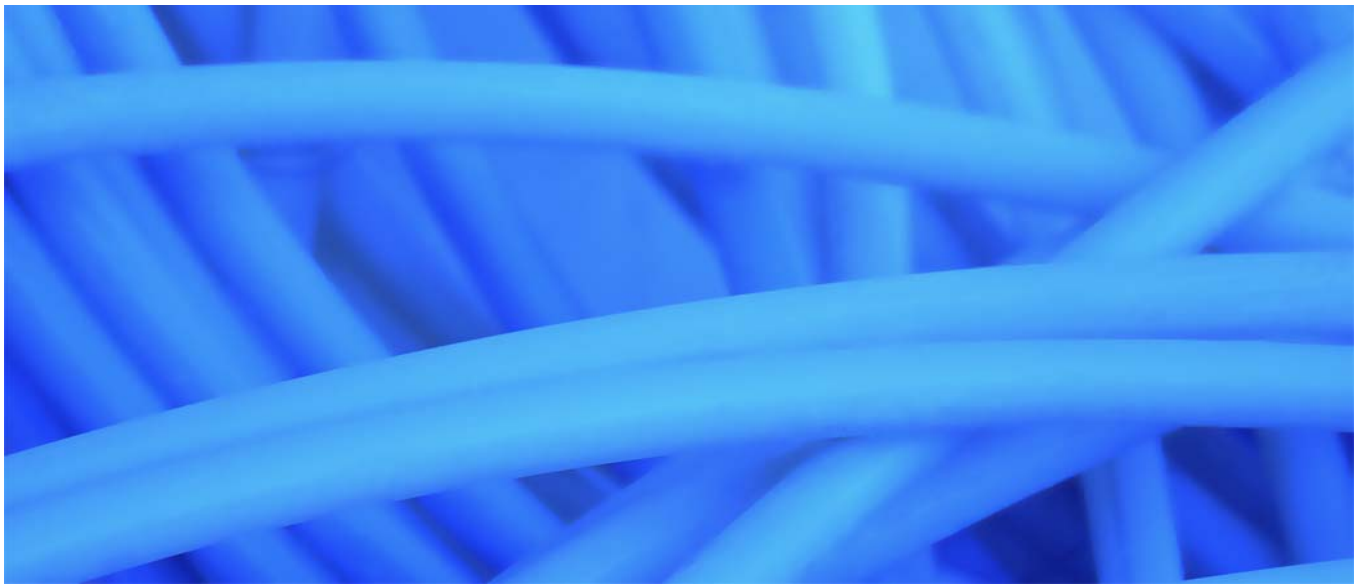
Final Environmental Impact Report

# Adoption of Statewide Regulations Allowing the Use of PEX Tubing



Prepared by:

EDAW
2022 J Street
Sacramento, CA 95811

January 2009

EDAW | AECOM

Final Environmental Impact Report

# Adoption of Statewide Regulations Allowing the Use of PEX Tubing

Prepared for:

California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833

Attn: Valerie Namba
Department of General Services
Senior Environmental Planner
916/376-1607

Prepared by:

EDAW
2022 J Street
Sacramento, CA 95811

Contact:

Jason Barrett
Project Manager
916/414-5800

January 2009

EDAW | AECOM

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ACS | American Cancer Society |
| ANSI | American National Standards Institute |
| BSC | California Building Standards Commission |
| CCR | California Code of Regulations |
| CEQA | California Environmental Quality Act |
| Coalition | Coalition for Safe Building Materials |
| CPC | California Plumbing Code |
| DEIR | draft environmental impact report |
| DFA | Department of Food and Agriculture |
| DGS | Department of General Services |
| DPH | Department of Public Health |
| DSA | Division of the State Architect |
| EIR | environmental impact report |
| FAQ | frequently asked questions |
| GHG | greenhouse gas |
| HCD | California Department of Housing and Community Development |
| IAPMO | International Association of Plumbing and Mechanical Officials |
| MCL | maximum contaminant levels |
| MTBE | methyl tertiary-butyl ether |
| NOD | Notice of Determination |
| NOP | Notice of Preparation |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OPR | Office of Planning and Research |
| OSHPD | Office of Statewide Health Planning and Development |
| PB | polybutylene |
| PEX | cross-linked polyethylene |
| PHG | public health goal |
| proposed project | Adoption of Regulations Allowing the Use of Cross-Linked Polyethylene Tubing |
| STEL | short-term exposure level |
| TAC | toxic air contaminant |
| TBA | tertiary butyl alcohol |
| UPC | Uniform Plumbing Code |
| USEPA | U.S. Environmental Protection Agency |
| UV | ultraviolet |
| µg/L | micrograms per liter |

# 1 INTRODUCTION

This Final Environmental Impact Report (EIR) has been prepared to respond to comments received on the Draft Environmental Impact Report (DEIR) and the Recirculated Draft Environmental Impact Report (RDEIR) for the Adoption of Regulations Allowing the Use of Cross-Linked Polyethylene (PEX) Tubing (proposed project). The Final EIR has been prepared on behalf of the California Building Standards Commission (BSC), the lead agency, in accordance with the requirements of the California Environmental Quality Act (CEQA) and State CEQA Guidelines. Implementation of the proposed project requires approval by the BSC as the lead agency.

The BSC proposes to adopt new state plumbing code regulations that would remove the prohibition against the use of PEX tubing, a type of plastic pipe, from the California Plumbing Code. Implementation of the proposed project would allow the statewide use of PEX tubing for hot and cold water (including potable water) distribution applications under the jurisdiction of the BSC and the five Responsible Agencies that adopt regulations based on environmental information and conclusions in this EIR. This includes applications such as drinking water, irrigation, and wastewater. The proposed PEX tubing regulations would apply to all occupancies, including commercial, residential, and institutional building construction, rehabilitation, and repair under the jurisdiction of BSC and the Responsible Agencies in all areas of the state. Examples of commercial occupancies include retail establishments, restaurants, office buildings, salons, theaters, farms, ranches, and food processing plants. Residential buildings include, but are not limited to, single-family dwellings, apartment houses, hotels, motels, lodging houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-build housing, permanent buildings and permanent accessory buildings or structures constructed within manufactured home parks and special occupancy parks, and other types of dwellings containing sleeping accommodations with or without common toilet or cooking facilities including accessory buildings and facilities. Institutional building examples include schools and hospitals. Currently, PEX is authorized for use in radiant heating systems, manufactured homes, certain approved institutional uses, and for hot and cold water distribution, including potable water uses, in some local jurisdictions.

