 342, 355-356 & 361.
[51] Draft EIR at p. 4-24.

placed end-to-end would be five times taller than Mount Everest.[52] Larger projects like the California Pacific Medical Center project in San Francisco may install well over a 100 miles of pipe.[53] The false and unsupported characterization of the amount of pipe that would be installed under these regulations as relatively negligible skews the entire analysis the Draft EIR and violates CEQA's informational disclosure requirements.

B. The Draft EIR Fails to Disclose Variations in Manufacturing Formulas for CPVC Pipe

The Project description is also inadequate because the Draft EIR fails to disclose and describe all the variations of CPVC, PVC and ABS pipe that would be approved by the Project. CPVC, PVC and ABS are generic terms. There can be significant differences in the chemical composition of different brands of these pipes resulting from varying manufacturing methods. CPVC, PVC and ABS pipe and fittings contain potentially harmful chemicals that are introduced during the manufacturing and extrusion process. Each manufacturer uses different formulas that contain different chemical contaminants as ingredients or additives.[54] The Draft EIR, however, fails to describe the variations in pipe and fitting formulations (or to even disclose that such wide variations exist).

The differences in manufacturing and extrusion methods result in differing chemical compositions and create a potential for a wide variation in health and environmental effects. New formulations or revised formulations of CPVC are often introduced into the market.[55] Furthermore, California has always seen low cost Pacific Rim imports enter the construction materials market that may contain ingredients not tested under NSF 61 standards.[56]

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[52] Kaiser Permanente, Press Release - Kaiser Permanente breaks ground on Antioch Medical Center (July 27, 2004), http://share.kaiserpermanente.org/article/kaiser-permanente-breaks-ground-on-antioch-medical-center/.
[53] Pless, Review of Draft Environmental Impact Report for Revisions to the 2016 California Plumbing Code to Allow the Use of Perfluoroalkoxy in Dialysis Branch Lines and Plastic Pipe in Plumbing Applications in OSHPD 1, 2, 3, and 4 Facilities (October 12, 2015) (hereafter "Pless Comments 2015") [Exhibit 1]; Sutter Health, CPMC, Overview; http://vng.cpmc2020.org/overview.
[54] Draft EIR at p. 3-6.
[55] Reid Comments (Sept. 13, 2006) p. 6; See 2006 CPVC Draft EIR at p. 63 (low-VOC solvents contain increased amounts of ACE); 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).
[56] Reid Comments (Sept. 13, 2006).

There are both numerous formulations of CPVC, PVC and ABS resins that form the base ingredient for the pipes and fittings and numerous formulations of additives and stabilizers that are added to the resins by the different companies that extrude the plastic resin into pipe and fittings. Because the extrusion process occurs at high temperatures and under high mechanical stress, chemical additives are necessary. The Draft EIR must be revised to disclose the full range of CPVC, PVC and ABS resin formulations along with a description of the stabilizers and additives and that may be added during the extrusion process.

The Draft EIR also fails to describe and disclose the CPVC, PVC and ABS cleaners, primers and cements that would also be approved by the Project. The Draft EIR must disclose current variations in solvent cement and primer formulations, and must also evaluate the potential impacts from reasonably foreseeable future changes in these formulations.

The failure to disclose this information defeats CEQA's mandate for full public disclosure and consideration of potential impacts. For example, without disclosure of the current variations in solvent cement and primer formulations, potential impacts to worker health and safety cannot be fully assessed. In his attached comments, Dr. Bellows finds that some newer formulations of solvent cement and primers contained ten times the amount of MEK compared to the formulations used in a 1989 Department of Health Services ("DHS") worker safety study and would thus likely result in worker exposure impacts even greater than that identified in the DHS study.[57]

The Draft EIR must be revised to disclose the actual proportions of ingredients found in the primers and cements approved under this Project. Without the disclosure of this significant information, the public is unable to compare these products with the findings in the 1989 DHS study or otherwise meaningfully evaluate their potential impacts.

VI. THE DRAFT EIR FAILS TO ACCURATELY DESCRIBE THE EXISTING ENVIRONMENTAL SETTING

The Draft EIR describes the existing environmental setting inaccurately and incompletely, thereby skewing the impact analysis. CEQA requires every EIR to

[57] Dr. Bellows DEIR Comments (Aug. 27, 1998), pp. 18-22, 28.

include an accurate description of the physical environmental conditions in the vicinity of the project.[58] Knowledge of the environmental setting is critical to the assessment of environmental impacts. In order to make a meaningful significance determination, a project's impacts must be considered in the full environmental context.[59] An inadequate description of the environmental setting makes proper analysis of project impacts impossible.[60]

The Draft EIR fails to provide an accurate environmental setting because it incorrectly states that the use of ABS, PVC and CPVC pipe "is currently allowed at all other facilities in California."[61] This is incorrect. California restricts the use of each of these materials in residential buildings as well. CPVC is allowed to be installed in residential occupancies only where specific worker health and safety, air quality and drinking water quality mitigation measures are followed (measures that are not being proposed by OSHPD).[62] ABS and PVC pipe is prohibited in residential occupancies greater than two stories in height.[63]

The Draft EIR also mischaracterizes the scope of ozone pollution throughout California. In its analysis at p. 4-17, the Draft EIR states that just "several areas in California are designated as nonattainment with respect to ozone." The Draft EIR's Table 4-3, however, shows that all but five (5) of California's 15 air basins are designated as nonattainment for Federal and/or California ambient air quality standards for ozone and two are designated as unclassified, *i.e.*, there is insufficient information available to make a determination of attainment.[64] By substantially understating the scope of ozone pollution in California, the Draft EIR misleads the public regarding the scope of the impacts that may result from increased use of CPVC, PVC and ABS primers and cements.

These errors in the description of the Project setting must be corrected in a revised EIR and the conclusions in the Draft EIR must be revised to take into account this corrected information.

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[58] CEQA Guidelines, § 15125, subd. (a).
[59] CEQA Guidelines, § 15125, subd. (c).
[60] *Galante Vineyards v. Monterey Peninsula Water Management District* (1997) 60 Cal.App.4th 1109, 1122.
[61] Draft EIR at p. 10-4.
[62] Cal. Code Regs., tit. 24, Part 6, §§ 604.1.1, 605.4.2, and Appendix I, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, §§ 1.2, 1.2.1, 1.2.2.
[63] Cal. Code Regs., tit. 24, Part 6, §§ 701.1, 903.1.1, 1101.3.1.
[64] Draft EIR p. 4-10, 4-11.

VII. INADEQUATE ANALYSIS OF POTENTIAL IMPACTS

A. The Draft EIR's Air Quality Analysis is Inadequate

1. Draft EIR's Evaluation of Air Quality Impacts is Conclusory and Lacks Evidentiary Support

The Draft EIR's analysis of the Project's impacts on air quality is inadequate, arbitrary and unsupported by any analysis or evidence. Sections of CPVC, PVC and ABS pipe are joined using fittings or connectors. The pipe is chemically fused to the fittings or connectors using a process called "solvent welding" or "cementing." This process uses chemicals—cleaners, primers and cement—which are applied to the end of the pipe and 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.

The cleaners, primers and cements used to join CPVC, PVC and ABS pipes contain high concentrations of solvents which evaporate during the transfer, drying, surface preparation, and cleanup, releasing volatile organic compounds ("VOCs") into the atmosphere during application. VOCs, together with nitrogen oxides ("NOx"), are the main reactants in the photochemistry that produces ozone in the troposphere,[65] also referred to as photochemical smog. Therefore, the proposed expanded approval of CPVC, PVC and ABS pipe for hospitals, nursing homes and other health care facility buildings under OSHPD's jurisdiction which will increase the use of CPVC, PVC and ABS cleaners, primers and cements statewide, will increase statewide emissions of VOCs. As a result, the expanded use of these adhesives may have direct and cumulatively significant impacts on air quality due to increased formation of ozone.

The Draft EIR states that VOC air quality emissions resulting from the installation of the proposed Project's new pipe materials could contribute to an exceedance of significance thresholds for a construction project when combined with other construction-related emissions (i.e., exhaust emissions). The Draft EIR, however, then claims that this contribution would be less than significant because it would represent a relatively small proportion of total construction-related VOC

[65] The troposphere is the lowest portion of Earth's atmosphere and contains roughly 75 percent of the mass of the atmosphere and 88 percent of its water vapor and aerosols. It extends from the earth's surface to about 4.3 miles at the poles and about 12 miles at the equator.

emissions.[66] The Draft EIR claims that because emissions from plumbing pipe installation at OSHPD 1, 2, 3 and 4 facilities would be extremely low compared to total construction emissions, they would not be expected to substantially increase overall construction emissions or to cause a construction project to exceed a significance threshold if it would not already be exceeded.[67]

The Draft EIR's claim that VOC emissions from plastic pipe installations in OSHPD occupancies are not expected to substantially increase overall construction emissions or to cause a construction project to exceed a significance threshold if it would not already be exceeded is conclusory and is not supported by any evidence or analysis. An agency's significance determinations must be supported by credible analysis and substantial evidence.[68] An EIR must contain "facts and analysis, not just the bare conclusions of a public agency."[69] By arbitrarily assuming less than significant impacts without any evidentiary support or analysis in order to meet a pre-determined outcome, the lead agency has engaged in precisely the sort of *post hoc* rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA.[70]

In addition to lacking any evidentiary support, the Draft EIR's claim that the VOC emissions from plumbing pipe installation would not be significant because they are just a small portion of overall construction emissions relies on an ratio approach that has been expressly rejected by the courts. The court in *Kings County Farm Bureau v. City of Hanford* held that this "drop in the bucket" approach was inconsistent with a meaningful analysis of air pollution impacts because air pollution was inherently an issue of thousands of relatively small sources of pollution causing a serious environmental health problem.[71] The court held that the issue for the lead agency to consider was not the relative amount of emissions, but rather "whether any additional amount of precursor emissions should be considered significant in light of the serious nature of the ozone problems in this air basin."[72]

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[66] Draft EIR at p. 4-17, 4-18.
[67] Draft EIR at p. 4-17, 4-18, 4-19, 4-20.
[68] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692.
[69] *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831.
[70] See, e.g., *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 394; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 307.
[71] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-721.
[72] *Id.* at 718.

Similarly, the issue for OSHPD to consider here is not relative scale of VOC emissions resulting from the installation of plumbing pipe when compared to construction emissions as a whole, but rather whether these additional emissions should be considered significant in light of the serious nature of the ozone problems throughout California.

2. The Draft EIR's Claim that the Project's Potential Impacts on Air Quality Can Only Be Analyzed Qualitatively Is Not Supported

Rather than basing its conclusions on actual facts and analysis, the Draft EIR claims that "because the Proposed Project would not be a direct action, the actual air quality impacts could not be modeled similar to site-specific development proposals."[73] The Draft EIR's assumption that the impact of indirect regulatory actions cannot be assessed similar to site-specific development proposals is conclusory and ignores the fact that the regulatory actions such as those proposed here are regularly modeled to determine their air quality impacts.[74]

For example, in her October 18, 2006 comments on the 2006 CPVC Draft EIR, Dr. Pless estimated potential VOC emissions that would have resulted if HCD had permitted the use of ABS and PVC DWV pipe in residential buildings more than two stories in height.[75] HCD's 2006 CPVC EIR also quantified the potential VOC emissions that could result from its proposed regulatory change.[76]

Local air districts also regularly provide quantitative analyses of the impacts on air quality of proposed regulations.[77] For example, in a comparable action to the Proposed Project, the South Coast Air Quality Management District ("SCAQMD") conducted CEQA review for the potential air quality impacts resulting from relaxing limits on the VOC content allowed in primers and sealers used to weld

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[73] Draft EIR at p. 4-14.
[74] See Pless Comments (2015).
[75] Pless, Comments on Proposed Adoption of Regulations Permitting Statewide Residential Use of Polyvinyl Chloride (PVC) and Acrylonitrile Butadiene Styrene (ABS) Plastic Drain, Waste and Vent (DWV) Pipe in Buildings More Than Two Stories in Height, October 18, 2006 (2006 Pless PVC/ABS Comments").
[76] Pless Comments 2015; 2006 CPVC RDEIR.
[77] Pless Comments 2015.

CPVC pipes under SCAQMD Rule 1168.[78] This action is very similar to the Proposed Project in that it involves a regulation that would increase VOC emissions from the use of plastic pipe solvents, increases that would occur during project construction from a large number of small sources spread throughout the district. Other examples include the CEQA Initial Study prepared by the Bay Area Air Quality Management District ("BAAQMD") for amendments to BAAQMD Regulation 8, Rule 3: Architectural Coatings,[79] or the SCAQMD's environmental assessment for the proposed fleet vehicle rules and related rule amendments.[80] A building code sets forth specific conditions for individual, but recurring activities. As such it is comparable to regulations issued by local air districts and their amendments.[81]

The Draft EIR also claims that it takes a qualitative approach to evaluating air quality impacts rather than a quantitative approach because the number of new and retrofit projects to install plastic pipe as a result of the proposed regulatory change would be impossible to estimate and speculative.[82] Even a qualitative analysis of impacts, however, must be based upon substantial evidence and credible analysis. Here, no substantial evidence or credible analysis is provided to support the Draft EIR's conclusions.

Moreover, a lead agency may not simply label the scope of a potential impact as speculative and then assume on that basis that it is less than significant.[83] If a precise analysis of an environmental impact is not practical, an agency must still

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[78] Final Subsequent Environmental Assessment for: Proposed Amended Rule 1168 – Adhesive and Sealant Applications, December 22, 2004, SCAQMD No. 041104JKK; http://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2005/final-subsequent-ea-for-proposed-amended-rule-1168.doc?sfvrsn=4.

[79] BAAQMD, Initial Study/Negative Declaration for the Amendments to Bay Area Air Quality Management District Regulation 8, Rule 3: Architectural Coatings, April 2009; http://www.baaqmd.gov/~/media/files/planning-and-research/public-hearings/2009/0803_july09_public_hearing/0803_ceqa_052109.pdf?la=en.

[80] SCAQMD, Final Program Environmental Assessment for: Proposed Fleet Vehicle Rules and Related Rule Amendments, June 5, 2000, SCAQMD No. 000307DWS; http://www.aqmd.gov/home/library/documents-support-material/lead-agency-scaqmd-projects/aqmd-projects---year-2000/proposed-fleet-vehicle-rules.

[81] Pless Comments 2015.

[82] Draft EIR at p. 4-14.

[83] *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App. 4th 342, 347; *Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1370.

make an effort to make a reasonable forecast.[84] When uncertain future events could lead to a range of possible outcomes, an EIR may base its analysis on a reasonable worst-case scenario.[85]

In the case at hand, the claim that the number of new and retrofit projects to install pipe as a result of the proposed regulatory change would be impossible to estimate is not supported by substantial evidence. To the contrary, OSHPD tracks all healthcare facility projects under its jurisdiction and is responsible for review and enforcement of its plans.[86]

Just because OSHPD has chosen not to review this information and estimate the number of projects that may result from this regulatory change does not mean that such an estimate is impossible or speculative. The Draft EIR should be revised to provide a reasonable worst-case scenario estimate of the number of new CPVC, PVC and ABS plumbing pipe installations that may result from the proposed regulatory change. The failure to provide such an estimate impedes full disclosure and evaluation of the potential impacts of this action.

By failing to model or estimate the increased emissions that may result from OSHPD's proposed regulatory change, the Draft EIR lacks substantial evidence to support a finding that these emissions would not be significant. CEQA places the burden of environmental investigation on the government rather than the public. As a result an agency is not allowed to "hide behind its own failure to gather relevant data."[87]

3. The Draft EIR's Claim that VOC Emissions due to Implementation of the Proposed Project Would Be Nominal and Would Result in Less-than-Significant Impacts on Air Quality Is Not Supported

While the Draft EIR acknowledges that the additional VOC emissions resulting from the installation of the plastic pipe materials could "conceivably" contribute to an exceedance of the applicable significance threshold for a

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[84] *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421, 432; see also *San Francisco Ecology Center v. City & County of San Francisco* (1975) 48 Cal.App.3d 584, 595.
[85] *Planning & Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, 244.
[86] See, e.g., OSHPD, Facility Status Search, http://www.oshpd.ca.gov/FDD/project_status/index.asp.; Pless Comments 2015.
[87] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.

construction project when combined with other construction-related emissions, it claims that off-gas VOC emissions from pipe installations would represent only a nominal proportion of total construction-related VOC emissions which are also emitted from architectural coatings, asphalt paving applications, and with exhaust emissions from construction equipment, delivery trucks, and construction worker vehicles.[88] Therefore, the Draft EIR concludes that because emissions from plumbing pipe installation at OSHPD 1, 2, 3 and 4 facilities would be extremely low compared to total construction emissions, they would not be expected to substantially increase overall construction emissions or to cause a construction project to exceed a significance threshold if it would not already be exceeded. Accordingly, the Draft EIR finds that VOC emissions associated with the Proposed Project would be less than significant.[89] The Draft EIR's claim with respect to the amount of VOCs that would be emitted is entirely conclusory and is not supported by any evidence or analysis.

Further, substantial evidence indicates that VOC emissions from the Project may have a significant direct and cumulative impact on ozone pollution in California. This evidence includes prior environmental reviews of similar plastic pipe proposals that have found that installing plastic pipe with primers and solvents would result in significant direct and cumulative VOC emissions. This evidence also includes the quantification of potential impacts from the Project contained in the attached comments of Dr. Pless.

(a) The 2006 CPVC EIR Analysis Provides Substantial Evidence that OSHPD's Approval of CPVC, PVC and ABS Pipe May Result in a Significant Contribution to Ozone Pollution in California

Readily available evidence that VOC emissions from the Project may have a significant direct and cumulative impact on ozone pollution in California includes the analysis and findings contained in HCD's 2006 CPVC EIR. The 2006 CPVC EIR quantified the additional VOC emissions that would result from HCD's proposed expanded approval of CPVC in residential occupancies and found that this expansion would result in significant impacts on ozone pollution due to VOC emissions from the increased use of CPVC primer and cement.[90] The 2006 CPVC

[88] Draft EIR pp. 4-17 and 4-18.
[89] Draft EIR pp. 4-17 through 4-20.
[90] 2006 CPVC RDEIR.

EIR imposed mitigation to reduce these significant impacts, including the use of low-VOC, one-step cements, yet found that HCD's approval of CPVC would still result in a significant and unavoidable impact even with the imposed mitigation.[91] This evidence was provided to OSHPD in the Coalition's previous comments to OSHPD, yet was neither disclosed nor evaluated in the Draft EIR.

Here, not only is OSHPD similarly proposing to allow the installation of CPVC in occupancies where it is currently prohibited, OSHPD is also proposing to allow installation of PVC or ABS DWV pipe. Because DWV pipe is larger in diameter, it requires significantly greater amounts of primer and cement to install, resulting in higher emissions.[92] In addition, unlike the HCD approval, OSHPD has not proposed the use of low-VOC, one-step cement, *i.e.* adhesives that do not require the use of primers, to minimize the amount of VOCs emitted during installation.[93] Accordingly, OSHPD's proposal will result in significantly more VOC emissions per project than the CPVC proposal.[94]

OSHPD projects will also result in significantly more VOC emissions because healthcare facilities are much more pipe intensive than residential buildings. For example, the recent 570,000 square feet, 150 bed, Kaiser Permanente Antioch Medical Center contains 29 miles of pipe.[95] If the entire plumbing system were plastic, substantial quantities of primer and cement would be required to join the pipes and would result in substantial VOC emissions. When combined with other VOC emissions from project construction, this would result in VOC emissions that would almost certainly exceed local air district thresholds for the individual project and would significantly increase any existing exceedance of air district thresholds.[96]

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[91] 2006 CPVC RDEIR.
[92] See IPS, Weld-On Guide to Solvent Cementing PVC and CPVC Plastic Pipe and Fittings, at p. 18, http://www.regalplastics.net/pdf/IPS_How_To_Guide.pdf.
[93] 2006 CPVC RDEIR. Even with the requirement to use low-VOC, one-step cements, the 2006 CPVC EIR found that VOC emissions may contribute substantially to an existing or projected air quality violation and may result in a cumulatively net increase of ozone in those areas that are designated as nonattainment under the applicable state or federal ambient air quality standards or in those areas where maintaining ozone attainment status is difficult.
[94] Pless Comments 2015.
[95] Kaiser Permanente, Press Release - Kaiser Permanente breaks ground on Antioch Medical Center (July 27, 2004), http://share.kaiserpermanente.org/article/kaiser-permanente-breaks-ground-on-antioch-medical-center/.
[96] Pless Comments 2015.

(b) An Analysis of VOC Emissions that Could Result From Plumbing an Individual Hospital Project with Plastic Pipe Demonstrates that Project VOC Emissions Are Significant

In her attached comments, air quality expert Dr. Petra Pless evaluates the VOC emissions that would have occurred had a recent hospital project been plumbed with CPVC and PVC pipe. Her analysis of these VOC emissions demonstrates that these emissions cannot reasonably be characterized as "nominal."[97]

IPS, a manufacturer of PVC, CPVC, and ABS solvent cements, primers, cleaners, and thread sealants, provides a guide for estimating the amount of primer and cement needed to plumb a project.[98] Using the guide, Dr. Pless estimates that a hospital the size of the 570,000 square feet, 150 bed, Kaiser Permanente Antioch Medical Center would have used around 10,291.1 liters of cement and primer if it had been plumbed with CPVC and PVC pipe.[99]

This estimate is the minimum amount that would be needed.[100] IPS cautions that their guide is based on their laboratory tests. Due to the many variables in the field, the actual amount of cement and primer needed would likely be much higher.[101] In addition, a solvent cleaner may also be used prior to applying the primer and cement, which would further increase VOC emissions from pipe installation.[102]

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[97] Pless Comments 2015.
[98] IPS, Weld-On Guide to Solvent Cementing PVC and CPVC Plastic Pipe and Fittings, at p. 18, http://www.regalplastics.net/pdf/IPS_How_To_Guide.pdf.
[99] Pless Comments 2015.
[100] Pless Comments 2015.
[101] IPS, Weld-On Guide to Solvent Cementing PVC and CPVC Plastic Pipe and Fittings, at p. 18, http://www.regalplastics.net/pdf/IPS_How_To_Guide.pdf.
[102] Pless Comments 2015. A pipe cleaner is a mixture of solvents used to clean any dirt or foreign materials on the surface of the pipe which could prevent the penetration of the cement into the pipe surface. The cleaner must be wiped off with a clean rag immediately. A primer is a mixture of solvents used to penetrate the pipe and fitting and start the swelling process ahead of the application of the solvent cement. It is not wiped off. The solvent cement is applied on top of the primer immediately while wet.

Eleven of California's air districts, including SCAQMD and BAAQMD, require cement to meet a 490 grams VOC per liter ("g VOC/L") standard and primers to meet a 650 g VOC/l standard.[103] Assuming compliance with these VOC limits, this would result in the Antioch project alone emitting 12,932 pounds ("lb") or 6.5 tons of VOCs just from plumbing activities.[104] If a project of this size took 150 work days to complete the plumbing work, this would average to an additional 86 pounds per day[105] ("lb/day") of VOC emissions, which by itself, would exceed the significance threshold for construction established by for example, the BAAQMD (54 lb/day),[106] Imperial County Air Quality Management District ("ICAPCD") (75 lb/day),[107] the Sacramento Metropolitan Air Quality Management District ("SMAQMD") (85 lb/day),[108] and the SCAQMD (75 lb/day).[109]

Even if it took as long as 600 work days to complete the plumbing work, emissions would average at 21.6 pounds a day, or between 25 and 40 percent of the above mentioned daily significance thresholds for construction.[110] Contrary to the assumption in the Draft EIR, this is not a nominal contribution to the overall construction emissions of a project. When combined with other VOC emissions from project construction, this would result in VOC emissions that would almost certainly exceed local air district construction significance thresholds for the individual project and would significantly increase any existing exceedance.[111]

Furthermore, significantly larger projects than the Antioch hospital are likely to be built under these regulations in the future. For example, a hospital project consisting of 2.7 million square feet and 865 patient beds is being constructed in

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[103] Draft EIR p. 4-9, Table 4-2.
[104] Pless Comments 2015. (5,145.5 L cement × 490 g VOC/L) + (5,145.5 L cement × 650 g VOC/L) / (453.6 g/lb) = **12,932.2 lb VOC; (**12,932.2 lb VOC) /(2000 lb/ton) = **6.5 ton VOC.**
[105] Pless Comments 2015. (12,932.2 lb VOC) / (150 work days) **= 86.2 lb VOC/day.**
[106] BAAQMD, Proposed Air Quality CEQA Thresholds of Significance, May 3, 2010; http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/summary_table_proposed_baaqmd_ceqa_thresholds_may_3_2010.pdf?la=en.
[107] ICAPCD, CEQA Air Quality Handbook, Guidelines for the Implementation of the California Environmental Quality Act of 1970, as amended November 2007; http://www.co.imperial.ca.us/AirPollution/Forms_Docs/CEQA/HandbkNov2007.pdf.
[108] SMAQMD Thresholds of Significance Table, May 2015; http://www.airquality.org/ceqa/CH2ThresholdsTables5-2015.pdf.
[109] SCAQMD Air Quality Significance Thresholds, March 2015; http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.
[110] Pless Comments 2015. (12,932.2 lb VOC) / (600 work days) **= 21.6 lb VOC/day.**
[111] Pless Comments 2015.

Dallas.[112] The California Pacific Medical Center ("CPMC") project in San Francisco includes a 274-bed, 12-story, 740,000-square-foot hospital for the women's, children's, cardiology, oncology, emergency care and transplant departments and an adjacent 253,000-square foot, 9-story medical office building at the Van Ness and Geary Campus; a 120-bed, 215,000-square foot acute health care hospital at the St. Luke's campus; and a new medical office building at the Davies Campus.[113] These projects would likely have four to five times the VOC emissions of a project the size of the Antioch project.[114]

Moreover, multiple other OSHPD projects would likely be piped or re-piped concurrently in the same air district, resulting in cumulatively significant emissions.[115]

4. Local Air District Regulations of Plastic Pipe Solvents and Cements Do Not Reduce the Proposed Project's Impacts below a Level of Significance

The Draft EIR cites local air district rules and regulations for plastic pipe cements and primers as another reason why the Project's impact on air quality will be less than significant.[116] The reliance on local air district VOC limits for cements and primers to reduce air quality impacts below a level of significance is speculative and lacks evidentiary support. Moreover, this claim contradicts the Draft EIR's earlier acknowledgement that these emissions may affect regional air quality even with compliance with local VOC limits for cements and primers.[117] The Draft EIR fails to explain this contradiction other than to again blindly assert that overall construction emissions would be much greater than emissions from pipe installation.

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[112] Kristin D. Zeit, Hard Hat Tour of the Largest Healthcare Construction Project in the U.S., Healthcare Design Magazine, August 13, 2013; http://www.healthcaredesignmagazine.com/blogs/kristin-zeit/hard-hat-tour-largest-healthcare-construction-project-us.
[113] Sutter Health, CPMC, Overview; http://vng.cpmc2020.org/overview.
[114] Pless Comments 2015.
[115] Pless Comments 2015.
[116] Draft EIR, p. 4-17.
[117] Draft EIR at p. 4-17.

In any case, the Draft EIR fails to cite any evidence that air district VOC limits are sufficient to reduce the Project's air quality impacts to below a level of significance. Air district VOC limits are set based upon feasibility and are an attempt to reduce impacts from use of these products, not eliminate impacts altogether.[118] VOC limits of 490 g VOC/L for cement and 650 g VOC/L for primers were already widely adopted by California air districts at the time of HCD's 2006 review of their proposed expanded approval of CPVC pipe in residential occupancies.[119] HCD found that, even with these limits, emissions were still significant, enough to require the imposition of additional mitigation measures, and, even with the imposition of the additional mitigation, emissions would remain significant.[120]

The HCD finding is consistent with the finding discussed above that VOC emissions would be substantial even with the use of primer and cement that complied with District adhesive rules regarding maximum VOC emissions. The comments of Dr. Pless demonstrate that the use of plastic pipe primer and cement may significantly increase the overall VOC emissions of a construction project even if the primers and cements meet air district rules and regulations for VOC emissions.[121] For very large projects, emissions from the plastic pipe primer and cement may exceed thresholds of significance even without taking into consideration other construction VOC emissions. For smaller projects, emissions may cause, or significantly add to, the exceedance of VOC thresholds for construction projects.

Furthermore, not all districts set VOC limits for plastic pipe cements and solvents. Accordingly, an adequate analysis must also evaluate VOC emissions in air districts that do not set minimum VOC standards for these products.

5. The Draft EIR's Reliance on Proper Application Practices Is Speculative and Lacks Evidentiary Support

The Draft EIR cites compliance with "proper application practices (e.g., closing containers when not in use)" as a reason why the Project's impact on air quality will be less than significant.[122] The Draft EIR's reliance on compliance with

[118] Pless Comments 2015.
[119] Pless Comments 2015.
[120] 2006 CPVC RDEIR.
[121] Pless Comments 2015.
[122] Draft EIR at p. 4-17.

"proper application practices" is also speculative. The Draft EIR fails to provide any evidence that CPVC, PVC and ABS plumbing pipe installation emit less than significant levels of VOCs when "proper application practices" are followed.

As discussed above, VOC emissions from application of these products would be significant even based solely on the usage predicted by the IPS vendor guide for determining the quantity of cement per joint.[123] This guide estimates cement and primer usage based upon usage rates in controlled laboratory conditions.[124] It does not take into account common and widely encouraged over-application practices, product loss from failing to keep containers covered when not in use, accidental spills, or the significantly increased emission rates that occur during hot or windy days.[125]

Furthermore, the Draft EIR's assumption that "proper application practices" will be followed is not supported by substantial evidence. Plumbers and inspectors report that ideal application practices are rarely followed in real world applications.[126] For this reason, these vendor calculators are widely known to substantially underestimate cement and primer usage in actual field conditions.[127] Vendors also caution that their usage estimates are guides only and actual usage could be higher, depending upon application practices. IPS, for example, warns that "[t]hese figures are estimates based on our laboratory tests. Due to the many variables in the field, these figures should be used as a general guide only."[128]

In her comments, Dr. Pless has identified a number of critical differences between laboratory and field application of primers and cements that substantially increases field usage.

First, in the field, over-application of cement and primer is the rule, not the exception.[129] A certified plumbing inspector explains: "Plumbers almost always use

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[123] Pless Comments 2015.
[124] IPS, Weld-On Guide to Solvent Cementing PVC and CPVC Plastic Pipe and Fittings, at p. 18, http://www.regalplastics.net/pdf/IPS_How_To_Guide.pdf.
[125] Pless Comments 2015; Dr. Fox Comments (April 22, 2005); Declaration of John Hall; Calone Declaration.
[126] Pless Comments 2015; Pless 2006 CPVC Comments; Declaration of John Hall; Calone Declaration.
[127] Pless Comments 2015; Declaration of John Hall; Calone Declaration.
[128] IPS, Weld-On Guide to Solvent Cementing PVC and CPVC Plastic Pipe and Fittings, at p. 18, http://www.regalplastics.net/pdf/IPS_How_To_Guide.pdf.
[129] Pless Comments 2015.

more cement, primer and solvent than suggested by manufacturers when installing [plastic plumbing] pipe. This is because it is expedient (there is no bonus for saving and there is a large penalty for leaks)."[130] Joints are not tested until the complete system is assembled and pressure tested. Once a system is assembled, it is very difficult to isolate leaks and very expensive to repair them, particularly if they occur after a unit is occupied. Further, it is well known that the most common cause of joint failures is failure to apply adequate amounts of cement.[131] Therefore, applicators routinely apply excess primer and cement to assure good seals because there is no penalty for excess applications.[132]

Moreover, this over-application of cement and primer is, in fact, considered by industry to be consistent with proper application process.[133] The Thermoplastic Piping Technical Manual cautions: "The PVC and CPVC solvent cement usage estimates… should only be considered as guideline. Actual usage could vary according to a wide variety of installation conditions… *these estimates should in no way be used to restrict the liberal instructions in the Six Step Application Techniques*…" (emphasis retained). Plumbing codes, plumbing manuals, and vendors recommend applying "liberal" and "heavy" amounts.[134] These terms mean different things to different people and can result in substantial over applications compared to the amounts assumed in the vendor calculations.[135] Further, due to ease of installation compared to copper pipe soldering, PVC and ABS are often installed by less skilled labor, resulting in more frequent incidence of improper workmanship and excessive application.[136]

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[130] Dr. Fox Comments (April 22, 2005).
[131] Pless Comments 2015.
[132] Pless Comments 2015.
[133] Pless Comments 2015.
[134] Pless Comments 2015. The Plastic Pipe and Fittings Association's *Plumber's Installation Handbook* recommends applying a "heavy" coat of cement. (Plastic Pipe and Fittings Association, Plumber's Installation Handbook, August 2003, p. 6; http://www.scribd.com/doc/184354527/PLUMBERS-INSTALLATION-HANDBOOK-pdf#scribd.) Harrington's *Engineering Handbook for Industrial Plastic Piping Systems* (Harrington Industrial Plastics, Inc., p. 80; http://www.hipco.com/Downloads/ENGINEER.PDF) recommends applying a "liberal coat of solvent cement." Ace Hardware recommends: "[l]iberally apply cement first to the pipe end..." (Ace Hardware, Working with Plastic Pipe; http://www.acehardware.com/info/index.jsp?categoryId=1280920.)
[135] Pless Comments 2015.
[136] Pless Comments 2015.

Second, high temperatures and winds can increase the amount of material required per joint.[137] The laboratory is a controlled environment with ideal joining conditions. The temperature is usually around 70 F. Field temperatures can range from subzero to 110 F in desert portions of California where most of the new residential construction is occurring. Pipes are often stored outdoors in the hot sun and assembled at elevated temperatures. Extreme ambient temperatures and other conditions (*e.g.*, winds, rain, snow) make it difficult to control application when it occurs in unprotected areas. Further, high temperatures and weather conditions, such as those that occur during the peak construction period throughout much of California where rapid growth is occurring (*e.g.*, Mojave Desert, Central Valley, South Coast), substantially increase losses from volatilization and hence usage per joint compared to laboratory conditions.[138]

Third, in the field, there is always pressure to perform work quickly to minimize labor costs. Therefore, the time is virtually never taken to carefully replace the lids on the primer and cement cans between application to joints, as practiced in the lab and instructed on the cans.[139] This increases the volatilization loss per joint. Field observations indicate that the cans are typically left half open, with the dauber off to one side. More care is taken with the cement because solvent evaporation thickens the cement, but even in this case, the lid is virtually never screwed on.[140]

Fourth, accidental spills occur in the field that do not occur in the laboratory.[141] An industrial hygiene survey found that in 14 out of 280 15-minute exposure periods, or 5 percent of those monitored, small spills covering less than about 3 square feet were observed. Some workers also applied primers and cements so liberally that they also covered their clothes, the pipes, and nearby surfaces with drips and small splashes.[142]

Finally, there is no regulatory limit on the quantity of adhesives that can be used per joint or per unit.[143] Thus, there is no basis to assume that no more product than indicated in vendor usage estimates would be used.

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[137] Pless Comments 2015.
[138] Pless Comments 2015.
[139] Pless Comments 2015.
[140] Dr. Fox Comments (April 22, 2005).
[141] Pless Comments 2015.
[142] *Id.*
[143] Pless Comments 2015.

All of these factors would increase the release of VOCs, compared to the vendor usage data that Dr. Pless relies upon in her attached comments.[144] Thus, the potential VOC emissions from the project and the resulting significance of air quality impacts would be even greater than Dr. Pless's estimate. An adequate review of the Project's potential VOC emissions must consider how the usage of these solvents under actual field conditions may significantly increase the actual Project VOC emissions. Simply assuming "proper application practices" will substantially underestimate actual Project impacts.