On May 9, 2008, the BSC released the DEIR for public and agency review and comment. Three public hearings were conducted. Thirty-one letters were received on the DEIR during the public comment period, and four members of the public provided oral comments during the public hearing held on June 6, 2008. The 45-day public comment period closed on June 23, 2008. During and until the end of the review period, comments were received on the DEIR. After the close of the comment period on August 15, BSC received additional comments letter from Adams Broadwell Joseph & Cardozo on behalf of the Coalition for Safe Building Materials (Coalition). The letter was submitted in response to proposed regulations that were circulated for public comment at that time, but the Coalition noted that these were to be considered supplemental comments on the DEIR. The letter does not raise any new environmental issues that are not addressed in the June 23, 2008 and November 14, 2008 Coalition comment letters. Comments contained in Part III of the letter refute comments provided by Somach Simmons & Dunn on behalf of the Plastic Pipe and Fittings Association (see comment letter 29), raise concerns about short-term exposure to MTBE, and generally reflect comments provided in other Coalition comment letters. These comments are thoroughly addressed in the responses to comments contained herein (see responses to comment letters C, 25, 27, and 29).

The BSC reviewed those comments to identify specific environmental concerns and determine whether any additional environmental analysis would be required to respond to issues raised in the comments. The comment letters raised issues that resulted in the addition of significant new information to the EIR. This new information relates to: 1) the nature and rate of leaching of chemicals from PEX tubing, 2) the applicability and appropriateness of DEIR thresholds of significance for water quality, and 3) the determination that certain chemicals are no longer considered constituents of concern because they are not used in PEX.

New information resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact. In addition, new information resulted in the modification of a mitigation measure concerning the permeation of PEX by solvents and petroleum products.

The revised permeation mitigation measure is now more consistent with standard construction practice, and is more protective of human health. Therefore, certain mitigation measures initially proposed in the initial DEIR are no longer included in the EIR, and one mitigation measure has been revised. BSC released a RDEIR for public and agency review and comment on October 16, 2008 that reflected these changes. The State Clearinghouse approved a 30-day shortened review period in accordance with Appendix K of the CEQA Guidelines, and the 30-day public comment period closed on November 14, 2008. Three letters were received on the RDEIR during this period.

This response to comments document, the DEIR, and the RDEIR, together comprise the Final EIR. Copies of these documents are available for review online at http://www.bsc.ca.gov/pex and at the following addresses:

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Suite 3-400
West Sacramento, CA 95605

California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833

Copies of the Final EIR have also been distributed to the five state Responsible Agencies and each includes a compact disk containing electronic versions of all three Final EIR documents (i.e., this response to comments document, the DEIR, and the RDEIR).

## 1.1 FINAL ENVIRONMENTAL IMPACT REPORT BACKGROUND

Comment letters received on the DEIR and information received after the close of the DEIR public comment period raised issues that resulted in the addition of significant new information to the EIR. This information included NSF[1] testing results concerning the leaching of MTBE and TBA from PEX, information concerning the establishment and applicability of the California notification level for TBA, health risks associated with short-term exposures to MTBE and TBA, and detailed information concerning Proposition 65 chemicals and the PEX formulation. This information, discussed in greater detail below and in the RDEIR, supports changes to the significance threshold for water quality and changes to significance determinations for two water quality impacts and one cumulative impact.

### 1.1.1 OVER-TIME TESTING AND LEACHING FROM PEX

As described in the DEIR, PEX manufacturers and industry experts have suggested that levels of methyl tert butyl ether (MTBE) and tertiary butyl alcohol (TBA) that may be higher in new PEX pipe, decline rapidly over time. While this assertion was made prior to release of the DEIR, limited data or other evidence was available to substantiate the claim. Testing by NSF was initiated in April 2008 (about the time of DEIR release) to determine if, and at what rate, the levels decline, and to determine if it is a reasonable assumption that levels would decline to concentrations at or below California criteria within a limited period of time. More specifically, the testing was conducted to determine the point at which the TBA extraction result would be equal to, or lower than 12

[1] NSF International, founded in 1944 as the National Sanitation Foundation, is a not-for-profit, non-governmental testing organization that develops product standards and provides third-party conformity assessment services to government, users, and manufactures/providers of products and systems. NSF has been developing standards for testing and certification of plastics since 1965. NSF is one of few organizations certified by ANSI (American National Standards Institute) to perform testing and certification to ANSI/NSF Standard 61. NSF currently certifies over 280 PEX products produced at 50 manufacturing sites to the health-effects requirements of ANSI/NSF Standard 61, and has 20 years of experience in evaluating PEX piping. Please see comment letter 27 for additional information.

micrograms per liter (µg/L) (the California notification level for TBA), and the MTBE extraction result would be equal to, or lower than 13 µg/L (the California primary maximum contaminant level [MCL] for MTBE).[2]

NSF Standard 61, Section 4.5.4.3, is the multiple-time point protocol for over-time testing. The protocol states that the testing will be conducted over 90 days, and that extrapolation may be used by plotting the relationship between contaminant concentration and time using a minimum of five data points. In accordance with NSF Standard 61, testing of 10 samples of PEX tubing to evaluate the over-time extraction (i.e., leaching) of MTBE and TBA was completed in August 2008.