6. Increased VOC Emissions Due to Implementation of the Proposed Project May Cause or Contribute to Violations of State and Federal Ambient Air Quality Standards for Ozone

In the atmosphere, VOCs – in the presence of sunlight and NOx – may be converted into secondary pollutants, specifically ozone and fine particulate matter, causing or contributing to violations of ambient air quality standards and attendant health effects. VOCs and NOx are emitted by a variety of sources, including cars, trucks, diesel engines, industrial facilities, and petroleum-based solvents. Emissions of VOCs in one area do not necessarily result in significant impacts in the same area, but yet can cause or contribute to ozone impacts in areas downwind where they react with NOx. Thus, ozone and its precursors, VOCs and NOx, must be evaluated on both a project-level, local and regional basis and on a cumulative basis. It is not reasonable to conclude that minor VOC emissions in one region are not significant without considering their cumulative effect.[145]

The U.S. Environmental Protection Agency ("EPA") and California have set ambient air quality standards for ozone to protect public health and welfare. These ozone standards are frequently exceeded throughout much of the state. EPA has designated 42 counties (or portions thereof) in California as nonattainment for the federal 8-hour ozone standard.[146] The California Air Resources Board ("CARB") has designated much of California as nonattainment for the State 8-hour ozone standard. For the state 1-hour ozone standard, the entire South Coast Air Basin and portions of the Salton Sea Air Basin and the Mojave Desert Air Basin are

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[144] Pless Comments 2015.
[145] Pless Comments 2015.
[146] EPA, Current Nonattainment Counties for All Criteria Pollutants, October 1, 2015; http://www3.epa.gov/airquality/greenbook/ancl.html.

designated as extreme nonattainment; the entire San Joaquin Valley Air Basin and a portion of the South Central Coast Air Basin are designated as severe non-attainment; and the entire Bay Area Air Basin and portions of the Sacramento Valley Air Basin are designated as serious non-attainment. [147] Any increase in ozone in an area that already significantly exceeds ozone ambient air quality standards should be considered significant.[148]

Ozone monitoring data indicates that the highest concentrations of ozone occur throughout the State during July to September,[149] which coincides with the peak construction period. Thus, the highest VOC emissions from the Project will occur when the ambient air quality is already severely impacted. The future increases in VOC emissions from solvents contained in cleaners, primers and cements that would be permitted by OSHPD's proposed regulations for the expanded approval of CPVC, PVC and ABS DWV pipe will contribute to ozone formation in the atmosphere. The resulting increase in ozone concentrations may cause or contribute to existing violations of state and federal ambient air quality standards throughout much of California. Thus, the increases in ozone precursor emissions in the South Coast Air Basin, the San Joaquin Valley Air Basin and other areas that currently violate ambient air quality standards for ozone will be potentially significant on a project-level and cumulative basis.[150]

7. Increased Ozone Levels due to Implementation of the Proposed Project Would Contribute to Adverse Health Effects

Ozone, the principal element of smog, is the most pervasive of all the regulated criteria air pollutants and a major source of respiratory illness in California.[151] In proposing a new rulemaking limiting emissions of NOx and particulate matter from certain diesel engines, EPA summarized the effects of ozone on public health:

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[147] *See*, California Air Resources Board, 2013 Area Designations for State Ambient Air Quality Standards, Ozone, June 2013; http://www.arb.ca.gov/desig/adm/2013/state_o3.pdf.
[148] Pless Comments 2015.
[149] California Air Resources Board, Review of the California Ambient Air Quality Standard for Ozone, Staff Report, Initial Statement of Reasons for Proposed Rulemaking, March 11, 2005, p. 1-3 and Chapter 7, Figures 7-4, 7-5; http://www.arb.ca.gov/research/aaqs/ozone-rs/ozone-final/ozone-final.htm.
[150] Pless Comments 2015.
[151] Pless Comments 2015.

> "A large body of evidence shows that ozone can cause harmful respiratory effects, including chest pain, coughing and shortness of breath, which affect people with compromised respiratory systems most severely. When inhaled, ozone can cause acute respiratory problems; aggravate asthma; cause significant temporary decreases in lung function of 15 to over 20 percent in some healthy adults; cause inflammation of lung tissue, produce changes in lung tissue and structure; may increase hospital admissions and emergency room visits; and impair the body's immune system defenses, making people more susceptible to respiratory illnesses."[152]

Similarly, CARB concluded in a rulemaking aimed at reducing VOC emissions from similar products:

> "While we cannot accurately assess potential risk reduction due to reducing VOC and PM [particulate matter] emission, it has long been known that exposure to ground level ozone and PM has adverse impacts on public health. Research has shown that, when inhaled, ozone and PM can cause respiratory problems, aggravate asthma, and impair the immune system. Any reduction in PM or ozone precursors, namely VOCs, results in improving health in California."[153]

Moreover, ozone is not an equal opportunity pollutant, striking hardest the most vulnerable segments of our population: children, the elderly, and people with respiratory ailments. Children are at greater risk because their lung capacity is still developing, because they spend significantly more time outdoors than adults, especially in the summertime when ozone levels are the highest and most of the construction activity occurs, and because they are generally engaged in relatively intense physical activity that causes them to breathe more ozone pollution.[154]

Ozone pollution has severe impacts on millions of Americans with asthma. While it is as yet unclear whether smog actually causes asthma, there is no doubt

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[152] 66 Fed. Reg. at 5002, 5012, Jan. 18, 2001.
[153] CARB, Initial Statement of Reasons for Proposed Amendments to the California Aerosol Coating Products, Antiperspirants and Deodorants, and Consumer Products Regulations, Test Method 310, and Airborne Toxic Control Measures for Para-dichlorobenzene Solid Air Fresheners and Toilet/Urinal Care Products, Volume I: Executive Summary, 2004, p. 24.
[154] Pless Comments 2015.

that it exacerbates the condition.[155] Moreover, as EPA observes, the impacts of ozone on "asthmatics are of special concern particularly in light of the growing asthma problem in the United States and the increased rates of asthma-related mortality and hospitalizations, especially in children in general and black children in particular."[156] To improve public health protection, particularly for at-risk groups including children, older adults, people of all ages who have lung diseases such as asthma, and people who are active outdoors, especially outdoor workers, EPA recently lowered the federal 8-hour ambient air quality standard for ozone to 70 parts per billion ("ppb"),[157] matching California's ambient air quality standard.[158]

The health and societal costs of asthma are wreaking havoc in California with about 3 million Californians suffering from this disease. In 2010 alone, 34,796 residents required hospitalization because their asthma attacks were so severe.[159] Shockingly, asthma is now the leading cause of hospital admissions of young children in California.[160] In 2009, there were 415 deaths due to asthma, or a rate of 11 per million residents; these deaths corresponded to 7,038 years of potential life lost or 17 years lost per person. Combined with very real human suffering is the enormous financial drain associated with asthma hospitalizations on the State's health care system. The most recent data indicate that the statewide financial cost of these hospitalizations was over $1 billion in 2010 with Medicare and Medi-Cal covering 65% of asthma hospitalizations and 50% of asthma emergency department visits in 2010.[161]

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[155] *See* 66 Fed. Reg. at 5002, 5012, January 18, 2001. (U.S. EPA points to "strong and convincing evidence that exposure to ozone is associated with exacerbation of asthma-related symptoms".)
[156] 62 Fed. Reg. at 38864.
[157] EPA, EPA Strengthens the Air Quality Standards for Ground-Level Ozone, October 1, 2015; http://www3.epa.gov/ozonepollution/actions.html#current.
[158] CARB, Ambient Air Quality Standards, October 1, 2015; http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.
[159] California Department of Public Health, Asthma in California, A Surveillance Report, May 2013, pp. 3-7; https://www.cdph.ca.gov/programs/ohsep/Documents/Asthma_in_California2013.pdf.
[160] National Resources Defense Council, Public Health And Environmental Coalition Sues EPA For Allowing Corporate Agriculture In California To Evade Clean Air Act; http://www.nrdc.org/media/pressReleases/020204.asp.
[161] California Department of Public Health, Asthma in California, A Surveillance Report, May 2013, pp. 3-7; https://www.cdph.ca.gov/programs/ohsep/Documents/Asthma_in_California2013.pdf.

8. The Project's Air Quality Emissions Must Be Evaluated Cumulatively with the Current and Likely Future Scope of CPVC, PVC and ABS Approval in the California Plumbing Code

The Draft EIR is further deficient because it fails to evaluate the potential emissions from plastic pipe installation in healthcare facilities when combined with related past, present and reasonably anticipated future projects. A complete assessment of the Project's air quality impacts must also include an evaluation of the significance of the potential emissions from plastic pipe installation in healthcare facilities when combined with related past, present and reasonably anticipated future projects.

In particular, the Project's emissions must be looked at in conjunction with the emissions from the California Plumbing Code's current limited approval of CPVC, PVC and ABS pipe in other occupancies, such as residential buildings. To look at emissions just from one type of occupancy would piecemeal the overall impact of plastic pipe approval in the California Plumbing Code, minimizing disclosure of actual harm. Such piecemealing violates the intent of CEQA.

Because OSHPD's proposed regulations further expand the approved use of CPVC, PVC and ABS pipe in the California Plumbing Code, they will further exacerbate what the 2006 CPVC EIR already found to be a significant adverse impact on the environment.[162] Moreover, VOCs from PVC and ABS DWV pipe will be significantly greater than from CPVC water pipe, because drain, waste and vent pipes are significantly larger in diameter than water pipes and thus require substantially more solvent and cement to install.[163]

In addition, the Draft EIR must take into account the cumulative impact from likely related future projects. At the September 9, 2015 Plumbing, Electrical, Mechanical and Energy ("PEME") Code Advisory Committee meeting, representatives of HCD stated on the record that if OSHPD lifted its restriction on PVC and ABS pipe in hospitals and health care facilities, then HCD would likely lift its restriction on the use of PVC and ABS pipe in residential occupancies greater

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[162] 2006 CPVC RDEIR.
[163] IPS, Weld-On Guide to Solvent Cementing PVC and CPVC Plastic Pipe and Fittings, at p. 18, http://www.regalplastics.net/pdf/IPS_How_To_Guide.pdf.

than two stories. Dr. Pless previously evaluated the potential air quality impacts if HCD lifted its restrictions on the use of PVC and ABS pipe and found that it would result in significant increased emissions of VOCs.[164] Given these findings, the combined VOC emissions from lifting both the OSHPD restrictions and the HCD restrictions on ABS and PVC pipe would certainly be significant.[165]

By expanding the universe of buildings that may install CPVC, PVC and ABS pipe, the Project is cumulatively increasing the amount of CPVC, PVC and ABS pipe installed in California on a daily basis and therefore the amount of VOCs emitted associated with the use of solvents and adhesives. An adequate EIR must model and meaningfully evaluate these cumulative impacts and identify appropriate alternatives or mitigation measures.

9. The Draft EIR's Evaluation of VOC Emissions from Increased Manufacturing of CPVC, PVC and ABS Pipe and Solvents Fails to Comply With CEQA

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.[166]

CEQA requires that both primary or direct and secondary or indirect consequences of a project be evaluated.[167] 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.[168] 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

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[164] Pless, Comments on Proposed Adoption of Regulations Permitting Statewide Residential Use of Polyvinyl Chloride (PVC) and Acrylonitrile Butadene Styrene (ABS) Plastic Drain, Waste and Vent (DWV) Pipe In Buildings More Than Two Stories in Height (October 18, 2006).
[165] Pless Comments 2015.
[166] *Kings Co. Farm Bureau v. Hanford* (1990) 221 Cal.App.3d 692 at 717; CEQA Guidelines, § 15064, subd. (d) & Appendix G.
[167] CEQA Guidelines, § 15064, subd. (d).
[168] *Building Code Action v. Energy Resources Conservation and Development Comm*. (1980) 102 Cal.App.3d 577.

from glass factories. The court held that CEQA review was required to analyze this impact.

Here, 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.[169] 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. When evaluated in conjunction with VOC emissions from the installation of CPVC, PVC and ABS pipe, these emissions may result in potentially significant impacts.[170]

Rather than evaluating the additional emissions from manufacturing, the Draft EIR incorrectly assumes that:

> [A]any change in emissions associated with manufacturing in California would be regulated by local air district permitting requirements to avoid generating emissions that substantially would impede the region's ability to meet air quality standards. Therefore, the impact would be less than significant.[171]

This conclusion is speculative and lacks evidentiary support.

While increases beyond currently permitted parameters would require permit modifications, increases within permitted parameters would not be regulated by the air district.[172] The assumption that increases within permitted parameters would not significantly increase emissions is not supported by any evidence or analysis. To the contrary, the courts have expressly recognized that increases in air pollution induced by an agency action can contribute to significant impacts even when the increase is within the parameters of an existing permit.[173]

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[169] Pless Comments 2015; 2006 Pless PVC/ABS Comments, p. 15.
[170] Pless Comments 2015.
[171] Draft EIR p. 4-16.
[172] Pless Comments 2015.
[173] *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310.

Moreover, if a permit increase is required, the air district may approve permit increases that would cumulative contribute to air pollution levels.[174] Permit requirements in air districts that are in nonattainment for ozone pollution are based upon Best Available Control Technology ("BACT") and Reasonably Available Control Technology ("RACT").[175] As long as a facility meets BACT and RACT, it may be entitled to a permit even if its emissions after BACT and RACT would still make a considerable cumulative contribution to air pollution levels.[176]

The Draft EIR's claim that the location (*i.e.*, air basin) in which an increase in production and associated emissions would occur is unknown is also incorrect. The location of PVC, CPVC and ABS manufacturers are readily available via a number of public databases.[177] Potential air quality impacts from increased manufacturing of PVC, CPVC and ABS should be calculated and evaluated in a revised Draft EIR.

Finally, the Draft EIR's assumption that the additional VOC emissions from manufacturing activities would be nominal is not supported by any evidence or analysis.

B. Fire Hazard Impacts

Substantial evidence exists that the expanded use of ABS plastic pipe for DWV pipe may increase the risk of fires in multi-story buildings.[178] The fire

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[174] Pless Comments 2015.
[175] *See* CARB, Reasonably Available Control Technology (RACT), Best Available Retrofit Control Technology (BARCT), April 21, 2010; http://www.arb.ca.gov/ractbarc/ractbarc.htm.
[176] Pless Comments 2015; *See* CARB, Consumer Products Enforcement, June 6, 2012; http://www.arb.ca.gov/enf/consprod.htm.
[177] *See*, *e.g.*, ThomasNet.com, CPVC Pipe Suppliers; http://www.thomasnet.com/nsearch.html?cov=NA&which=prod&what=CPVC+Pipe+&heading=58380007.
[178] See. e.g., McMullen, Analysis and Opinions on the OSHPD's Proposed Changes to Sections 604.1 & 701.1.2.1 of the California Plumbing Code (October 12, 2015) ("McMullen Comments (2015)"); Reid Comments (Oct. 18, 2006); Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000); KBS, Specifier's Handbook; Joe Thornton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002); Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11; 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); Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009) http://www.fireengineering.com/articles/print/volume-162/issue-8/features/toxicology-of-smoke-inhalation.html; Richard Gann, et al., NIST Technical Note 1439, U.S. Department of Commerce,

hazards associated with CPVC, PVC and ABS pipe include increased risk of fire spread and increased risk from toxic smoke or gas. For this reason, many jurisdictions restrict the use of PVC and ABS pipe in certain occupancies. In addition to the current prohibition on CPVC, PVC and ABS pipe in California healthcare facilities, California also prohibits the installation of PVC or ABS DWV pipe in high rise residential facilities. Other jurisdictions have similar restrictions. In British Columbia, the building code prohibits the use of ABS pipe in all noncombustible buildings and prohibits the use of ABS or PVC pipes in noncombustible high rise buildings.[179]

The Draft EIR, however, declines to evaluate the risk of fire spread and provides only a cursory evaluation of toxic smoke and gas impacts. The Draft EIR's conclusion that switching from non-combustible metal plumbing pipe to plastic CPVC, PVC and ABS pipe would not increase fire hazard risks is not supported by substantial evidence.

1. The Draft EIR Improperly Declines to Evaluate the Project's Contribution to Increased Fire Spread Risks

The Draft EIR declines to evaluate the potential for CPVC, PVC or ABS pipe to increase the risk of fire and smoke spread despite the fact that the Notice of Preparation for the Project EIR states that this topic will be evaluated.[180] The Draft EIR justifies failing to investigate and evaluate this issue based on its assumption that risk of fire and smoke spread from the CPVC, PVC or ABS pipe

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"International Study of the Sublethal Effects of Fire Smoke on Survivability and Health (SEFS): Phase I Final Report (August, 2001) at p. 110; Captain Rick Rochford, Hydrogen Cyanide: New Concerns For Firefighting and Medical Tactics, Fire Engineering (June 29, 2009) http://www.fireengineering.com/articles/2009/06/hydrogen-cyanide-new-concerns-for-firefighting-and-medical-tactics.html; Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012) http://www.firefighternation.com/article/firefighter-safety-and-health/carbon-monoxide-hydrogen-cyanide-make-today-s-fires-more-dangerous; Naki Ocran, GHL Consultants Newsletter (April 2014), citing BC Building Code 2012, § 3.1.5.16.(1), COMBUSTIBLE PIPING MATERIALS http://www.ghl.ca/shared/Mar_2014_CombustiblePipingMaterials.pdf.

[179] Naki Ocran, GHL Consultants Newsletter (April 2014), citing BC Building Code 2012, § 3.1.5.16.(1), COMBUSTIBLE PIPING MATERIALS http://www.ghl.ca/shared/Mar_2014_CombustiblePipingMaterials.pdf; see also Excerpts from Canadian National Building Code, National Research Council of Canada, Institute for Research in Construction, http://www.firestop.com/education/nbc.pdf.

[180] Draft EIR at p. 3-4; see also Notice of Preparation at p. B-31.

installation "would not be substantially different from similar potential impacts arising from existing metal piping at OSHPD facilities."[181] This assumption is speculative and not supported by any substantial evidence or credible analysis.

The claim that CPVC, PVC and ABS pipe do not impact fire and smoke spread any different from existing metal pipe is inherently absurd and is not supported by the facts. Unlike metal pipes, plastic pipes melt and burn. PVC melts at just 167°F (75°C), ABS at 190°F (88°C).[182] Copper melts at 1976°F (1080°C) and Cast Iron melts at 2200°F (1200°C).[183] Accordingly, CPVC, PVC and ABS pipes are more likely to rupture in a fire than metal pipes.

The plumbing systems of greatest concern for fire spread are, by far, those for DWV systems.[184] DWV pipes are large in diameter, hollow and combustible.[185] If constructed out of plastic pipe that easily melts or ignites, these pipes can create large openings between rooms, creating a pathway for smoke, hot gases and fire to spread through a building.[186] Furthermore, because DWV pipe is vented to the outside air, is large in diameter and is hollow, when plastic DWV pipe melts or ruptures, it creates a direct pathway for outside air to feed oxygen to a small fire within a confined space.[187] These risks do not occur with metal pipe.

Firestopping requirements are not sufficient to reduce the increased risk of fire spread posed by plastic pipe below a level of significance.[188] Firestopping is not 100% reliable.[189] The ICC Building Safety Journal warns that "there is quite a lengthy list of items which can result in problems with the installation of firestopping materials."[190] The ICC International Building Code Commentaries

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[181] Draft EIR at p. 3-4.
[182] See Tony Cafe, Physical Constants for Investigators, TC Forensic (Reproduced from "Firepoint" magazine - Journal of Australian Fire Investigators), http://www.tcforensic.com.au/docs/article10.html (temperatures in Celsius in article).
[183] *Id.*
[184] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 15; see also KBS, Specifier's Handbook.
[185] KBS, Specifier's Handbook.
[186] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 16.
[187] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 16; see also KBS, Specifier's Handbook.
[188] McMullen Comments (2015).
[189] McMullen Comments (2015).
[190] Eirene Oliphant, Common Firestop Code Violations, ICC Building Safety Journal Online (June 18, 2010) http://bsj.iccsafe.org/june/features/firestop.html)

notes that improper installation of firestopping has been attributed as the cause of fire damage and loss of life in building fires.[191] A report by fire engineer Thomas J. Klem and Massachusetts Institute of Technology professor of engineering Dr. Thomas Eagar found a significant level of non-compliance with regard to plastic pipe fire stop penetrations and that improper installation is a problem noted by manufacturers of these assemblies.[192] Accordingly, it is not unusual for firestopping to be incorrectly applied.[193]

In addition, firestopping is difficult to inspect to ensure correct installation.[194] An outer surface that appears *Code*-compliant to an inspector may mask hidden gaps or voids resulting in an improper or incomplete installation.[195]

Because firestopping systems in buildings often have significant problems and are not 100% reliable, forensic fire safety expert Jim McMullen concludes that the introduction of plastic piping into occupancies increases fire hazard risks compared to the use of non-flammable metal piping.[196]

Even where firestopping material is correctly applied, the use of CPVC, PVC or ABS pipe may have cumulative impacts on the spread of fire. It is extremely rare for a fire resistive assembly to be built exactly as it is found in generic form as described in the tables of the model building codes.[197] Such assemblies will have other piping present and/or electrical components and possibly insulation and other components for data transmission.[198] The CPVC, PVC or ABS pipe increases the fire load and may have a cumulative effect with these other components that may impact the performance of these walls if a serious fire occurs.[199]

Firestopping also does not prevent the spread of fire within a room. The speed of fire spread within a room is particularly a concern in nursing homes and

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[191] ICC, International Building Code Commentaries (2009) Chapter 7, commentary on § 713.3.1.2, http://publicecodes.cyberregs.com/icod/ibc/2009f2cc/icod_ibc_2009f2cc_7_par177.htm.
[192] Klem, et al, Safety of Firewall Penetrations in High-Rise Building (2004).
[193] McMullen Comments (2015).
[194] McMullen Comments (2015).
[195] Wayne Moore, Fire Stopping: What Every Contractor Needs to Know, Electrical Contractor (May 2005), http://www.ecmag.com/print/section/codes-standards/fire-stopping-what-every-contractor-needs-know
[196] McMullen Comments (2015).
[197] Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) at p. 28.
[198] *Id.* at pp. 28-29.
[199] *Id.* at p. 29.

hospitals with non-ambulatory patients or residents.[200] ABS pipe poses a particularly acute risk of rapid fire spread, both within a room and between rooms. ABS is significantly more flammable than any other plumbing pipe on the market and has been said to burn like a fuse.[201]

Because substantial evidence exists that the installation of ABS DWV pipe increases fire spread risks even with current firestopping requirements, the Draft EIR violated CEQA by declining to investigate and evaluate this impact. This failure puts the health and safety of firefighters and building occupants at risk. A lead agency has a legal duty under CEQA to investigate potential impacts of a project where substantial evidence that such impacts may result has been presented to the agency.[202] The Draft EIR must be revised to evaluate this impact based upon substantial evidence and credible analysis.

2. The Draft EIR's Evaluation of the Project's Impact on Toxic Emissions During a Fire Is Not Supported by Substantial Evidence

CPVC, PVC and ABS pipe also increase fire risks because they release toxic fumes and chemicals when heated or burned. These hazardous substances pose increase acute and chronic health risks to firefighters, health care and nursing care facility occupants and the surrounding community.

Plastics create most of the corrosive gases found in fires.[203] When CPVC or PVC pipes burn, they form hazardous substances including hydrogen chloride gas and dioxin.[204] The hydrogen chloride released by burning PVC is potentially lethal to people caught in a burning building, while dioxin's health effects are exerted more slowly and are spread across a larger population. Hydrogen chloride is a corrosive, highly toxic gas that can burn skin on contact. When it comes into contact with the mucous lining of the respiratory tract, it creates hydrochloric acid

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[200] McMullen Comments (2015).
[201] KBS, Specifier's Handbook; Reid Comments (Oct. 18, 2006).
[202] CEQA Guidelines, § 15144.
[203] Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009) http://www.fireengineering.com/articles/print/volume-162/issue-8/features/toxicology-of-smoke-inhalation.html;
[204] Joe Thornton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48.

and can cause severe respiratory damage.[205] Exposure to a single CPVC or PVC fire can cause permanent respiratory disease.[206]

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.[207] By the time actual combustion begins, they lose over 60% of their weight in the generation of hydrochloric acid and other chemicals.[208]

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.[209] 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.[210]

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.[211]

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 off gassing may

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[205] *Id.*
[206] *Id.*
[207] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11.
[208] 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).
[209] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at pp. 1, 11.
[210] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11 (citing International Association of Fire Fighters, AFL-CIO, CLC, "Hazardous Materials: Polyvinyl Chloride" (Washington DC, 1995).
[211] Frank Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at p. 11.

occur in the event of fire.[212] 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."[213]

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.[214] 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.[215] Dioxin is a known human carcinogen and has been linked to reproductive disorders, immune suppression, and endometriosis, and other diseases in laboratory animals.[216] 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.[217]

ABS pipe also releases toxic gases when burned, including acrolein, hydrogen cyanide and styrene.[218] These toxic gases make fires more dangerous to occupants and firefighters. Firefighter organizations are particular concerned about the additional risk that hydrogen cyanide gases pose to firefighters in fires.[219] While

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[212] Joe Thornton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 48.
[213] *Id.*
[214] *Id.*
[215] *Id.*
[216] *Id.*
[217] *Id.* at p. 49.
[218] 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, http://fire.nist.gov/bfrlpubs/fire01/PDF/f01080.pdf .
[219] Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009) http://www.fireengineering.com/articles/print/volume-162/issue-8/features/toxicology-of-smoke-inhalation.html; 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; Captain Rick Rochford, Hydrogen Cyanide: New Concerns For Firefighting and Medical Tactics, Fire Engineering (June 29, 2009) http://www.fireengineering.com/articles/2009/06/hydrogen-cyanide-new-concerns-for-firefighting-and-medical-tactics.html; Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012)

carbon monoxide is the primary cause of fatalities in a fire, there is increasing concern that hydrogen cyanide increases the risk of incapacitation to firefighters and occupants and may result in death even when carbon monoxide is at below lethal levels.[220]

Hydrogen cyanide begins forming before combustion at low heat levels such as when a fire first begins.[221] The toxic gases generated during this pre-combustion period are particularly dangerous, as there is no flame to warn firefighters and occupants.[222]

Hydrogen cyanide is more dangerous than carbon monoxide and attacks the body in different ways.[223] Carbon monoxide attaches to the oxygen molecules in the body, causing suffocation in a short period of time.[224] Hydrogen cyanide targets the central nervous system, cardiovascular system, thyroid and the blood. This causes disorientation and agitation.[225] Hydrogen cyanide can result in the loss of consciousness within 30 seconds, apnea within three to five minutes and cardiac arrest in five to eight minutes.[226] Lower levels of hydrogen cyanide exposure can

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http://www.firefighternation.com/article/firefighter-safety-and-health/carbon-monoxide-hydrogen-cyanide-make-today-s-fires-more-dangerous.

[220] Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009) http://www.fireengineering.com/articles/print/volume-162/issue-8/features/toxicology-of-smoke-inhalation.html; see also Captain Rick Rochford, Hydrogen Cyanide: New Concerns For Firefighting and Medical Tactics, Fire Engineering (June 29, 2009) http://www.fireengineering.com/articles/2009/06/hydrogen-cyanide-new-concerns-for-firefighting-and-medical-tactics.html; Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012) http://www.firefighternation.com/article/firefighter-safety-and-health/carbon-monoxide-hydrogen-cyanide-make-today-s-fires-more-dangerous; Alan Hall, M.D. and Rob Schnepp, Cyanide: Fire Smoke's Other Toxic Twin, Fire Engineering (Dec. 1, 2011), http://www.fireengineering.com/articles/print/volume-164/issue-12/departments/fire-service_ems/cyanide-fire-smokes-other-toxic-twin.html.

[221] Reid Comments (Oct. 18, 2006).

[222] *Id.*

[223] Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012), http://www.firefighternation.com/article/firefighter-safety-and-health/carbon-monoxide-hydrogen-cyanide-make-today-s-fires-more-dangerous.

[224] *Id.*

[225] *Id.*

[226] Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009); see also Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012); Captain Rick Rochford, Hydrogen Cyanide: New Generation Concerns Resulting in Firefighting Tactics and Medicine.

have delayed and long-term effects.[227] Accordingly, ABS fumes may injure or kill residents much quicker during a fire than inhalation of carbon monoxide from burning wood.[228]

In addition, ABS makes smoke more deadly in fires because hydrogen cyanide and carbon monoxide appear to have a synergistic affect that causes occupant deaths with levels of carbon monoxide or cyanide that individually would not be lethal.[229] When combined with exposure to carbon monoxide, hydrogen cyanide can result in symptoms of cardiac related emergencies.[230] Cardiac fatalities are still the number one cause of death in the fire service and it is believed that some of these fatalities are the result of hydrogen cyanide exposures combined with carbon monoxide.[231]

The formation of hydrogen cyanide from ABS pipe during the early, low-heat stages of a fire poses a particularly acute risk to occupants and firefighters.[232] Many departments use carbon monoxide levels to determine the safety of the fire scene. Because hydrogen cyanide is produced at much lower temperatures than carbon monoxide, hydrogen cyanide may be present when the carbon monoxide level is safe.[233] This scenario can be deadly because the synergistic effect of hydrogen cyanide can make the air lethal even when the carbon monoxide levels would not otherwise appear to be deadly.[234] As a result, if an electrical fire starts in an enclosed wall that contains ABS DWV pipe, the hydrogen cyanide fumes from this

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[227] *Id.*
[228] *Id.*
[229] *Id.*
[230] Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012), http://www.firefighternation.com/article/firefighter-safety-and-health/carbon-monoxide-hydrogen-cyanide-make-today-s-fires-more-dangerous.
[231] Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012), http://www.firefighternation.com/article/firefighter-safety-and-health/carbon-monoxide-hydrogen-cyanide-make-today-s-fires-more-dangerous.
[232] Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009); see also Todd Shoebridge, Carbon Monoxide & Hydrogen Cyanide Make Today's Fires More Dangerous, Fire Fighter Nation (February 14, 2012); Captain Rick Rochford, Hydrogen Cyanide: New Generation Concerns Resulting in Firefighting Tactics and Medicine.
[233] Gill Hall, Toxicology of Smoke Inhalation, Fire Engineering (Aug. 1, 2009) http://www.fireengineering.com/articles/print/volume-162/issue-8/features/toxicology-of-smoke-inhalation.html
[234] Alan Hall, M.D. and Rob Schnepp, Cyanide: Fire Smoke's Other Toxic Twin, Fire Engineering (Dec. 1, 2011), http://www.fireengineering.com/articles/print/volume-164/issue-12/departments/fire-service_ems/cyanide-fire-smokes-other-toxic-twin.html

pipe will increase risks to occupants and firefighters compared to if metal pipe had been installed.

Rather than meaningfully investigate and evaluate this impact, the Draft EIR instead makes the conclusory pronouncement that the risk for toxic air contaminant ("TAC") emissions during a fire would be less than significant because "any addition of plastic pipe resulting from the Proposed Project would add an extremely small amount (compared with the other materials in a building) of materials that could emit TAC emissions when combusted."[235] This conclusion is speculative and lacks evidentiary support.

No evidence is cited to support the assumption that the amount of plastic pipe resulting from the Project would add an extremely small amount (compared with the other materials in a building) of materials that could emit TAC emissions when combusted. To the contrary, healthcare facilities are extremely pipe-dense occupancies. As discussed in the air quality section of these comments, the recent Kaiser Permanente Antioch Medical Center contains 29 miles of pipe.[236] Larger projects like the California Pacific Medical Center project in San Francisco may have four to five times the amount of pipe as the Antioch project.[237] If the entire plumbing system were ABS, CPVC or PVC pipe, that would result in a significant amount of additional flammable material and additional toxins being produced by the fire compared to if it was all metal pipe. The claim that this is "an extremely small amount" of plastic pipe is conclusory and incorrect.

In addition to lacking any evidentiary support, the Draft EIR's claim that the TAC emissions from CPVC, PVC and ABS pipe would not pose a significant health risk because they are just a small portion of overall building materials that could burn in a fire relies on a ratio approach that has been expressly rejected by the courts.[238] The court has held that the issue for the lead agency to consider is not the relative amount of emissions, but rather the potential direct and cumulative impact

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[235] Draft EIR at p. 4-24.
[236] Kaiser Permanente, Press Release - Kaiser Permanente breaks ground on Antioch Medical Center (July 27, 2004), http://share.kaiserpermanente.org/article/kaiser-permanente-breaks-ground-on-antioch-medical-center/.
[237] Pless Comments (2015); CPMC, Overview; http://vng.cpmc2020.org/overview; see also Kristin D. Zeit, Hard Hat Tour of the Largest Healthcare Construction Project in the U.S., Healthcare Design Magazine, August 13, 2013; http://www.healthcaredesignmagazine.com/blogs/kristin-zeit/hard-hat-tour-largest-healthcare-construction-project-us.
[238] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-721.

of the emissions.[239] The fact is that any building material would represent just a fraction of the overall building materials that could burn in a fire. That does not mean that no building materials can ever cause a cumulatively significant impact to fire risks. In the case at hand, OSHPD proposes replacing 29 miles of non-combustible, fire safe metal pipe in a hospital with 29 miles of combustible, toxic-smoke producing CPVC, PVC and ABS plastic pipe. The Draft EIR must be revised to meaningfully evaluate the potential impact from this based upon substantial evidence and credible analysis.

Furthermore, the Draft EIR's focus on the overall amount of combustible materials in a healthcare facility only has relevance once the entire building is burning out of control. *The impact of particular building materials on fire spread or fire-related injuries, however, depends on where the fire starts.*[240] If an electrical fire starts in an enclosed wall or ceiling next to plumbing pipe, the risk of rapid fire spread or of toxic gases affecting occupants before they exit are much greater if that pipe is ABS or PVC than if it is metal. Accordingly, the Draft EIR must be revised to evaluate potential increased fire risks not just from whole building fires, but also from localized fires that involve ABS, PVC or CPVC pipe instead of metal pipes.

3. OSHPD Facility Occupants Require Greater Fire Protection Standards

The fire spread and toxic smoke hazards associated with CPVC, PVC and ABS pipe are particularly important to consider in health care facilities. Occupants in these types of buildings are much more likely to have limited mobility and may not be able to rapidly evacuate during a fire.[241] 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 off gassing from heated CPVC, PVC or ABS while awaiting evacuation. In addition, OSHPD patients and residents are often sick or have weakened immune systems that increase the risk of exposure to even low levels of toxic fumes.

The Draft EIR fails to disclose or take into account the special sensitive nature of OSHPD occupants. The Draft EIR must revise its analysis of the Project's

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[239] *Id.* at 718.
[240] McMullen Comments (2015).
[241] McMullen Comments (2015).

fire safety risks to investigate and evaluate the heightened risk that plastic plumbing pipe fires may pose to OSHPD occupants.

C. Worker Health and Safety Impacts

The Draft EIR asserts that existing requirements to protect the safety of workers and others near a construction area are adequate to ensure that exposure to CPVC, PVC and ABS solvents would not result in significant human health impacts.[242] As discussed below, this assertion is not supported by evidence or meaningful analysis.