The test results show a steady decline in the concentrations of TBA and MTBE for each PEX sample over time. All 10 samples reached the 13 µg/L primary MCL for MTBE by day 90, and 6 of 10 samples reached the 5 µg/L secondary MCL for taste and odor for MTBE by day 90. Test results for TBA show that concentrations in all 10 samples were far below the health risk assessment-based NSF criterion of 9,000 µg/L by day 90, ranging from non-detect to 62 µg/L. This new evidence, coupled with health-based information used in the establishment of the standards, supports changing the significance thresholds for water quality (see Section 1.1.2 below).

With regard to taste and odor, NSF testing data show that new PEX pipe can leach MTBE at concentrations that exceed the secondary MCL for MTBE. However, based on over-time testing results described above, chemical concentrations decline rapidly with time, so exceedances of guidelines for taste, odor, and appearance of water would be temporary. Importantly, a significant amount of PEX tubing is currently installed in California, the United States, and Europe, and there is no known record of consumer complaint regarding adverse taste and odor impacts attributable to PEX tubing. Furthermore, taste and odor impacts are aesthetic impacts, and are not health impacts. In contrast, "primary drinking water standards" are defined as a "maximum levels of contaminants that, in the judgment of the department, may have an adverse effect on the health of persons" (Health and Safety Code, Section 116275[c][1]). Therefore, the EIR was revised to conclude that taste and odor impacts are less than significant.

### 1.1.2 THRESHOLDS OF SIGNIFICANCE

Based on the information that was available during preparation of the DEIR, the nonregulatory notification level for TBA was used as a significance threshold for water quality. Evidence received during public review of the DEIR raises questions as to the validity of using the California notification level for TBA as a threshold of significance in the EIR and its applicability to human health risk assessment with respect to PEX. Correspondence was received from NSF indicating that the standard is inappropriate for several reasons. In summary, the notification level is not based on a sufficient human health risk assessment; the process for derivation of the 12 µg/L notification level in 1999 was noted as an "interim assessment with preliminary calculations, and by no means represents a full risk assessment" and was "based on limited data"; and the limit-setting process used methods that have since been determined to be not relevant to human health, a conclusion supported by U.S. EPA. By definition, notification levels are "…nonregulatory, health-based advisory levels…for which maximum contaminant levels have not been established" (California Health and Safety Code Section 116455[c][3]). NSF conducted a human health risk assessment to allow toxicological assessment of TBA, an unregulated contaminant, in drinking water using risk assessment methodology developed by U.S. EPA and identified levels of 900 to 40,000 µg/L as being protective of human health. Based on this new information, it is determined that the non-regulatory California notification level of 12 µg/L is overly conservative and not appropriate for use as a threshold of significance for PEX water quality impact assessment purposes. In addition, over-time testing results (as described above) show that concentrations of MTBE and TBA leaching from PEX steadily decline at predictable rates, and that TBA concentrations after 90 days are relatively low (ranging from non-detect to 62 µg/L) compared to the NSF health risk assessment-based criterion of 9,000 µg/L. Based on these facts, NSF criteria are considered protective of human health, and exposure to concentrations of TBA indicated in the over-time testing (that continue to decline over time) would not result in a significant impact to human health.

[2] As will be discussed in more detail in Section 1.1.2 of this Final EIR, notification levels are nonregulatory, health-based advisory levels. MCLs are enforceable regulatory standards.

Finally, the question was raised as to whether *any* exceedance of a standard should constitute a significant adverse impact on human health. As described above, test results show that concentrations of TBA and MTBE decline over time. By day 90, all 10 samples met the 13 µg/L MCL for MTBE, and TBA concentrations decline to well below the NSF criterion of 9,000 µg/L. Although the test results show that MTBE and TBA concentrations for some samples are initially higher than the California notification level for TBA and MCL for MTBE, exposure to a chemical concentration that is higher than a California standard for a short period of time is not necessarily a valid indicator of human health risk.

The NSF health risk assessment-based criterion for TBA and the MCL for MTBE are based on long-term exposure to those chemicals. The California MCL for MTBE considers effects that may result from MTBE exposure and "estimates the level of the contaminant in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime." In addition, a risk assessment performed by NSF for MTBE resulted in a standard of 100 µg/L. Both the California MCL of 13 µg/L and the NSF standard of 100 µg/L are acceptable given current U.S. EPA risk management criteria and are protective of public health. In addition, the assumption behind the California MCL is a continuous exposure of the chemical at the regulated level over a lifetime. Because concentrations of contaminants leaching from plumbing products decay rapidly over time, they should not be assumed to be consistent and continuous over the lifetime of a product. Therefore, short term exposure to TBA or MTBE at levels exceeding California standards would not cause a substantial adverse impact on human health.

### 1.1.3 PROPOSITION 65 CHEMICALS

At the time the DEIR was prepared, three Proposition 65 compounds (butyl benzyl phthalate, toluene diamine, and carbon black) thought to be potentially present in PEX formulations and for which there are no established California or federal drinking water criteria were identified. Based on evidence received during and after public review of the DEIR, it has since been determined that these three chemicals are not present in PEX. According to NSF, butyl benzyl phthalate and toluene diamine are not found in PEX tubing. Based on NSF's 20 years of experience in reviewing PEX formulations and testing PEX tubing, NSF has not seen and would not expect to see butyl benzyl phthalate or toluene diamine in the formulation for PEX or in chemical extraction test results of PEX tubing. (This erroneous information came from a study that considered constituents that could be present in PEX and other types of plastics, but did not identify the specific chemicals associated with each type of plastic.) These compounds are associated with polyurethane, and polyurethane is not an ingredient in PEX nor is it used as a liner or coating for PEX in potable water applications. Therefore, butyl benzyl phthalate and toluene diamine are no longer considered constituents of concern, and are not considered further in this EIR. Carbon black is also identified in the DEIR as a substance potentially present in PEX tubing, and is listed on the Proposition 65 list of "Chemicals Known to the State to Cause Cancer or Reproductive Toxicity." However, based on information provided by NSF after publication of the DEIR, carbon black is not present in the PEX formulation.

## 1.2 SUMMARY DESCRIPTION OF THE PROPOSED PROJECT

### 1.2.1 PROJECT LOCATION

The proposed adoption of regulations related to PEX tubing is a statewide regulatory change. As such, the project area is the State of California.

### 1.2.2 PROJECT OBJECTIVE

BSC proposes adoption of new state plumbing code regulations that would authorize the statewide use of PEX tubing for various cold and hot water (including potable water) plumbing applications in residential, commercial, and institutional buildings. Responsible Agencies, each of which will rely on this EIR for its own adoption of regulations, include the California Department of Housing and Community Development (HCD), Division of the State Architect (DSA), Office of Statewide Health Planning and Development (OSHPD), Department of Public

Health (DPH, previously known as the Department of Health Services, or DHS), and the Department of Food and Agriculture (DFA). Individual cities and counties would not be responsible agencies because they would not have any authority to approve or deny the project or add requirements or restrictions relating to the use of PEX within their jurisdictions after it is approved by BSC, unless they make express findings for such additions or deletions based on climatic, topographical, or geological conditions (California Plumbing Code [CPC] Section 101.8.1). BSC's objective in proposing these regulations is to provide an alternative plastic hot and cold water plumbing material for use in California.

### 1.2.3 PROPOSED REGULATIONS

California Health and Safety Code Sections 18928, 18938, 17922, and 19990 direct BSC and the Responsible Agencies to adopt building standards that are reasonably consistent with recognized and accepted standards contained in the most recent editions of the Uniform Plumbing Code (UPC). California adopts the UPC on a triennial basis with modifications in strikeout for deletions and italics and underline for additions. This revised code becomes the CPC; no finalized version (i.e., without changes shown in strikeout and underlined italics) is prepared. BSC has selected the 2006 UPC published by the International Association of Plumbing and Mechanical Officials (IAPMO) as the model code for this code adoption cycle. The proposed project is a change to Part 5, Title 24, California Code of Regulations (CCR) (referred to as CPC), which is applicable to buildings under the jurisdiction of BSC, DFA, DPH, DSA, HCD, and OSHPD. Currently, PEX is authorized for use in radiant heating systems, manufactured homes, certain approved institutional uses, and for hot and cold water distribution, including potable water uses in some local jurisdictions. However, PEX was specifically not adopted (i.e., it was deleted) in the 2007 CPC for uses under the jurisdiction of BSC and the Responsible Agencies.

The modifications to the existing plumbing code would entail the following changes. The following table (Table 6-4, "UPC") and text are excerpted from "The Express Terms for the Building Standards of the Building Standards Commission Regarding the Adoption of Amendments into the 2007 California Plumbing Code, California Code of Regulations," Title 24, Part 5. The proposed changes to the regulations involve deletion of exceptions to the adoption of PEX in the CPC. As no additions are proposed to the CPC, no text is in italics.

**Table 6-4**
**UPC**

| Material | Water Distribution Pipe and Fittings | | Building Supply Pipe and Fittings |
|---|---|---|---|
| | Hot | Cold | |
| Asbestos – Cement | | | X |
| Brass | X | X | X |
| Copper | X | X | X |
| Cast Iron | X | X | X |
| CPVC | X | X | X |
| Galvanized Malleable Iron | X | X | X |
| Galvanized Wrought Iron | X | X | X |
| Galvanized Steel | X | X | X |
| PE | | | X |
| PE-AL-PE | X | X | X |
| PEX ~~1~~ | X | X | X |
| PEX-AL-PEX[1] | X | X | X |
| PVC | | | X |

[1] [BSC, DSA/SS & HCD] The use of ~~PEX and~~ PEX-AL-PEX in potable water supply systems is not adopted ~~for applications under the authority of the California Building Standards Commission, the Division of State Architect and the Department of Housing and Community Development.~~

**604.1**

Exceptions:

~~**(2) [For OSHPD 1, 2, 3 & 4]** Use of PEX piping is not permitted for applications under the authority of the Office of Statewide Health Planning and Development.~~

~~**(4) [For BSC]** Use of PEX piping is not adopted for applications under the authority of the Department of Health Services and the Department of Food and Agriculture.~~

**604.11 PEX**. ~~***[Not Adopted by BSC, HCD, DSA/SS, DHS, AGR & OSHPD 1, 2, 3 & 4]***~~Cross-linked polyethylene (PEX) tubing shall be marked with the appropriate standard designation(s) listed in Table 14-1 for which the tubing has been listed or approved. PEX tubing shall be installed in compliance with the provisions of this section.

**604.11.1 PEX Fittings.** ~~***[Not Adopted by BSC, HCD, DSA/SS, DHS, AGR & OSHPD 1, 2, 3 & 4]***~~Metal insert fittings, metal compression fittings, and cold expansion fittings used with PEX tubing shall be manufactured to and marked in accordance with the standards for the fittings in Table 14-1.

**604.11.2 Water Heater Connections.** ~~***[Not Adopted by BSC, HCD, DSA/SS, DHS, AGR & OSHPD 1, 2, 3 & 4]***~~ PEX tubing shall not be installed within the first eighteen (18) inches (457mm) of piping connected to a water heater.

~~***(2) [For OSHPD 1, 2, 3 & 4]*** *Use of PEX piping is not permitted for applications under authority of the Office of Statewide Health Planning and Development.*~~

~~***(4) [For AGR, DHS]*** *Use of PEX piping is not adopted for applications under the authority of the Department of Health Services and the Department of Food and Agriculture.*~~

## 1.2.4 SUMMARY OF ALTERNATIVES TO THE PROPOSED PROJECT

The EIR evaluates the following alternatives to the project:

- No Project Alternative (Alternative A)
- Mitigated Design Alternative (Alternative B)

The No Project Alternative is defined as the current pipe usage in California plus the reasonably foreseeable future pipe usage for approved plumbing materials if the regulation is not adopted and the prohibition against the use of PEX for hot and cold water distribution (including potable water uses) is not removed. Overall, the No Project Alternative would be similar to the proposed project.