1. The Draft EIR Fails to Disclose or Evaluate Substantial Evidence that Workers Will Be Regularly Exposed to Harmful Chemicals When 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.[243] Despite the fact that the Coalition previously provided these studies to OSHPD, the Draft EIR fails to even disclose their existence, much less evaluate their relationship to the proposed Project. The failure to disclose and evaluate this evidence violates CEQA and precludes informed decision-making.[244]

The most comprehensive study on this subject was conducted in the 1989 DHS Study.[245] 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.[246]

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[242] Draft EIR at p. 8-14.
[243] See 1989 DHS Study [Exhibit 2]; Dr. Bellows Comments (Aug. 27, 1998); Smith-Lopipero Comments on CPVC Draft EIR (Aug. 1998); Dr. Bellows Comments (Sept. 8, 2006); Reid Comments (Sept. 13, 2006); Stern, et al, Are There Health Risks from the Migration of Chemical Substances from Plastic Pipe into Drinking Water? A Review, Human and Ecological Risk Assessment: An International Journal, 14:4 (2008) at p. 772.
[244] *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App.4th 342, 361; see also *Save our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.
[245] 1989 DHS Study.
[246] *Id.*

Sections of CPVC, PVC and ABS pipe are joined using fittings or connectors. The pipe is chemically fused to the connector using a process called "solvent welding" or "cementing." This process uses chemicals (cleaners, primers and cements) which are applied to the end of the pipe and the inside of the fitting socket. The pipe ends and fittings are first cleaned, primer is applied to soften the pipe, and cement is applied to bond the pipe and fitting.[247] 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").[248]

The DHS Study found that workers installing CPVC, PVC or ABS pipe were regularly exposed to these harmful chemicals at levels exceeding established workplace standards.[249] The likelihood of overexposure above the full-shift exposure limit was estimated to be 10% for a typical workday. The likelihood of overexposure above the short-term exposure limit at least once in a typical eight-hour workday was estimated to be 68%. The highest MEK exposures occurred during the installation of ABS drainage pipe.[250] The highest THF exposures occurred during the concurrent installation of CPVC potable water pipe and PVC drain, waste and vent pipe.[251] Three of the six samples in which THF exposures exceeded the short-term exposure limits were for workers installing PVC drainage pipe.[252] The study found that THF, CHX, ACE and MEK enter the bloodstream of workers through vapors, solvent skin contact and through permeation of gloves and clothes.

In 1998, DHS again reviewed the potential for worker health and safety impacts from the installation of CPVC, PVC and ABS plastic pipe and concluded that: "Case reports point to the likelihood that overexposure related to poor ventilation has already led to illness in pipe workers."[253]

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

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[247] Pless Comments (2015).
[248] Reid Comments (Sept. 13, 2006)
[249] 1989 DHS Study.
[250] *Id.*
[251] *Id.*
[252] *Id.*
[253] Comments of Elizabeth Katz, MPH, Acting Chief, Hazard Identification System and Information Service, Department of Health Services (June 11, 1998).

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.[254]

Even at levels lower than recommended exposure limits, MEK and ACE produce irritation of the eyes, nose and throat.[255] Indeed a substantial percentage of plumbers report experiencing irritation during the installation of these plastic pipes.[256] DHS has stated clearly that short-term irritation is a material impairment to health.[257] Furthermore repeated irritation may contribute to chronic illness.[258] 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 DHS Study, followed by headaches.[259]

The impacts to workers installing plastic pipe in healthcare facilities are likely to be even greater than that found in the DHS study because health care facilities contain a significantly higher density of pipe joints than other occupancies.[260] Hospitals are very pipe intensive buildings. The average hospital installs approximately 0.16 linear feet of pipe per square foot of building space. In contrast, the average office building installs just 0.018 linear feet of pipe per square foot of building space. The amount of glue and solvent for these types of installations and the worker exposure to the fumes would thus be much higher in healthcare facilities than in the buildings evaluated in the 1989 DHS study.[261] The unique exposure risks to workers installing CPVC, PVC and ABS pipe in healthcare facility settings must be evaluated in a revised DEIR.

In addition, new formulations of primers and cements that have entered the market since the completion of the DHS Study must be reviewed to determine if they have increased the risks to workers.[262] Dr. James Bellows, one of the primary

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[254] Smith-Lopipero Comments on CPVC Draft EIR (Aug. 1998), pp. 1-2, 23..
[255] *Id.*
[256] *Id.*
[257] Dr. Bellows DEIR Comments (Aug. 27, 1998) at p. 25.
[258] *Id.*
[259] *Id.* at p. 36.
[260] Lescure, ABS and CPVC in Hospitals letter (Oct. 7, 2009).
[261] Lescure, ABS and CPVC in Hospitals letter (Oct. 7, 2009).
[262] See 2006 CPVC Draft EIR at p. 63 (low-VOC solvents contain increased amounts of ACE); 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).

authors of the DHS Study, reviewed the impact of new formulas in his follow-up 1998 report. Dr. Bellows found that the introduction of low-VOC primer and cement formulations has actually resulted in *higher* combined exposures than were observed in the DHS Study.[263] While these formulations have reduced the amount of some chemicals, they have increased the amount of other chemicals.[264] 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."[265] In addition, the 2006 CPVC EIR found that new low-VOC adhesives actually increase the amount of Acetone in primers and cements.[266] Moreover, the acceptable workplace exposure limits for ACE have been significantly lowered since the 1989 DHS Study.[267]

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.[268] For example, unreacted monomers from impact modifiers may contain butadiene or acrylonitrile, which are carcinogens.[269]

Accordingly, the new formulations of primer and cements will likely result in significantly greater leaching impacts of certain chemicals than revealed in the DHS Study. New data or testing is required to adequately evaluate this impact.[270]

The DHS Study, Dr. Bellow's 1998 and 2006 comment 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. No new studies or testing has been conducted to support a claim that the impacts to workers installing CPVC, PVC and ABS that were confirmed by the Department of Public Health are no longer a problem. OSHPD is simply wishing away an inconvenient problem rather than undertaking a meaningful investigation.

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[263] Dr. Bellows Comments (Aug. 27, 1998), pp. 18-20.
[264] *Id.*
[265] *Id.* at p. 20.
[266] 2006 CPVC Draft EIR at p. 63.
[267] Dr. Bellows Comments (Sept. 8, 2006); see also CPVC 2006 Draft EIR at p. 65 .
[268] Reid Comments (Sept. 13, 2006), p. 6.
[269] *Id.*
[270] See *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421.

By failing to evaluate this evidence, the Draft EIR lacks substantial evidence to support its findings. In addition, the failure to disclose and evaluate the evidence previously provided to the agency violates the informational requirements of CEQA. CEQA requires agencies to inform decision makers and the public of potential environmental impacts before they happen, thereby ensuring environmental protection and informed self-government.[271]

2. Draft EIR's Reliance on Manufacturer Safety Recommendations Is Not Supported By Substantial Evidence

Rather than evaluating the evidence of actual impacts in the field, the Draft EIR instead asserts that that installers will avoid potentially significant impacts by compliance with the following manufacturer safety recommendations: (1) only installing the pipe when there is adequate ventilations; (2) using air purifying respirators; (3) avoiding prolonged contact of solvents with skin; and (4) closing containers tight when not in use.[272] The reliance on compliance with manufacturer's instructions is speculative and unsupported by any evidence.

Without substantial evidence that manufacturers' installation instructions will, in fact, reduce the risk to workers, the EIR may not rely upon these instructions to avoid evaluation of this potential impact.[273] In the case *Californians for Alternatives to Toxics v. Department of Food and Agriculture*, the First District struck down an EIR that assumed the use of pesticides under an agricultural disease control program would not result in significant adverse impacts because pesticides would be used in accordance with their labeling directions. The Court

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[271] *Citizens of Goleta Valley v. Board of Supervisors of Santa Barbara* (1990) 52 Cal.3d 553, 564; *Berkley Keep Jets Over the Bay Committee v. Board of Port Commissions of the City of Oakland* (2001) 91 Cal.App.4th 1344, 1354.

[272] Draft EIR at pp. 8-13. The Draft EIR also relies on warnings to: (1) avoid contact with eyes; (2) avoid ignition sources; (3) store primer and solvent cement in the shade between 40 and 110 degrees Fahrenheit; (4) follow all manufacturer-recommended precautions when using power tools; and (5) flush plumbing systems for 10 minutes after pressure testing to remove trace amounts of solvents or other system components. No explanation is provided for how any of these warnings relate to the risks documented by the DHS study regarding inhalation or dermal absorption of CPVC primer and cement chemicals.

[273] See *Californians for Alternatives to Toxics v. Department of Food and Agriculture* (2005) 136 Cal.App.4th 1, 17.

held that there is no "legal authority for the proposition that using registered pesticides according to their labels never results in significant adverse effects."[274]

As in the *Californians for Alternatives to Toxics* case, the Draft EIR blindly relies upon manufacturers' instructions without any basis to believe that these instructions would, in fact, reduce the risk to workers to an insignificant level. Manufacturer's instructions are not regulated and vary widely. No evidence is provided that workers read manufacturer's instructions, no evidence is provided that all (or even any) manufacturer's instructions include guidance clear enough to ensure workers are not exposed to harmful levels of solvent fumes, and no evidence is provided that familiarity with manufacturer's instructions is effective in reducing exposures below a level of significance. While some manufacturers caution installers to ensure proper ventilation or to wear protective breathing devices, they do not provide any meaningful guidance on what proper ventilation entails or how to readily ascertain that additional ventilation or protective breathing devices are necessary.

Furthermore, the Draft EIR's assumption that these recommendations are actually being implemented by installers is not supported by substantial evidence and ignores the documented reality of actual field installation conditions. The Draft EIR ignores substantial evidence of actual, systematic non-compliance with these recommended measures. In addition to the DHS study, the 2005 reports by Robert Calone and by Mark Capitolo demonstrate that ventilation and glove-use protective measures are not being enforced, implemented or monitored.[275]

Robert Calone is a certified plumbing inspector and a plumbing instructor who has inspected worksites where CPVC pipe was being installed. He also interviewed numerous plumbers on their CPVC installation practices. He concludes in his report that there is almost universal non-compliance with the ventilation and glove-use mitigation measures.[276] The only worksite he observed that actually complied with the safety standards did so only *after* a serious accident.[277]

In light of the evidence that ventilation and other worker safety precautions are not being regularly implemented, monitored or enforced, the Draft EIR cannot

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[274] *Id*.
[275] Capitolo Study; Calone Declaration.
[276] Calone Declaration.
[277] Calone Declaration.

rely on its illusory assumption of compliance with these measures to support a finding of no significant worker health impacts.[278] Protective measures relied upon to reduce potential impacts below a level of significance must be feasible, meaning capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors.[279] Furthermore, such measures must actually be implemented, and not merely adopted and then neglected or disregarded.[280] Evidence of past failure to vigorously monitor and enforce compliance with similar or identical protective measures is substantial evidence that adverse impacts may occur.[281] When implementation of recommended protective measures is uncertain, an agency cannot reasonably determine that significant effects will not occur."[282]

3. Draft EIR's Reliance on Cal/OSHA Enforcement of Its General Ventilation Requirements Is Not Supported By Substantial Evidence

The Draft EIR's reliance on enforcement of Cal/OSHA's general ventilation requirements is also insufficient to support a finding of no significant worker health impacts. Cal/OSHA does not proactively enforce these general requirements, has not adopted any specific regulations or guidance to address installation of plastic pipe, and has no way of readily determining in the field whether "adequate ventilation" is being provided. Furthermore, the Draft EIR fails to disclose, or evaluate, substantial evidence that Cal/OSHA ventilation requirements are not, in fact, being followed or enforced.

Cal/OSHA has not adopted any specific regulations regarding the installation of plastic pipes with chemical solvent.[283] Federal OSHA standards include a general requirement to protect workers from hazardous gases, vapors, fumes, dust and mists through the use of proper ventilation or protective respirator equipment,

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[278] See *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 876 (evidence of past failure to enforce the mitigation measures for noise impacts imposed in a prior MND demonstrated that there may still be a significant impact even with the proposed mitigation measures).
[279] Pub. Resources Code, § 2106.1; CEQA Guidelines § 15364.
[280] *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261; see Pub. Resources Code § 21002.1, subd. (b).
[281] *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 882.
[282] *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1260; *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 882.
[283] See Cal.Code Regs., tit. 8, § 1536.

but these requirements do not specifically address plastic pipe installation and are not proactive in nature.[284] While OSHA regulations state that ventilation or respirators should be provided if workers are being exposed to fumes that exceed workplace safety levels, no guidance is provided to employers for determining in the field when plastic pipe installation is exposing workers to fumes that exceed workplace safety levels. Neither OSHA or Cal/OSHA regulations require employers to monitor or test the air to determine if plastic pipe installers are being exposed to fumes that exceed workplace safety levels. Without guidance on how to ascertain that additional ventilation or a protective breathing device is necessary, the general ventilation requirements fail to ensure any meaningful prophylactic safeguards. Instead, it is up to the employee or employer to guess when additional ventilation or respirator protection is needed.

In contrast, Cal/OSHA provides express proactive, prophylactic requirements for protecting workers from fumes from metal welding activities.[285] These requirements are very specific and include a requirement to ensure either a minimum air velocity of 100 lineal feet per minute in the welding zone or the use of respirators – measures that are not required for the installation of CPVC, PVC or ABS pipe.[286] Because specific ventilation rates are required in all situations, Cal/OSHA requirements for welding metal pipes do not rely on the unrealistic assumption that workers will know when they are being exposed to hazardous fumes at levels that exceed workplace safety standards. OSHPD should require the same level of protection for installers of CPVC, PVC or ABS pipe in healthcare facilities.

OSHA ventilation guidelines are also insufficient because they do not address exposure through dermal absorption. The DHS study identifies dermal absorption as one of the key exposure routes. In his 1998 comments, Dr. Bellows stated that workers should be required to use chemical protective gloves during all handling of CPVC primers and cements. HCD requires workers installing CPVC in residential occupancies to wear protective gloves, but OSHPD is not proposing any similar requirement. Furthermore, Dr. Bellows found that most gloves being used by workers fail to provide any meaningful protection against liquid THF, MEK, CHX and ACE."[287] Chemicals such as tetrahydrofuron, for example, have been found to

[284] See Cal.Code Regs., tit. 8, §1528, et al; 29 CFR 1926.
[285] Cal.Code Regs., tit. 8, §1536.
[286] Cal.Code Regs., tit. 8, §1536.
[287] Dr. Bellows DEIR Comments (Aug. 27, 1998).

permeate nitrile gloves "almost immediately."[288] Dr. Bellows found that the gloves being used by workers not only fail to adequately protect from exposure, but, in fact, increase exposure by holding contaminants in intimate contact with the skin after they have penetrated the protection.[289]

Even if strict compliance with Cal/OSHA measures would sufficiently protect workers, Dr. Bellows warns that it is not sufficient to review the technical merit alone of a worker safety measure in understanding whether the measure will result in any real exposure reduction.[290] Simply requiring ventilation or protective respirator gear whenever exposure levels to CPVC, PVC or ABS solvents exceed workplace safety standards does not provide sufficient assurance that installers will not be exposed to harmful levels of these solvents. Without air monitoring requirements, there is no way for an installer to know when exposure levels exceed workplace safety standards.

Dr. Bellows finds that there are also sociological and economic barriers to ensuring adequate protection of plastic pipe installers.[291] Contractors, for example, have a powerful economic interest in avoiding protective measures that add cost and time to the job. This makes it likely that contractors will fail to ensure that workers have sufficient ventilation or are using protective respirator gear without express requests for such protection from the worker. Indeed, the Capitolo and Calone reports found that almost no contractors ensured that the worker training, ventilation and glove use requirements required by HCD for residential installations are implemented.[292]

Workers also may have an inherent resistance to these measures. Many workers find wearing chemical protective gloves to be uncomfortable and to slow their work.[293] Plumbing requires a reasonable sense of touch for the installation of piping, especially in finishing work, where some of the work may be done "blind" inside cabinets and the like.[294] In addition, some workers believe incorrectly that any type of gloves will provide protection. Workers under pressure to complete a job

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[288] Dr. Bellows DEIR Comments (Aug. 27, 1998); Dr. Bellows Comments (Sept. 8, 2006).
[289] Dr. Bellows DEIR Comments (Aug. 27, 1998); Dr. Bellows Comments (Sept. 8, 2006).
[290] Dr. Bellows DEIR Comments (Aug. 27, 1998); Dr. Bellows Comments (Sept. 8, 2006).
[291] Dr. Bellows DEIR Comments (Aug. 27, 1998); Dr. Bellows Comments (Sept. 8, 2006).
[292] Calone Declaration; Capitolo Study.
[293] Dr. Bellows DEIR Comments (Aug. 27, 1998); Dr. Bellows Comments (Sept. 8, 2006).
[294] See CPVC Environmental Review of Proposed Expanded EIR Use of Plastic Pipe (Mar. 1983) at p. IV.C-49.

quickly may not take care to minimize or clean up spills, or to set up ventilation when their CPVC installation must be done in enclosed spaces.[295]

The Draft EIR's assumption that Cal/OSHA enforcement is sufficient to ensure workers are not exposed to harmful levels of CPVC, PVC and ABS solvents is also not supported by substantial evidence. Cal/OSHA does not have any program set up to go into construction sites and measure the exposure level of plastic pipe fumes that installers are inhaling. The Cal/OSHA Enforcement Branch only investigates workplaces in response to complaints or accident investigations.[296] The only exception is its inspection program for high hazard industries, but this program does not cover plastic pipe installers.[297] Furthermore, Cal/OSHA does not have jurisdiction over workers that are self-employed or independent contractors.

In addition, "a combination of too few OSHA inspectors and low penalties make the threat of an OSHA inspection hollow for most employers."[298] When workers do complain, it may take weeks before an inspection, and the hazard is often gone. Workers also fear for their jobs when they complain, so are unlikely to file a complaint except for the most serious of accidents.[299] Serious impacts from repeated solvent exposure may not show up until years later, and thus are unlikely to ever get reported or investigated by Cal/OSHA.

The Draft EIR's reliance on OSHA enforcement to prevent this issue is not rooted in reality and is not supported by substantial evidence. The Draft EIR fails to disclose or evaluate substantial evidence that sufficient ventilation or other worker safety measures are not actually being implemented, and that installers of

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[295] Pless Comments 2015.
[296] Department of Industrial Relations, Cal/OSHA Enforcement Branch, (August 2015), http://www.dir.ca.gov/dosh/EnforcementPage.htm.
[297] Department of Industrial Relations, Cal/OSHA Enforcement Branch, (August 2015), http://www.dir.ca.gov/dosh/EnforcementPage.htm. The only construction workers covered by the high hazard targeted inspection program are framing contractors. See Department of Industrial Relations, Cal/OSHA, FFY 2015 – 2016 High Hazard Industry List, http://www.dir.ca.gov/dosh/HHU_List.pdf.
[298] Ferla, Caution: going to work may still be dangerous to your health, Remapping Debate (Oct. 5, 2011), http://www.remappingdebate.org/sites/default/files/Caution-going%20to%20work%20can%20be%20dangerous%20to%20your%20health.pdf
[299] Kazan Law, Interviewing in Cal/OSHA Cases, Occupational Safety and Health Portal, http://www.kazanlaw.com/OSHPortal/solve/investigate/interviewing.php; see also Roelofs, et al, A qualitative investigation of Hispanic construction worker perspectives on factors impacting worksite safety and risk, http://www.ehjournal.net/content/10/1/84.

CPVC, PVC and ABS pipe are regularly being exposed to levels of solvent chemicals that are leading to illness, notwithstanding the existence of Cal/OSHA general worker safety requirements capabilities.[300] The Draft EIR's assumption that proper ventilation or respirators would be regularly used during the installation of PVC, CPVC, and ABS pipes is arbitrary, lacks evidentiary support and is simply not true.

4. Draft EIR's Reliance on Section 302.4 "Facility" Training Is Not Supported By Substantial Evidence

The Draft EIR's reliance on "each facility" training workers before handling "these materials" is also vague, speculative and unsupported by any evidence. First, the "facility" training requirements cited in the Draft EIR are not applicable to building plumbing pipe installers. The Draft EIR bases its facility training assumption on the training and handling of hazardous materials requirements set forth in Section 302.4, Title 40 of the Code of Federal Regulations. The reliance on this section to protect plastic pipe installers from overexposure to chemicals in plastic pipe solvents is arbitrary and not supported by substantial evidence. Section 302.4 is not applicable to the use of CPVC, PVC and ABS primer and cement in the construction workplace.

Section 302 does not apply to consumer products in consumer use, does not apply to exposures to persons solely within a workplace, and applies only to hazardous materials that meet the reportable quantity thresholds (which are substantially higher than would be contained in CPVC, PVC or ABS primer and cement containers).[301] The Draft EIR provides no evidence that this section applies, no evidence that these requirements would be effective in preventing the overexposure of workers document in the DHS study even if they did apply, and fail to provide the analytic route between the existence of Section 302.4 and the conclusion that the installation of CPVC, PVC and ABS in pipe-intensive healthcare facilities would not pose a substantial risk to workers.

[300] Calone Declaration; Capitolo Study.
[301] 40 C.F.R. §§ 302.3, 302.4, 302.4.

5. Draft EIR Lacks Evidentiary Support for its Assertion that CPVC, PVC and ABS Pipe Will Not Increase Worker Health and Safety Risks above Current Baseline Conditions

The Draft EIR asserts that the installation of CPVC, PVC and ABS pipe will not result in any different exposure to hazardous fumes than the installation of metal pipe. This claim is speculative and unsupported by any evidence. No evidence is provided that these risks are the same or that the solvent fumes that workers will breathe are the same as fumes produced from welding metal pipes. Furthermore, no evidence is provided that plumbers who install copper or cast iron pipe are regularly exposed to hazardous levels of toxic fumes or regularly fail to implement sufficient ventilation or other safety requirements.

To the contrary, unlike for plastic pipe installation, Cal/OSHA provides express minimum air ventilation requirements to protect workers from fumes from metal welding activities.[302] The OSHPD proposal does not require similar minimum ventilation requirements for plastic pipe installers and thus does not provide the same level of protection. Furthermore, welding requires considerable more skill and training than installing plastic pipe. Workers installing plastic pipe are much easier to replace and thus are less likely to complain about working conditions, less likely to demand mechanical ventilation or respirator equipment, and less likely to be aware of the risks from the continued exposure to fumes.

The Draft EIR's statement that solvent cements are already used in the installation of PVC, CPVC, and ABS pipes in non-OSHPD facilities is also irrelevant to the baseline determination. The Project is not proposing to regulate non-OSHPD facilities. As the Draft EIR itself acknowledges elsewhere in the document, the Project will result in construction workers being exposed to these hazardous emissions at a higher frequency and greater concentration than under existing conditions.[303] This is the impact that must be evaluated in the Draft EIR.

In any case, the evidence submitted to OSHPD demonstrates that the installation of PVC, CPVC, and ABS pipes in non-OSHPD facilities has, in fact, resulted in the regular overexposure of workers to hazardous levels of solvents, and

[302] Cal.Code Regs., tit. 8, §1536.
[303] Draft EIR at p. 4-22.

that agencies such as HCD require compliance with specific worker health and safety measures to reduce the impact of these exposures. Accordingly, rather than supporting OSHPD's findings, the current limited approvals of CPVC, PVC and ABS pipe in other occupancies instead support a finding that OSHPD's proposed approval may result in significant worker health and safety impacts.

6. Draft EIR Fails to Consider the Increased Risk to Workers Manufacturing CPVC Pipes and Solvents

The Draft EIR fails to adequately address the worker health impacts associated with the increased manufacturing of PVC and CPVC resins, pipe and fittings, and solvent cements and primers. Throughout the manufacture of PVC and CPVC, dioxins, furans, hexachlorobenzene, and PCBs are unavoidably produced, primarily because of the chlorine content of these pipes.[304] When evaluated in relation to other plastics used to make pipe, PVC 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.[305]

Not surprisingly, PVC and CPVC manufacture can result in significant worker exposures to toxic and carcinogenic chemicals.[306] In her 2005 comments, Dr. Phyllis Fox calculated that dioxin emissions alone may expose workers to a cancer risk of over 5 per million – five times above relevant significance thresholds.[307] In addition, workers are exposed to a wide range of other toxic chemicals, including THF, MEK and CHX.[308] The Vinyl Chloride industry in particular has a very disturbing record of manufacturers knowingly exposing workers to serious and life-threatening workplace conditions.[309]

The proposed action to allow the installation of PVC and CPVC plumbing pipe in healthcare occupancies would result in increased production of PVC and CPVC pipes, fittings and solvents. This in turn would substantially increase the

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[304] Dr. Fox Comments (April 22, 2005).
[305] *Id.*
[306] *Id.*
[307] *Id.*
[308] *Id.*
[309] Jim Morris, Staff Houston Chronicle, The Chemical Industry's Secrets/High-Level Crime/Italy Develops a Case for Manslaughter Because Workers Breathed Vinyl Chloride.

risk to workers in the CPVC pipe and solvent manufacturing industry. This is a potentially significant adverse impact that must be reviewed in a revised EIR.

D. Risk of Mechanical Failure

1. The Draft EIR Fails to Evaluate Substantial Evidence that the Project Will Increase Risks from Seismic Events

The Draft EIR is inadequate because it dismisses the potential increased risk of plumbing pipe failure in healthcare facilities during seismic events without evaluation and without evidentiary support. The coalition has previously provided OSHPD with substantial evidence that approval of CPVC, PVC and ABS pipes in OSHPD healthcare facilities may result in a greater number of failures during earthquake events, increasing the likelihood of water contamination and disease outbreak. The Draft EIR fails to disclose or evaluate this evidence.

Instead it claims that this risk does not require any analysis in the Draft EIR because: (1) the flexibility of PVC and CPVC pipe "makes it less vulnerable to earth movements than the materials currently authorized for use in OSHPD 1, 2, 3 and 4 facilities" and (2) "no reason exists to believe that PVC, CPVC, or ABS pipe would be more likely to fail in the event of a seismic-related rupture of a known earthquake fault, thereby exposing people or structures to adverse effects, than the metal pipe currently authorized for use in OSHPD 1, 2, 3, and 4 facilities."[310] Both of these claims are incorrect and lack evidentiary support.

OSHPD claims that the cited Duffy article and Ohlinger report contain evidence that the flexibility of PVC and CPVC pipe "makes it less vulnerable to earth movements than the materials currently authorized for use in OSHPD 1, 2, 3 and 4 facilities." This claim is incorrect. Neither the cited Duffy article nor Ohlinger report support such a finding.

The Ohlinger report compares buried PVC underground public sewer pipe with vitrified clay pipe. It does not evaluate its use in DWV applications in buildings (where it will be hanged, rather than buried) and does not compare its seismic rupture risks with any of the code approved building plumbing pipes, such as cast iron pipe.

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[310] Draft EIR at p. 3-3.

The Duffy article compares buried PVC water main pipe with cast iron pipe. It does not evaluate its use in potable water pipe applications in buildings. Its discussion of seismic risks is limited to a comparison of large diameter (6, 8, 10, 12 or 16 inch) PVC pipe that is buried underground with cast iron pipe that is buried underground. It does not evaluate or compare seismic rupture risks of plumbing pipes installed in buildings where they will be hanging and subject to very different stresses. Furthermore, its conclusions rely on the use of doublespigot pipe connections utilizing cast sleeves to protect against fitting failures in seismic events. Such fittings are not used to install CPVC building water pipe or PVC or ABS building DWV pipe. The Duffy article also fails to set forth any expertise of Mr. Duffy for making his expert claims.

Furthermore, the claim "no reason exists" to believe that PVC, CPVC, or ABS pipe would be more likely to fail in the event of a seismic event than the metal pipe currently authorized for use in OSHPD facilities is incorrect on its face. This statement ignores substantial evidence demonstrating that a cast iron pipe DWV system installed in building is substantially less likely to break or rupture than a DWV system construction of PVC or ABS pipe.[311] Cast iron pipes and fittings have a proven track record in commercial construction for over 100 years, including in hospitals and skilled nursing facilities in California. During the many earthquakes and seismic events that have occurred in the past 100 years, there have been no reports of failure of the cast iron piping systems except those where the structure collapsed.[312]

The performance of building plumbing pipes and fittings during seismic events varies depending on the ductility of the different types of pipes and fittings and on the jointing methods used for the connection of the pipes and fittings within the system. Piping materials and jointing methods can generally be classified as rigid or flexible for determining the advantages and disadvantages for each type of piping materials in seismic events.

ABS and PVC piping materials are thermoplastic materials and although considered flexible, utilize a solvent cemented joint that is rigid. Because the ABS and PVC piping materials are flexible, these materials have low beam strength and require more horizontal and vertical support than rigid piping materials such as

[311] Declaration of Bill Le Van (2015); see also Lescure, ABS and CPVC in Hospitals (Oct. 7, 2009).
[312] Declaration of Bill Le Van (2015).

cast iron which has very high beam strength.[313] If plastic piping is used in California health care facilities it is likely to be ABS Schedule 40 cellular core manufactured to ASTM F628.[314] The maximum allowed deflection for this pipe is 5% and zero for the solvent cemented joint.[315] The crush load would be 473 pounds per linear foot.[316]

Cast iron pipes and fittings are manufactured from gray cast iron having a tensile strength of 21,000 pounds per square inch and a 45,000 modulus of rupture.[317] This high tensile strength and high modulus of rupture allows the cast iron pipe and fittings to be subjected to high crush loads. As an example, the crush load of 4 inch cast iron hubless pipe, the type most used in health care facilities in California, is 4,877 pounds per linear foot.[318] Cast iron is thus easily 10 times stronger than PVC pipe.

While PVC and ABS pipe are flexible, that doesn't make them more reliable during seismic events. PVC and ABS are installed using solvent cements which create rigid joints. No deflection or movement can occur without the potential failure of the joint.[319] This is particularly critical at fittings having branch openings such as tees and wyes where the fittings are rigidly joined with piping from different directions.[320] A movement at the branch openings of these fittings potentially can create a stress fracture and result in a joint leak or separation.[321]

These rigid joints thus turn the flexibility of PVC and ABS pipe into a liability. In buildings, DWV pipe is often hung and it must be able to support its own weight.[322] The flexibility of the PVC and ABS pipe makes it more difficult to support their own weight and puts added stress on the rigid connection joints.[323] As a result, PVC and ABS pipe must be supported every 4 feet with hangers. Because of the flexibility of PVC and ABS pipe, they may deflect more easily during seismic events when hanging from fittings than cast iron pipe, resulting in separation or

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[313] *Id.*
[314] *Id.*
[315] *Id.*
[316] *Id.*
[317] *Id.*
[318] *Id.*
[319] *Id.*
[320] *Id.*
[321] *Id.*
[322] *Id.*
[323] *Id.*

cracks at the rigid connection joints.[324] If hangers fail during a seismic event, the weight of the PVC or ABS pipe can cause the joints to fail.

Because cast iron pipe has very good beam strength, it only requires support within 18 inches of each joint.[325] In addition to cast iron pipes having greater tensile strength, they also provide much greater protection at connections joints than PVC and ABS pipe. Cast iron pipe has a flexible joint which deflects under loads and does not separate or leak.

Jointing of cast iron soil pipes and fittings is accomplished with a flexible rubber gasketed and stainless steel coupling.[326] The joints allow up to 5 degrees of deflection without failure.[327] This enables the joint to remain flexible during seismic events with less chance of joint failures than the rigid cemented joints of PVC or ABS pipe.[328] Joints at cast iron fittings with branch openings such as tees and wyes remain flexible reducing the chance of shear breaks or separations during seismic events.[329]

These couplings are tested daily during production using shear and deflection tests of the pressurized pipes to be sure they will not leak during failures of the supports or hangers that might occur during a seismic event.[330] Because the joints are strong enough to support a full 10 foot length of pipe filled with water under pressure without any support, the joints can be relied on to support a partially filled or empty pipe in the event of failure of the hangers as might happen in a seismic event.[331] In addition, the higher tensile strength of cast iron pipe helps to protect it when its flexible joint deflects, as opposed to the rigid PVC or ABS fitting that is easily damaged when deflected.[332]

The integrity of plumbing joints during seismic events should be an important consideration when constructing healthcare facilities as failures can create significant safety problems for healthcare facilities. These failures could

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[324] *Id.*
[325] *Id.*
[326] *Id.*
[327] *Id.*
[328] *Id.*
[329] *Id.*
[330] *Id.*
[331] *Id.*
[332] *Id.*

result in separation and cause the plastic DWV piping to fall damaging the fire sprinkler systems or causing the blocking of escape routes.[333] Failure of the plastic joints during a seismic event could allow the discharge of waste contaminated liquids into areas where this could be catastrophic during a natural disaster causing the health care facility being unable to provide medical support when most needed.[334]

The greater risk of plastic pipe failure from seismic events is particularly a concern for healthcare facilities since they are considered essential facilities that must be able to remain functional in an earthquake emergency.[335] The Draft EIR must be revised to disclose and evaluate the potential increased risk of plumbing pipe failure in healthcare facilities during seismic events.

2. Increased Risk of 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.[336] Failure of drainage systems may result in unsanitary and unsafe conditions from the release of raw sewage and sewer gas. When drainage pipe breaks, the walls and occupied space of a building are contaminated by sewage. Such sewage contamination would increase the risk of the spread of infectious diseases in health care facilities.

ABS drainage pipe has already experienced extensive failures, leading to numerous consumer lawsuits and class action claims for damages.[337] These failures were widespread and were not limited to one manufacturer, one extruder or even

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[333] *Id.*
[334] *Id.*
[335] *Id.*; see also Lescure, ABS and CPVC in Hospitals (Oct. 7, 2009); see also OSHPD, Seismic Compliance Program Overview, http://www.oshpd.ca.gov/fdd/seismic_compliance/SB1953/SB1953Overview.pdf.
[336] Reid Comments (Oct. 18, 2006); CMHC, Research Report on Incompatible Building Materials, p. 40; Noveon Chemical Resistance Data; CraftTech Industries, Inc., Chemical Resistance Guide; Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, pp. 8-10; Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail*; CMHC, Research Report on Incompatible Building Materials, p. 40; Thompson, ABS and PB Failures in California; Stern, et al, Are There Health Risks from the Migration of Chemical Substances from Plastic Pipe into Drinking Water? A Review, Human and Ecological Risk Assessment: An International Journal, 14:4 (2008) at p. 772.
[337] See Thompson, ABS and PB Failures in California.

one kind of pipe. These extensive failures were blamed on a combination of factors, including chemical attack from numerous commonly encountered chemicals.

The ABS drainage pipe that remains on the market today continues to be susceptible to failure from chemical attack on the plastic. ABS is subject to attack by most organic solvents. Chemicals such as isopropyl-alcohol, turpentine, drain cleaners, candle wax and vegetable oils all will decompose, dissolve or substantially reduce the lifetime of ABS pipe.[338]

Because such materials are commonly flushed down drains in buildings, a fair argument exists that some installations of ABS drainage pipe may prematurely fail as a result of such exposure. Isopropyl-alcohol (rubbing alcohol) is particularly likely to be commonly flushed down drains in health care facilities, substantially increasing the risk that ABS installed in these types of facilities may prematurely fail or rupture. Even where this pipe does not fail under normal circumstances, repeated exposure to these substances can make the pipe brittle and more likely to fail during seismic events.

Cast iron, on the other hand, is resistant to most common chemicals and compounds discharged into waste systems in hospitals. Only highly acidic (low Ph) waste is corrosive to cast iron and its fittings.[339] Alcohol, acetone, and other agents found in hospitals are not compatible for plastic piping, but have no effect on cast iron or the neoprene gaskets used to join the products together.[340] For highly acidic waste that may damage cast iron, the plumbing code sets forth specific standards to protect those drains.[341] Alcohol and other non-acidic substances are not covered by those standards and thus are disposed down regular drains.