Under the Mitigated Design Alternative, PEX would only be used above the slab (i.e., out of bare soil) unless the PEX is sleeved by a metal pipe or other proven impermeable barrier. Also, for all continuously recirculating hot water systems in jurisdictions where chlorination is used for disinfection of water, PEX tubing must be certified using the NSF P171-CL-R standard or a yet-to-be-adopted comparable standard.

The Mitigated Design Alternative would be environmentally superior to the project with respect to public health and hazards, water quality, and air quality. It would be similar to the project with respect to solid waste. Overall, this alternative is environmentally superior to the proposed project. The objective of the proposed project is to provide another plastic piping alternative for use in California and this alternative would attain that objective. The Mitigated Design Alternative is the overall environmentally superior alternative of all the alternatives evaluated.

## 1.3 PURPOSE OF THE FINAL EIR

CEQA requires a lead agency that has completed an EIR to consult with and obtain comments from public agencies that have legal jurisdiction with respect to the proposed action, and to provide the general public with opportunities to comment on the EIR. This Final EIR has been prepared to respond to comments received on the DEIR and the RDEIR for the proposed project.

## 1.4 CEQA REQUIREMENTS FOR RESPONDING TO COMMENTS

The State CEQA Guidelines state that written responses to comments received on the DEIR must describe the disposition of significant environmental issues. In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed. There must be good faith, reasoned analysis in responses. Responses are not required on comments regarding the merits of the project or on issues not related to the environmental impacts of the project.

## 1.5 REQUIREMENTS FOR EIR CERTIFICATION AND FUTURE STEPS IN PROJECT APPROVAL

The EIR is intended to be used by the BSC when considering approval of the proposed project or an alternative to the proposed project.

In accordance with CEQA, the DEIR was circulated for public and agency review and comment on May 9, 2008. The 45-day public comment period closed on June 23, 2008. Comments were received from companies, organizations, local agencies, and individuals. Public hearings to receive public input on the DEIR were held during the review period on June 3, June 4, and June 6, 2008.

BSC released the RDEIR for public and agency review and comment on October 16, 2008. The State Clearinghouse approved a 30-day shortened review period in accordance with Appendix K of the CEQA Guidelines, and the 30-day public comment period closed on November 14, 2008. Three letters were received on the RDEIR during the public comment period.

Following completion of the Final EIR, the BSC will consider certification of the Final EIR and decide whether or not to approve the project or an alternative. Written findings of fact for each significant environmental impact identified in the EIR and a Mitigation Monitoring and Reporting Program shall be prepared and adopted by BSC. A Notice of Determination (NOD) would then be filed.

## 1.6 ORGANIZATION OF THE RESPONSES TO COMMENTS DOCUMENT

This document is organized as follows:

- **Chapter 1, "Introduction,"** describes the purpose and content of the Final EIR, provides an overview of the environmental review process, and presents a summary of the proposed project and alternatives.

- **Chapter 2, "Comments and Responses,"** contains a list of all companies, organizations, local agencies, and individuals who submitted comments on the DEIR and the RDEIR during the public review period, copies of the comment letters received, and individual responses to the comments.

- **Chapter 3, "Revisions to the Draft EIR and Recirculated DEIR,"** presents revisions to the DEIR and RDEIR text based on issues raised by comments, clarifications, or corrections. Changes in the text are signified by ~~strikeouts~~ where text is removed and by <u>underline</u> where text is added.

- **Chapter 4, "Report Preparation,"** lists the individuals who assisted in the preparation of this Final EIR.
- **Chapter 5, "References,"** lists the references cited in responses to comment letters C, 25, 27, and 29.

# 2 COMMENTS AND RESPONSES

This chapter contains comment letters received during the public review period for the Draft Environmental Impact Report (DEIR) and the public review period for the Recirculated Draft Environmental Impact Report (RDEIR). In accordance with State CEQA Guidelines Section 15088(a), written responses to comments on environmental issues received from reviewers of the DEIR and RDEIR were prepared.

Thirty-one comment letters were received on the DEIR during the public review period, and four members of the public provided oral comments on the DEIR at the public hearing held on June 6, 2008. Three comment letters were received on the RDEIR during the public review period. The list of commenters on the DEIR and RDEIR is presented in Table 2-1.

Each comment letter and each comment within a letter are assigned an identification number. Similarly, each public hearing transcript and each oral comment within a transcript are assigned an identification number. Numbered responses correspond to each comment. Where appropriate, responses are cross-referenced to reduce redundancy.

## 2.1 LIST OF COMMENTERS

Table 2-1 provides a list of all companies, organizations, public agencies, and individuals that submitted oral or written comments on the DEIR and/or the RDEIR during the respective public review periods.

**Table 2-1**
**List of Commenters**

| Letter ID | Commenter | Organization | Date Received |
|---|---|---|---|
| COMMENT LETTERS RECEIVED ON THE RECIRCULATED DEIR (RDEIR) | | | |
| A | Dennis Beddard, Chief Counsel | California Department of Housing & Community Development | October 20, 2008 |
| B | Richard Shields, Director of Building and Safety/Public Works | City of Grand Terrace | October 24, 2008 |
| C | Thomas Enslow, Attorney | Adams Broadwell Joseph & Cardozo (on behalf of the Coalition for Safe Building Materials) | November 14, 2008 |
| COMMENT LETTERS RECEIVED ON THE DEIR | | | |
| 1 | Bob Chambers, Director, Americas Water Division | Gambro | May 22, 2008 |
| 2 | John and Lori Silva, Concerned Citizens | - | May 29, 2008 |
| 3 | Kim Nielsen, Operations | Griffin Industries | June 3, 2008 |
| 4 | Steven Hartshorn, President | Orange Pacific Plumbing, Inc. | June 3, 2008 |
| 5 | Tobin Whitt, Chief Executive Officer | Pacific Production Plumbing | June 3, 2008 |
| 6 | Purna Prasad, Director, Department of Clinical Technology & Biomedical Engineering | Stanford University Medical Center | June 3, 2008 |
| 7 | Richard Shields, Building Official | City of Grand Terrace | June 6, 2008 |
| 8 | Wayne Taylor, General Manager | Golden West Plumbing, Inc. | June 6, 2008 |