The Draft EIR dismisses the potential for premature failure of ABS pipes based on the grounds that (1) it is not practical to evaluate the incompatibility of all chemicals that could be used in ABS pipes at OSHPD facilities; and (2) the selection of piping materials would conform to applicable sections of the California Plumbing Code and applicable chemical resistance guides to consider their tolerance for the types of chemicals that may be used in them. Neither of these are valid grounds for failing to evaluate the pipe's incompatibility with the chemicals expressly identified

[338] CraftTech Industries, Inc., Chemical Resistance Guide.
[339] Declaration of Bill Le Van (2015).
[340] Declaration of Bill Le Van (2015).
[341] Cal. Code Regs., tit. 24, Part 5, § 811.2.

in the Coalition's prior comments to OSHPD. Furthermore, these grounds are contradictory, rely on improper deferral of analysis and rely on unenforceable, speculative future studies and mitigation measures.

Even if it were not feasible to evaluate the compatibility of every single chemical that could be used in an OSHPD facility, the Draft EIR must at least evaluate the specific substances that the Coalition has identified as having a potential to damage or weaken ABS pipes. The Draft EIR may not simply decline to evaluate this evidence because it is inconvenient.

Moreover, the claim that is not practical to evaluate the incompatibility of all chemicals that could be used in ABS pipes at a hospital or other healthcare facility directly contradicts the second ground, which relies on contractors selecting piping materials based upon the compatibility of chemicals that could be used in the pipes. The Draft EIR fails to explain why contractors can be expected to make such an evaluation, yet OSHPD cannot.

In addition, the assumption that a contractor would be informed, or be aware of, all substances that may be encountered during the lifetime of a healthcare facility, and would necessarily choose the appropriate materials, is speculative and is not enforceable. Moreover, OSHPD may not simply defer analysis of this potential impact to future studies by hospital contractors. A lead agency has a legal duty under CEQA to investigate potential impacts of a project where substantial evidence that such impacts may result has been presented to the agency.[342] The duties to analyze and evaluate are derived from the notion that the EIR is primarily an informational document. CEQA requires agencies to inform decision makers and the public of potential environmental impacts before they happen, thereby ensuring environmental protection and informed self-government.[343] OSHPD violates this duty by stating that the evaluation, disclosure and mitigation of this impact will be done at some future time.

The Draft EIR also violates CEQA by failing to disclose or evaluate potential premature failures of PVC or CPVC pipe. The record contains substantial evidence that CPVC and PVC pipe are also susceptible to premature failure when exposed to

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[342] CEQA Guidelines, § 15144.
[343] *Citizens of Goleta Valley v. Board of Supervisors of Santa Barbara* (1990) 52 Cal.3d 553, 564; *Berkley Keep Jets Over the Bay Committee v. Board of Port Commissions of the City of Oakland* (1st Dist. 2001) 91 Cal.App.4th 1344, 1354.

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).[344] 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.[345]

Nothing in the building code 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.[346] Termiticides, fungicides, WD-40 and caulk are also likely to be applied near or around CPVC or PVC pipe under sinks or where they pass through openings in walls.

A report by Plastic Failures Labs indicates that the failure rate of CPVC pipes and fittings has been increasing.[347] The same report found that more than 80% of the failures have been due to contamination by incompatible substances.[348] 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.[349]

The Draft EIR violates CEQA by ignoring and failing to disclose this previously submitted evidence. Instead, the Draft EIR incorrectly claims that there is no risk of incompatible materials causing premature failure of CPVC and PVC pipe because such chemicals "would not be used in potable water distribution lines."

This statement reveals the complete lack of expertise that the author of this section has on this subject. Contrary to the Draft EIR's assumption, PVC pipe is not used in potable water distribution lines in buildings. PVC pipe in buildings is used

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[344] Reid Comments (Oct. 18, 2006); CMHC, Research Report on Incompatible Building Materials, p. 40; Noveon Chemical Resistance Data; CraftTech Industries, Inc., Chemical Resistance Guide; Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, pp. 8-10; Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail*.
[345] CMHC, Research Report on Incompatible Building Materials, p. 40.
[346] Declaration of John Hall.
[347] Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, p. 1; see also Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail*.
[348] *Id.* at pp. 2, 8-10.
[349] *Id.*

in DWV lines. Accordingly, the Draft EIR lacks any substantial evidence for the conclusion that there is no risk of incompatible materials causing premature failure of PVC pipe.

Furthermore, the evidence provided regarding CPVC and PVC failures shows that these failures are not caused by substances that are flushed down drains. They also include substances commonly encountered in the building environment that may come into contact with the outside of CPVC or PVC pipe, 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).[350] Substances causing CPVC failure also include antimicrobial lined metal pipes that are part of the water distribution system.[351]

The Draft EIR's conclusion that there is no risk of incompatible materials causing premature failure of CPVC, PVC and ABS pipe is not supported by substantial evidence. Moreover, its evaluation of these impacts fails to meet CEQA's standard for meaningful disclosure and review of potential impacts. The Draft EIR must be revised to disclose and evaluate these impacts in compliance with CEQA.

E. Water Quality Impacts

1. The Draft EIR Fails to Meaningfully Evaluate Evidence That Toxic Chemicals Leach Directly From CPVC Pipe and Solvents and May Contaminate Drinking Water

OSHPD's approval of CPVC plastic pipe may cause significant impacts due to the leaching of toxic chemicals into drinking water. Past studies demonstrate organic chemicals such as THF, MEK, ACE, and organotins have been found to leach into drinking water from CPVC pipe and solvents.[352]

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[350] Reid Comments (Oct. 18, 2006); CMHC, Research Report on Incompatible Building Materials, p. 40; Noveon Chemical Resistance Data; CraftTech Industries, Inc., Chemical Resistance Guide; Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, pp. 8-10; Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail*.

[351] Dr. Duane Priddy, Plastic Failure Labs, *Why Do CPVC Pipes Fail*, pp. 8-10; Duane Priddy, Plastic Failure Labs, *Why Do PVC and CPVC Pipes Fail*.

[352] Stern, et al, Are There Health Risks from the Migration of Chemical Substances from Plastic Pipe into Drinking Water? A Review, Human and Ecological Risk Assessment: An International Journal, 14:4 (2008), 753-779; Reid Comments (Sept. 13, 2006); Reid comments (Oct. 18, 2006).

Even in low doses, these chemicals may pose significant health risks when they contaminate drinking water.[353] THF, for example, is potentially carcinogenic.[354] THF may also cause depression of central nervous system functions.[355] MEK causes irritation and central nervous system depression even in low doses.[356] In higher doses, MEK may be embryotoxic, fetotoxic and potentially teratogenic.[357] Chronic irritation is associated with skin cancer. Subchronic toxicity studies of MEK show that it causes liver damage. MEK also potentiates the toxic effects of other common contaminants, including such common primer and cement leachates as THF and ACE.[358] Peripheral neuropathy may be caused by the combined exposure of MEK and THF.[359] Furthermore, MEK and ACE may cause polyneuropathy when found together.[360] MEK, ACE and possibly THF also have the ability to potentiate the toxic effects of other chemicals including common contaminants of tap water.[361]

Organotins such as diorganotins and triorganotins, are irritants to the skin and eyes and are powerful metabolic inhibitors.[362] Diorganotins are hepatoxic and can cause damaging effects on the liver and bile duct, immunotoxicity, reproductive toxicity and developmental toxicity.[363] Triorganotins, such as tributyltin, are highly toxic to the central nervous system.[364]

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."[365] The EPA cited in support of this conclusion numerous reports demonstrating that new CPVC systems have the potential to

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[353] *Id.*
[354] Smith-Lopipero Comments on CPVC Draft EIR (Aug. 1998) at pp. 7, 8.
[355] Dr. Bellows Comments (Aug. 27, 1998) at, p. 36.
[356] Smith-Lopipero Comments on CPVC Draft EIR (Aug. 1998) at p. 23.
[357] *Id.* at p. 9.
[358] *Id.* at pp. 9-10, 13-14.
[359] *Id.*
[360] *Id.*
[361] Smith-Lopipero Comments on CPVC Draft EIR (Aug. 1998) at p. 13.
[362] *Id.* at pp. 15-17.
[363] *Id.*
[364] *Id.*
[365] 63 Federal Register 10282 (Mar. 2, 1998).

contaminate drinking water with organotin compounds for a significant period of time after installation.[366] The EPA concluded that the toxicology and leaching of organotins required further in-depth evaluation.[367] 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.[368] The ASTDR recommendations for tributyltin corresponded to a drinking water concentration of 10.5 mg/L for an adult and 5.9 ug/L for an infant.[369]

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.[370] For an infant, the maximum exposure level under the German recommendation would be about 4.9 ug/L a day.[371]

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).[372]

The Draft EIR acknowledges that prior studies have found organotin concentrations in drinking water plumbed with CPVC pipe exceed levels of concern, but dismisses this evidence by assuming that the NSF 61 standard for leaching of tributyltin oxide will ensure that new CPVC pipe will not leach tributyltin at potentially harmful levels.[373] The Draft EIR lacks substantial evidence to support this assumption. Tributyltin oxide is just one of many compounds of tributyltin

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[366] *Id.*
[367] *Id.*
[368] Reid Comments (Sept. 13, 2006) pp. 9-12.
[369] *Id.*
[370] Reid Comments (Sept. 13, 2006).
[371] *Id.*
[372] *Id.*
[373] Draft EIR at pp. 9-23, 9-24.

that are used as stabilizers in PVC resin.[374] NSF 61 does not test for any of these other forms of tributyltin and thus cannot be assumed to ensure that all forms of tributyltin used as stabilizers in PVC resin will leach at below significant levels.

The Draft EIR also dismisses these prior studies by assuming that the pipe materials used in the experiments did "not necessarily" comply with the most current NSF requirements.[375] This assumption is speculative and not based on any evidence or investigation. Moreover, as discussed above, current NSF requirements continue to fail to test for all types of tributyltin used as stabilizers in PVC resin and thus could not be relied upon to change the findings of the earlier experiments.

The Draft EIR also dismisses these prior studies with the argument that the composition of pipe materials used under the Proposed Project may not contain a tributyltin stabilizer.[376] This is speculative and ignores the requirement to review all potential impacts of the Project, which would include the installation of CPVC pipe that contains a tributyltin stabilizer. While OSHPD should consider mitigating these impacts by prohibiting the installation of CPVC that contains any tributyltin stabilizers, it does not.

Finally, the Draft EIR dismisses these impacts on the basis that the EPA listed organotins on the Chemical Contaminant List in 2005, but not in 2014 or 2015. The dismissal of these impacts on the basis that organotins are not included on the EPA Chemical Contaminant List is not supported by substantial evidence.[377] The Draft EIR does not disclose, investigate or determine why organotins are no longer on that list. The EPA Chemical Contaminant List is not intended to be a comprehensive list of all potential drinking water contaminants and thus absence of a contaminant is not evidence of its safety. Rather, it is intended only to list contaminants with a substantial likelihood of occurring in "public water systems."[378]

The issue here is leaching of CPVC pipes in buildings, not in public water systems. PVC leaching into public water mains is much less of a concern because

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[374] Extension Toxicology Network, Pesticide Information Profile,Tributyltin (September 1993) http://pmep.cce.cornell.edu/profiles/extoxnet/pyrethrins-ziram/tributyltin-ext.html.
[375] Draft EIR at p. 9-23.
[376] Draft EIR at p. 9-23.
[377] Draft EIR at p. 9-23.
[378] U.S. EPA, Contaminant Candidate List (CCL) and Regulatory Determination: Basic Information on the CCL and Regulatory Determination (January 22, 2015), http://www2.epa.gov/ccl/basicinformationcclandregulatorydetermination.

the water mains have much larger pipe diameters with continuously flowing water, which ensures that any leaching is highly diluted. Drinking water in buildings, on the other hand, will sit static for long periods in CPVC pipe and will flow through the pipe in much smaller volumes, reducing dilution effects. Accordingly, the Draft EIR fails to identify a non-speculative analytic route between the content of the EPA Chemical Contaminant List and the Draft EIR's conclusion that leaching of organotins from CPVC potable water building pipe does not pose a significant impact.

Furthermore, the Draft EIR fails to disclose that prior state agency reviews have found leaching from CPVC pipe to pose a potentially significant impact and have required mitigation requirements to reduce this impact. In order to reduce the initial high levels of leaching from CPVC pipe and solvents, HCD requires CPVC in residential occupancies to be flushed for at least ten minutes, then filled and allowed to stand for at least a week, and then flushed again.[379] The Draft EIR violates CEQA by failing to disclose or evaluate the findings of the 2006 CPVC EIR and the mitigation adopted by HCD.

2. Substantial Evidence Demonstrates that Toxic Chemicals Leaching from CPVC and PVC Pipe May Contribute to Sediment Toxicity Resulting in Harm to Aquatic Organisms

Substantial evidence exists that the leaching of organotins from PVC and CPVC may be a significant contributor to organotin contamination in municipal wastewater effluents. 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.[380] One study 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.[381]

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[379] See Cal. Code Regs., tit. 24, Part 6, §§ 604.1.1, and Appendix I, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, §§ 1.2, 1.2.1, 1.2.2.
[380] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 6; *see also* Lozeau, Baykeeper comments (Apr. 25, 2005).
[381] *Id.*

Consistent with these studies, 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.[382] PVC and CPVC pipe have been implicated as one of the sources for these high levels. Concentrations of organotin compounds detected in PVC and CPVC leachates have been found to be similar to those measured in the municipal effluents.[383] Moreover, the majority of organotin compounds, 60% to 70%, are commercially used to stabilize the PVC and CPVC resins.[384]

The leaching of organotins from CPVC and PVC pipes may have significant impacts on fish and wildlife, including wildlife listed by state and federal wildlife agencies as endangered and threatened. Organotin compounds can be extremely toxic to aquatic life. The early developmental stages of aquatic organisms are particularly sensitive to organotin compounds.[385]

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.[386] Extremely low levels of tributyltin cause deformities in oysters and a wide range of adverse reproductive and developmental effects in fish.[387] In addition, tributyltin and the other organotins bioconcentrate in the aquatic environment. Because they bioconcentrate, the impact of persistent sources of organotins will be magnified over time and may thus affect anglers who catch and eat contaminated fish.[388] 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.[389]

The state's water quality agencies have long recognized the serious dangers posed by tributyltin discharges to the waters of the state.[390] Organotins, and in

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[382] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 6; *see also* Lozeau, Baykeeper comments (Apr. 25, 2005).
[383] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005).
[384] *Id.*
[385] *Id.* at pp. 13-14.
[386] *Id.* at p. 14.
[387] *Id.* at pp. 13-17.
[388] *Id.* at p. 15.
[389] *Id.*
[390] *Id.* at p. 16.

particular tributyltin, are commonly regulated by the Regional and State Boards throughout the state.[391] 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.[392] The additional tributyltin resulting from the proposed Project may exacerbate that existing threat.

The Draft EIR acknowledges that CPVC pipe and PVC pipe may contaminate effluent at levels that exceed the saltwater chronic criteria, but then assumes that this would not contribute to any significant biological impacts because: (a) the relatively small quantity of wastewater discharged from OSHPD facilities compared to total wastewater discharges from all other sources; (b) the quality of wastewater from OSHPD facilities using PVC, CPVC and ABS pipes will be equal to or better than the quality of wastewater from other facilities because PVC, CPVC and ABS pipes are already used statewide at other occupancies and OSHPD pipes will be held to new, and likely more conservative, standards; (c) no California water bodies have been 303(d)-listed 1 for organotin impairments; and (d) all pipe materials authorized at OSHPD facilities would be required to meet NSF/ANSI 61 and NSF/ANSI Standard 14. The reliance on each of these assumptions is arbitrary and lacks evidentiary support.

First, the Draft EIR's reliance on the relatively small quantity of wastewater discharged from OSHPD facilities compared to total wastewater discharges from all other sources ignores CEQA's requirement to evaluate cumulative impacts. Any source of wastewater discharge in California is necessarily going to be relatively small in comparison with total wastewater discharges from all sources. As with its flawed air quality analysis, the Draft EIR is relying on a ratio approach to avoid compliance with CEQA's inconvenient analysis and mitigation requirements. This approach has been expressly rejected by the Courts.[393] The issue for OSHPD to consider here is not the relative scale of OSHPD waste discharges compared to all waste discharges, but rather whether these additional discharges may add to cumulative contamination risks.[394]

Second, the Draft EIR's claim that organotin contamination in the wastewater discharged from OSHPD facilities using PVC, CPVC and ABS pipes will

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[391] *Id.* at pp. 8-13.
[392] *Id.*
[393] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 720-721.
[394] *Id.* at 718.

be equal to or better than the quality of wastewater from other facilities is speculative and not supported by any substantial evidence. Moreover, the issue is whether the organotin contamination in the wastewater discharged from OSHPD facilities using PVC, CPVC and ABS pipes will contribute toward organotin levels that may harm aquatic life, not if it the wastewater quality is relatively better than wastewater discharges from other, non-OSHPD facilities. OSHPD is proposing a new source of organotin pollution. This new source must be evaluated, even if it pollutes less than some other existing sources.

Third, the Draft EIR's reliance on the assertion that no California water bodies have been 303(d)-listed for organotin impairments incorrectly assumes that a lack of 303(d) listing means that contamination issues do not exist. The attached comment of Dr. Fox cites numerous studies documenting the concern with organotin contamination in the sediment of San Francisco Bay and other California watersheds.[395] A 1998 State Water Resources Control Board ("SWRCB") study found that tributyltin contamination is "a serious and widespread contaminant of marine and fresh water habitats across the state" and that 90% of samples exceeded SWRCB criteria.[396] I n addition, numerous water bodies throughout the state are 303(d) listed for general "toxicity" or "sediment toxicity," which can include sediments contaminated by tributyltin.[397]

Because of these concerns, many sewage plants have been issued NPDES permits that contain specific numeric effluent limitations for tributyltin. In each of those cases, the relevant regional board has made a formal determination that the sewage plant's discharges of tributyltin "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard."[398]

Several relevant water quality standards apply to the discharge of tributyltin. These include the State's Ocean Plan, which establishes very low numeric water quality objective of 0.0014 ug/L for tributyltin. The federal EPA also has issued water quality criteria for tributyltin of 0.46 ug/L for acute exposures (1-hour) and 0.072 ug/L for chronic exposures (4-day) in freshwater and 0.42 ug/L acute and 0.0074 ug/L chronic for saltwater. The EPA criteria are designed to be

[395] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 16.
[396] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 16.
[397] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005) at p. 16.
[398] 40 C.F.R. § 122.44(d)(1)(i) (emphasis added).

applied by California and other states when issuing tributyltin effluent limits in NPDES permits in the future. Likewise, all of the regional boards' basin plans include narrative water quality standards that prohibit the discharge of toxic pollutants in toxic amounts and any water quality degradation.[399]

As can be seen, tributyltin-contaminated wastewater effluent is considered an ongoing threat to health of aquatic entities in California, notwithstanding that no California water bodies have been expressly 303(d)-listed for organotin impairments.

Fourth, the Draft EIR's reliance on NSF/ANSI 61 and NSF/ANSI Standard 14 to ensure PVC, CPVC and ABS pipes won't contaminate waste discharges with organotins at levels that could harm aquatic life is not supported by any substantial evidence. NSF/ANSI Standard 14 does not set forth any organotin leaching criteria for plastic pipes. NSF/ANSI 61 sets forth organotin leaching criteria for human drinking water quality, but not for impacts to aquatic organisms. Moreover, NSF/ANSI 61 only applies to CPVC drinking water pipe. PVC and ABS building drain and waste pipe are not subject to the drinking water pipe leaching standards set forth in NSF/ANSI 61. The studies cited by Dr. Fox and by the Draft EIR show that PVC DWV pipe may contribute to organotin contamination of wastewater effluent that exceed the saltwater chronic criteria for impacts to aquatic organisms.

Accordingly, the Draft EIR's finding that organotin leaching from CPVC and PVC pipe would be less than significant is not supported by substantial evidence. By allowing for the installation of a substantial number of new sources of organotin compounds that will discharge to sewage plants throughout the State, including plants that already have a reasonable potential to discharge tributyltin at levels that may violate applicable water quality standards, the Project will exacerbate those existing threats of water quality standard violations.

For the plants that already are exceeding their applicable effluent limitations for tributyltin, the Project's approval of new releases of more tributyltin will exacerbate their ability to comply in the future. For those sewage plants that currently do not violate water quality standards for tributyltin, the expanded approval of CPVC pipe within their service areas will increase the likelihood that their future discharges of wastewater will have a reasonable potential to violate the applicable standards. Each of these scenarios involves a potential significant effect

[399] Dr. Fox Comments on Water Quality Impacts (Apr. 25, 2005).

on water quality involving the release of toxic pollutants at levels that may not protect beneficial uses and which alone justifies the preparation of an EIR. The Draft EIR must be revised to evaluate this issue based upon actual evidence and credible analysis.

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. They are essentially not recyclable, will replace plumbing pipe material that has an almost 100% recycling rate, and will generally need to be replaced more often than currently approved plumbing pipe materials. Additionally, CPVC, PVC and ABS contain contaminants that may create hazards when disposed in landfills or incinerators.

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

Reports on disposal of PVC and CPVC have stated bluntly, "there is no safe way to get rid of it, and no good way to recycle it."[400] 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.[401] Of an estimated 7 billion pounds of PVC thrown away in the U.S., barely one quarter of one percent is recycled.[402] Because of its higher chlorine content, CPVC is recycled even less than PVC. The American Association of Postconsumer Plastics Recyclers has declared efforts to recycle PVC and CPVC a

[400] 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; *see also* PVC Recycling – Solving a Problem or Selling a Poison?.
[401] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1.
[402] *Id*.

failure.[403] It further declared that it would henceforth view PVC and CPVC products as unrecyclable contaminants in the municipal waste stream.[404]

A 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.[405] It also found that CPVC and PVC posed disposal problems because they are the only plastic pipes on the market that contain OSPAR Chemicals for Priority Action (organotins, lead and possibly cadmium).[406]

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.[407] Like CPVC and PVC, ABS has highly hazardous manufacturing intermediates, including carcinogens, and is difficult to recycle.[408] As a result, it is considered only marginally better than PVC environmentally. The Danish EPA has ranked plastic from the most harmful to the least harmful. ABS was rated the second most harmful plastic, just behind PVC.[409] ABS received this rating due to the toxic intermediate compounds used to produce ABS and the difficulty in recycling ABS.[410]

Moreover, because CPVC and PVC are considered contaminants in the plastic recycling waste stream, increased amounts of PVC waste may actually interfere with recycling of other plastics.[411] Efforts to recycle other types of plastics may be

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[403] Joe Thornton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 55.
[404] *Id*.
[405] Rossi et al., San Francisco Department of the Environment, Plastic Pipes Alternative Assessment (Feb. 11, 2005) at pp. 3, 15.
[406] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at p. 3. OSPAR stands for "Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic." Chemicals on the OSPAR list are of high concern for water toxicity.
[407] *Id.* at p. 16.
[408] Jamie Harvie, et al., PVC-Free Pipe Purchasers' Report (Nov. 1, 2002) at p. 2.
[409] 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.
[410] *Id.*
[411] Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005) at p. 3, 15.

ruined by contamination with even small amounts of CPVC or PVC.[412] This makes strict segregation of CPVC and PVC from the plastics waste stream essential. However, such segregation is often difficult to achieve in practice.[413] The potential impact of increased CPVC potable water pipe waste and PVC drainage pipe waste on the recycling of other plastics is a potentially significant impact of the Project that requires further review.

In addition to not being recyclable, CPVC, PVC and ABS pipe also have shorter lifespans than their copper and cast iron counterparts.[414] The estimated lifespan for CPVC is only 20 to 40 years. Copper pipe, on the other hand, has an estimated lifespan of well over 50 years. PVC and ABS drainage pipe also have a much shorter lifespan than cast iron drainage pipe. Cast iron pipe has an estimated lifespan of over 100 years and has been known to last 200 to 400 years.[415] 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.[416] Second, the release of additives in the plastics may contaminate groundwater.[417] 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.[418] CPVC and PVC burning in landfill fires may be the largest source of dioxin releases to the environment.[419]

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[412] *Id.*
[413] *Id.*
[414] See Draft EIR Reid Comments (Oct. 18, 2006).
[415] Cast Iron Soil Pipe Institute, FAQ.
[416] See Joe Thornton, Ph.D., Healthy Building Network, "Environmental Impacts of Polyvinyl Chloride Building Materials" (2002) at p. 56; see also Rossi, et al., San Francisco Department of the Environment, Plastic Pipe Alternatives Assessment (Feb. 11, 2005).
[417] *Id.*
[418] *Id.*
[419] Healthy Building Network, PVC in Buildings: Hazards and Alternatives (Jan. 11, 2006) at p. 1; 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

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.[420] 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.[421] A 2003 report by the Global Development and Environment Institute has documented numerous efforts worldwide to phase out the use of PVC, including CPVC.[422] In California, the cities of Oakland, San Francisco and Berkeley have adopted resolutions to eliminate dioxin, including PVC use reduction as a broader strategy.[423] 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.[424] Denmark, Spain, Germany, Norway, Luxembourg and Sweden have all adopted policies encouraging the phasing out of PVC use, including PVC and CPVC piping.[425] Numerous water bottling companies in Europe are also phasing out the use of CPVC and PVC.[426] OSHPD's proposed expansion of CPVC and PVC use in California runs directly counter to this national and international public health trend.

Despite the substantial evidence that the Project's solid waste disposal impacts are potentially significant, the Draft EIR declines to evaluate this impact on the grounds that (1) "recycling is possible and commonly done" and (2) that impacts on landfill capacity would be speculative because Project activities could occur at various undetermined locations through the state.

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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.").

[420] Ackerman, et al., Global Development and Environment Institute, "The Economics of Phasing Out PVC" (December 2003) at pp. 16, 40-45; Dioxin, PVC, and Health Care Institutions; Mark Rossi, PVC & Healthcare (calling for reduction of PVC in health care facilities, including plastic plumbing pipes); Michael Belivue, et al., PVC: Bad News Comes In 3's: The Poison Plastic, Health Hazards and the Looming Waste Crisis (December 2004) at p. 48.

[421] Joseph Zicherman, Plastic Pipe and Fire Safety (Sept. 5, 2000) 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) (documenting PVC waste crisis).

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

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

[424] *Id.*

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

[426] *Id.* at p. 42.

The Draft EIR's conclusion that recycling of CPVC, PVC and ABS pipe is commonly done is not supported by substantial evidence. The Draft EIR relies on an article by Melissa Murphy to support this assertion, but a review of the article shows that Ms. Murphy came to the exact opposite conclusion.[427] Ms. Murphy found that mechanical PVC recycling is common only in the reuse of post-industrial scraps leftover from the manufacture of PVC plastics. Post-consumer recycling of PVC is much less common because of chemical composition issues. Post-industrial scrap recycling is easier because it involves PVC that is all the same chemical compositions. Post-consumer PVC, however, will vary widely in additives, creating contamination issues that impede recycling. Ms. Murphy concludes that the difficulties in the disposal and recycling of PVC have lead policymakers to focus on reduced production and usage of the material. The exact opposite of the policy that OSHPD is now proposing.

The argument that the Project's impact on the amount of solid waste in landfills is speculative because it is unknown where the Project activities will occur is inconsistent with the requirements of CEQA and is not supported by substantial evidence. A lead agency may not simply label a potential impact as speculative and decline to address it.[428] When uncertain future events could lead to a range of possible outcomes, an EIR may base its analysis on a reasonable worst-case scenario.[429]

Here, because the Project involves statewide regulations, its impacts must be assessed on a statewide level. Healthcare facilities and nursing homes are located throughout the entire state. Accordingly, any landfill in the state that has capacity issues will be affected by the Project. The reasonable worst-case scenario for the Project is thus that the increased installation of plastic pipe in OSHPD facilities will cumulatively contribute to landfill capacity issues in the state.

Because of the number of OSHPD facilities in the state and the high density of pipes in healthcare occupancies compared to other occupancies, this cumulative contribution would be more than nominal. For example, a single hospital project in

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[427] Melissa Murphy, PVC Disposal and Recycling, SF Gate, http://homeguides.sfgate.com/pvc-disposal-recycling-79234.html.
[428] *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App. 4th 342., 347.
[429] *Planning & Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, 244.

Antioch Medical Center contained 29 miles of pipe.[430] Larger projects may have four to five times that amount.[431] Furthermore, because plastic pipes are relatively bulky and have long biodegradation times, they take up a lot of landfill space.[432]

The Project's impact on the amount of solid waste in landfills must also be evaluated in the context of statewide solid waste reduction goals, and in particular with California's statutory goal that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020.[433] The Legislature and Governor Brown has set an ambitious goal of 75 percent recycling, composting or source reduction of solid waste by 2020 calling for the state and the Department of Resources Recycling and Recovery to take a **statewide** approach to decreasing California's reliance on landfills.[434] The Project directly conflicts with this goal.

In 2020, CalRecycle projects that there will be about 80 million tons of solid waste generated by Californians. To meet the 75% goal established in AB 341, almost 60 million tons of waste will need to be source reduced, composted, or recycled by 2020. CalRecycle assumes that more than half of that, or about 37 million tons, will be met by continuing the source reduction, composting, and recycling programs we have today. This means about 23 million more tons will need to be reduced, composted, or recycled in 2020 to meet the statewide goal.[435] OSHPD's proposal to replace pipes that have high-recycled material content and an almost 100% recycling rate with pipe products that essentially use 100% virgin material and that have very small recycling rates directly conflicts with this goal. The Draft EIR must be revised to disclose and evaluate this conflict.

The Draft EIR's evaluation of hazards associated with disposal of PVC, CPVC, and ABS pipe is also inadequate and unsupported by substantial evidence.

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[430] Kaiser Permanente, Press Release - Kaiser Permanente breaks ground on Antioch Medical Center (July 27, 2004), http://share.kaiserpermanente.org/article/kaiser-permanente-breaks-ground-on-antioch-medical-center/.
[431] Pless Comments (2015).
[432] Draft EIR at p. 3-5.
[433] Pub. Resources Code § 41780.01.
[434] *Id.*; see also CalRecycle, California's 75 Percent Initiative: Defining the Future (September 17, 2015), http://www.calrecycle.ca.gov/75percent/.
[435] CalRecycle, California's 75 Percent Initiative: Defining the Future (September 17, 2015), http://www.calrecycle.ca.gov/75percent/.

First, the Draft EIR claims that it evaluates the potential impact from the leaching of hazardous materials from plastic pipes disposed in landfills into water resources is discussed in Chapter 9 of the Draft EIR ("Water Quality").[436] Chapter 9, however, does not contain any discussion regarding the disposal of PVC, CPVC, or ABS pipe in landfills and does not contain any evaluation of potential impacts from that disposal.

Second, the Draft EIR claims that the potential hazardous air quality impacts from the disposal of plastic pipes in incinerators are discussed in Chapter 4 of the Draft EIR ("Air Quality").[437] Chapter 4 also does not contain any discussion regarding the disposal of PVC, CPVC, or ABS pipe in incinerators and does not contain any evaluation of potential impacts from that disposal.

Third, the Draft EIR arbitrarily assumes the risks from any hazardous materials from the recycling of PVC, CPVC, or ABS pipe would be reduced by combining the pipes with new product materials.[438] The Draft EIR does not base this assertion on any evidence or any explanation of how this would reduce the identified recycling impacts. Moreover, the record contains substantial evidence that PVC and CPVC cannot be combined with other plastic materials because they contain additives and chemicals that would contaminate those materials. Even different formulations of PVC and CPVC cannot be mechanically recycled together because of contamination issues.[439]

Fourth, the Draft EIR assumes that the PVC, CPVC, or ABS pipe would be unlikely to constitute a substantial portion of the existing or future waste stream related to these materials and thus would be unlikely to result in significant human health impacts relative to this issue. This assumption is speculative and not supported by any evidence or analysis. All PVC, CPVC and ABS pipe installed as part of the Project will eventually need disposal. The Draft EIR cites to no evidence that the amount of PVC pipe installed as a result of the Project would not be sufficient to cumulatively increase health and safety risks associated with the disposal of these materials. The amount of pipe involved is not insignificant. Healthcare facilities contain substantially more piping than other occupancies. Moreover, PVC pipe constitutes a substantial amount of the PVC found in landfills.

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[436] Draft EIR at p. 8-16.
[437] Draft EIR at p. 8-17.
[438] Draft EIR at p. 8-17.
[439] Melissa Murphy, PVC Disposal and Recycling, SF Gate, http://homeguides.sfgate.com/pvc-disposal-recycling-79234.html.

Plastics used in construction accounts for 75% of all PVC consumption.[440] Of these materials, piping, ducting, flooring, window casings, cladding, roof membranes, and wall coverings represent more than 65% of that total.[441]

Fifth, the Draft EIR assumes that it would be speculative to conclude that PVC, CPVC, or ABS pipe may lead to significant environmental impacts because the extent to which the piping material would be used and eventually disposed because of the Project is unknown. In the face of the overwhelming, undisputed evidence that disposal of CPVC, PVC and ABS plastic plumbing pipe can lead to significant environmental and health impacts, OSHPD may not simply label this impact as speculative and decline to address it.[442] To the extent that rate of use of this pipe in future projects is uncertain, OSHPD must base its analysis on a reasonable worst-case scenario.[443]

Moreover, OSHPD keeps detailed track of all healthcare facility construction in the state and has the capability to estimate the amount of pipe that could be involved.[444] CEQA places the burden of environmental investigation on the government rather than the public. OSHPD is not allowed to "hide behind its own failure to gather relevant data."[445] In any event, an accurate estimate of the total amount of CPVC, PVC or ABS pipe that will need to be disposed of in the future as a result of this Project is not necessary to determine its potential impact. It is sufficient to take into account that in even one large hospital project, the amount of pipe could exceed 29 miles in length. This alone is a substantial amount of pipe that may release toxic and cancerous contaminants if incinerated or disposed of in a landfill.

The Draft EIR must be revised to meaningfully evaluate the Project's potential solid waste impacts and to support its findings with substantial evidence.

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[440] Draft EIR at p. 8-16.
[441] Draft EIR at p. 8-16.
[442] *Napa Citizens for Honest Government v. Napa County Board of Supervisors* (2001) 91 Cal.App. 4th 342., 347.
[443] *Planning & Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, 244.
[444] OSHPD, Facility Status Search, http://www.oshpd.ca.gov/FDD/project_status/index.asp.
[445] *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 311.

V. CONCLUSION

As demonstrated in these comments, the Draft EIR is profoundly inadequate and fails to meet the minimum requirements of CEQA. The document does not provide substantial evidence or an analytic basis to support its findings or Project approval. Further, the Draft EIR ignores a vast body of evidence demonstrating that the expanded statewide approval of CPVC, PVC or ABS pipe may have numerous significant impacts on public health and the environment. As a result, it fails in significant aspects to perform its function as an informational document that is meant "to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment" and "to list ways in which the significant effects of such a project might be minimized."[446] The result instead is a grudging and pro forma compliance with CEQA designed solely to secure project approval "quickly and efficiently."[447] Because the Draft EIR fails to comply with the requirements of CEQA, it may not be used as the basis for approving the Project.

The Coalition for Safe Building Materials respectfully requests that OSHPD withdraw the Draft EIR and revise it to fully and completely address the issues and evidence that we have presented. The revised Draft EIR must then be recirculated for public review.

Sincerely,

Thomas A. Enslow

TAE:ljl

Attachments: A compact disc with referenced documents is provided. Paper copies of these documents will be provided to OSHPD upon request.

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[446] *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 391.

[447] *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 742 see also *Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 425.