| Table 2-1<br>List of Commenters | | | |
|---|---|---|---|
| Letter ID | Commenter | Organization | Date Received |
| 9 | Glen Freyermuth, Vice President of Purchasing and Product Development | Granite Homes | June 6, 2008 |
| 10 | John Zlomek, Chief Operating Officer | Saber Plumbing Company, Inc. | June 6, 2008 |
| 11 | Mark Pulver, Purchasing Manager | Warmington Homes | June 6, 2008 |
| 12 | Jim Casey, Area Manager | Osborne Company | June 18, 2008 |
| 13 | Victor Franco | Sheehan Construction, Inc. | June 18, 2008 |
| 14 | Bruce Wick, Director of Risk Management | California Professional Association of Specialty Contractors (CALPASC) | June 19, 2008 |
| 15 | Gregory Colgate, President | California Title Company | June 19, 2008 |
| 16 | Therese LeMieux | Robbins Plumbing and Heating Contractors, Inc. | June 19, 2008 |
| 17 | Ben Viloria | Viloria Construction Inc. | June 19, 2008 |
| 18 | Marc Kaplan, President | Aspen Insurance Brokers | June 20, 2008 |
| 19 | Kary Yergler | Bayside Concrete Construction Company | June 20, 2008 |
| 20 | James Kanell, President | Casa Plumbing, Inc. | June 20, 2008 |
| 21 | Richard Palmer | Frontier Mechanical, Inc. | June 20, 2008 |
| 22 | Gerrold Hopping Jr., President | GH Plumbing Inc. | June 20, 2008 |
| 23 | Fred Hovenier, Vice President | Laurence-Hovenier, Inc. | June 20, 2008 |
| 24 | Terry Fletcher, President | Richard's Plumbing, Inc. | June 20, 2008 |
| 25 | Thomas Enslow | Adams Broadwell Joseph & Cardozo (on behalf of the Coalition for Safe Building Materials) | June 23, 2008 |
| 26 | Rick Mercier, Vice President | Lucas & Mercier Construction | June 23, 2008 |
| 27 | Lori Bestervelt, Senior Vice President and Chief Technical Officer | NSF International | June 23, 2008 |
| 28 | Keith Strong | Pinnacle Plumbing, Inc. | June 23, 2008 |
| 29 | Kelley Taber | Somach Simmons & Dunn (on behalf of the Plastic Pipe and Fittings Association) | June 23, 2008 |
| 30 | David Keefe, President | Trilogy Plumbing, Inc. | June 23, 2008 |
| 31 | John Raya, President | Plumbing Concepts, Inc. | June 26, 2008 |

| Table 2-1<br>List of Commenters | | | |
|---|---|---|---|
| DEIR PUBLIC HEARING COMMENTS | | | |
| Transcript ID | Commenter | Organization | Date Received |
| PH1 | No comments received | - | June 3, 2008 |
| PH2 | No comments received | - | June 4, 2008 |
| PH3-1 | Kim Nielsen | Griffin Industries, Inc. | June 6, 2008 |
| PH3-2 | Bruce Wick, Director of Risk Management | California Professional Association of Specialty Contractors (CALPASC) | June 6, 2008 |
| PH3-3 | Bob Payne, Master Plumber | - | June 6, 2008 |
| PH3-4 | Rick Banner | Keyline Sales, Inc. | June 6, 2008 |

## 2.2 COMMENTS AND RESPONSES

The oral and written comments received on the DEIR and RDEIR and the responses to those comments are provided in this section. Each comment letter and public hearing transcript is reproduced in its entirety and is followed by the response(s) to the letter or transcript. Each comment is indicated by a bracket and identifying number in the margin of the comment letter or public hearing transcript.

Changes to the text of the DEIR or RDEIR that are made in response to the comments are signified by ~~strikeouts~~ where text is removed and by <u>underline</u> where text is added.

A

**From:** Dennis Beddard [DBeddard@hcd.ca.gov]

**Sent:** Monday, October 20, 2008 1:30 PM

**To:** Namba, Valerie

**Subject:** RDEIR - nonsubstantive comment

Valerie,

Here's a non-substantive observation -- P. 1.3 - Proposition 65 Chemicals, first sentence -- I don't think this is a complete sentence. A-1

***This message may contain privileged or confidential information and is only transmitted for the use of the intended recipient. The use of this information, in any manner, by anyone other than the intended recipient is prohibited. If you have received this message in error, please contact the sender and delete the material.***

Dennis L. Beddard, Chief Counsel
Dept. of Housing & Community Development
1800 Third Street, Room 440
P.O. Box 952052
Sacramento, CA 94252-2052
(916) 323-7288
fax: (916) 323-2815
dbeddard@hcd.ca.gov

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**Letter A Response**

California Department of Housing & Community Development
Dennis Beddard, Chief Counsel
October 20, 2008

**A-1** The commenter does not raise any issues related to the environmental analysis provided in the RDEIR; therefore, no further response is necessary.

B

DEPARTMENT OF
BUILDING & SAFETY,
PUBLIC WORKS
AND HOUSING

22795 Barton Road
Suite B
Grand Terrace
California 92313-5295
Civic Center
(909) 825-3825
Fax (909) 825-7506

OCT 24 2008
REAL ESTATE
SERVICES

October 22, 2008

California Department of General Services, Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

**Attn: Valerie Namba, Senior Environmental Planner**

**RE: Comments on Recirculated Draft Environmental Impact Report on Pex Tubing.**

My comments on the RDEIR are as follows:

As Building Official for numerous jurisdictions over the past 16 years, I have been exposed to pipe failures in domestic water supply systems that incorporated the use of copper pipe and the installation of new domestic water systems using nonmetallic pipe. Over the years, I have been involved with the expanded use of CPVC piping.

Pex Tubing has become very popular due to its ease of use and the lack of any glue for connections. I have been approving the use of Pex Tubing since 1996 when it was first introduced in our region from plumbing contractors who were using this pipe in Nevada and Arizona on dwelling construction.

Pursuant to the plumbing code, an alternative material approval is required to allow Pex Tubing that is now widely used across the Inland Empire. I have allowed this materials use in many home projects using the alternative approach and have never seen or have ever received any evidence of product failure do to the correct installation of Pex Tubing materials. I have never received complaints or experienced any odors or bad taste generated from Pex Tubing. However, I have received complaints regarding copper pipe having a metallic taste and odor. B-1

At this present time, I require each applicant to provide a water test examining the make up of the water for corrosion reasons. Each time a report is provided, the water is defined as hard in nature and corrosive. The recommendations in the reports are to use a nonmetallic material for domestic water supply. The code only recognizes CPVC which is a good nonmetallic material alternative. However, Pex Tubing is a better choice due to the ease of installation in its ability to be installed in tight areas for re-piping and new construction. Requiring the project applicants to pay additional money for testing and research coupled with time loss is not fair when Pex Tubing is already approved in manufactured homes and in most parts of the country.

In the past jurisdiction that I have worked, there was a company that rehabilitated kidney dialysis machines from all over the world. As you know, these machines are used to circulate blood for patients with kidney problems. I was shocked when I was informed by the owner of company that these machines use Pex Tubing in the circulation system because of its lack of carcinogens. If Pex Tubing is used in kidney dialysis machines with no effect on the patient, why would we not be able to approve its use for domestic water supply in the plumbing code. And, if Pex materials are already widely used in our state for other product uses we may not have been informed about, then an environmental study should support its continued expanded use.

When Pex pipe is installed on a project it is not likely to be stolen and recycled as is copper pipe today. The effects of copper pipe being stolen is far more of an environment problem than Pex tubing being placed in land fill areas or burning in an accidental home fire that are limited in nature. Much like CPVC piping material, Pex will be existing in homes it was originally installed in for many years beyond metallic pipe life because it is immune to corrosion attacks from aggressive water. There have been no documented failures reported or tracked in the rest of the country that has been shared with the building industry that would change minds on Pex Tubing performance. Only unsubstantiated talk that rodents have eaten through the pipe in an attic. If this is true, the pipe would not have been eaten if the attic was properly protected as required by code to stop rodents from entering. B-1 Cont'd

I attended a water symposium that reported, in order to kill new bacteria showing up in water systems today, chloramines are being used to kill this bacteria that can harm human consumption. The chloramines are attacking the Patina build up inside the copper pipe. Patina protects the pipe from corrosive attacks. Pursuant to water experts, the loss of Patina builds up in the pipe allows the pipe to be exposed to hard water and eventually pin hole leaks appear. Only having one additional solution to re-piping a home using CPVC application is not fair or reasonable when there is Pex piping that can be used to access hard to get areas and is generally easier to install in any type of application, new or re-pipe.

As a building official, I highly recommend that the use of Pex Tubing be allowed in the plumbing code not only to allow more choices in domestic water material but to also mitigate the problems of failing metallic pipe that continues to evade property owners.

I strongly encourage the adoption of Pex Tubing into the California Code.

Should you have any questions, please feel free to contact me at (909) 825-3825.

Sincerely,

Richard Shields

Richard Shields, CBO
Director of Building and Safety/Public Works

| Letter B Response | City of Grand Terrace<br>Richard Shields, Director of Building and Safety/Public Works<br>October 24, 2008 |
|---|---|

**B-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

C

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209
tenslow@adamsbroadwell.com

DANIEL L. CARDOZO
THOMAS A. ENSLOW
PAUL F. FOLEY*
TANYA A. GULESSERIAN
MARC D. JOSEPH
RACHAEL E. KOSS
LOULENA A. MILES
GLORIA D. SMITH

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

*Licensed in New York only

SO. SAN FRANCISCO OFFICE
601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080
TEL: (650) 589-1660
FAX: (650) 589-5062

November 14, 2008

**VIA EMAIL AND HAND DELIVERY**

Ms. Valerie Namba, Senior Environmental Planner
California Department of General Services, Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Re: Comments of Coalition for Safe Building Materials on the Recirculated Draft Environmental Impact Report on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing

Dear Ms. Namba:

The following comments on the October 2008 Recirculated Draft Environmental Impact Report on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing ("RDEIR") are respectfully submitted on behalf of the Coalition for Safe Building Materials ("Coalition"). The RDEIR amends and supplements the May 2008 Draft Environmental Impact Report on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing ("DEIR"). The RDEIR and DEIR evaluate the potential impacts of the proposed adoption of regulations that would amend the current California Plumbing Code ("CPC") to permit the use of cross-linked polyethylene ("PEX") tubing and fittings for potable water pipe ("Project") in residential, commercial and institutional buildings. C-1

The members of the Coalition include the California Pipe Trades Council, Consumer Federation of California, California Professional Firefighters, Planning and Conservation League, Center for Environmental Health, Sierra Club California and Communities for a Better Environment, along with their individual members. The environmental, consumer, public health and labor organizations that make up the Coalition represent literally millions of Californians concerned about the safety of new building materials.



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The California Building Standards Commission ("CBSC") has prepared the RDEIR as the Lead Agency under the California Environmental Quality Act ("CEQA") with the assistance of the California Department of General Services ("DGS"). The RDEIR states that it may be relied upon for approval of PEX in occupancies under the jurisdictions of the Department of Housing and Community Development ("HCD"), Division of the State Architect ("DSA"), Office of Statewide Health Planning and Development ("OSHPD"), Department of Public Health ("DPH") and the Department of Food and Agriculture ("DFA").

In its June 23, 2008 comments on the DEIR, the Coalition commended CBSC for preparing the DEIR (notwithstanding a number of serious deficiencies in the DEIR's analysis and conclusions that were identified and documented in the Coalition's comments). The DEIR corroborated many of the concerns that the Coalition has long raised regarding this product. These concerns included: (1) the potential health hazards from the leaching of methyl tertiary-butyl ether ("MTBE") and tert-butyl alcohol ("TBA") in amounts that exceed the state standards for taste, odor and health; (2) the permeation of PEX pipe by outside contaminants; and (3) the premature degradation and rupture of PEX pipe. For the first time, the DEIR proposed measures to attempt to mitigate these hazards. The DEIR's honest and calculated analysis of the leading issues was a welcome departure from HCD's now abandoned 2006 Negative Declaration on the statewide approval of PEX and PEX-AL-PEX that blatantly ignored the undisputed evidence of these significant health and public safety issues.

C-1
Cont'd

Unfortunately, the RDEIR arbitrarily reverses the DEIR's finding of significant leaching impacts and eliminates mitigation measures that it had previously identified as both feasible and necessary. As will be discussed in more detail below, the RDEIR's wholesale reversal of the DEIR's original findings regarding leaching impacts is arbitrary, without foundation, contrary to undisputed evidence in the administrative record, and contrary to the expert determinations of the California agency designated to evaluate the significance of such drinking water impacts.

The RDEIR does improve the mitigation that had been proposed to address the permeation impacts associated with PEX, but it fails to address any of the numerous other deficiencies that were contained in the original DEIR, particularly with regard to failure impacts. In other words, instead of taking this opportunity to improve its environmental review of PEX, the RDEIR takes a giant step backwards.

As a result, the RDEIR fails to fully comply with the requirements of CEQA. The Lead Agency may not approve the Project until the new errors in the RDEIR and the unaddressed errors in the DEIR are corrected, and an adequate document is circulated for public review and comment. C-1 Cont'd

## I. THE RDEIR LACKS FOUNDATION TO SUPPORT ITS REVERSAL OF THE DEIR'S DETERMINATION THAT THE LEACHING OF MTBE IN AMOUNTS EXCEEDING CALIFORNIA DRINKING WATER STANDARDS IS A SIGNFICANT IMPACT

The RDEIR's complete reversal of its determinations regarding MTBE leaching impacts is arbitrary and capricious and lacks foundation.

The DEIR evaluated the evidence regarding MTBE leaching and concluded that:

> Because PEX has been associated with the leaching of MTBE at levels that, at least initially, exceed State of California health-based MCLs ... this would represent a **potentially significant** impact.[1]

C-2

As a result of this finding, the RDEIR imposed mitigation that would have required that all PEX installed in California buildings for use as drinking water pipe must be certified and marked as meeting the California MCL for MTBE.[2]

After receiving protests from the plastic pipe industry and meeting with industry lobbyists,[3] the RDEIR now reverses this determination and eliminates this mitigation measure. The RDEIR attempts to justify the complete reversal of its previous finding of significant impact based on the following: (1) an unsupported extrapolation from limited test data provided by NSF for ten unidentified PEX samples that MTBE leaching from all PEX formulations will quickly decline below

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[1] DEIR at p. 4.4-16 (emphasis in original).

[2] *Id*.

[3] Letter from Kelley Taber on behalf of Plastic Pipe & Fittings Assoc. ("PPFA") to Valerie Namba (June 23, 2008) (objecting to proposed leaching mitigations); email from Moira Topp, lobbyist for PPFA, to Michael Saragosa, State and Consumer Services Agency (August 14, 2008) (confirming meeting with PPFA lobbyists and attorney); California Secretary of State, PPFA Lobbying Activity, http://cal-access.sos.ca.gov/Lobbying/Employers/Detail.aspx?id=1144583&session=2007&view=activity [as of November 13, 2008].

the California health-based MCL; (2) an assumption that exposure to MTBE must occur continuously over 70 years in order to impact health; and (3) a vague and misleading statement that both the California MCL of 13 µg/L and the NSF 61 standard of 100 µg/L are acceptable given current U.S. Environmental Protection Agency ("EPA") risk *management* criteria.[4] C-2 Cont'd

These assumptions and statements lack foundation, are generally incorrect or misleading, and fail to provide a rational basis for the agency's conclusions.

**A. CBSC Lacks Sufficient Expertise or Foundation to Second Guess the Public Health Goals for Drinking Water Set by the Office of Environmental Health Hazard Assessment**

The RDEIR's reversal of the DEIR's MTBE leaching findings is legally deficient because it appears to rely upon privately-set NSF 61 standards over California drinking water standards. This reliance is contrary to the intent of the Legislature, is arbitrary and capricious, and lacks foundation.

The RDEIR fails to identify whether it is relying upon the California drinking water standard for MTBE or the NSF 61 standard for MTBE for its threshold of significance. Instead, the RDEIR obliquely states that "both the California MCL of 13 µg/L and the NSF standard of 100 µg/L are acceptable given current U.S. EPA risk *management* criteria and are protective of public health."[5] The RDEIR, however, never makes the claim that the NSF 100 µg/L standard for MTBE reduces potential health impacts to a level of complete insignificance. Moreover, the RDEIR fails to identify any legally adequate basis for disregarding the California drinking water Public Health Goal for MTBE of 13 µg/L. In addition, the RDEIR ignores the critical difference between risk *assessment* criteria and risk *management* criteria. C-3

"Acceptable" regulations protective of public health do not necessarily reduce potential health impacts to a level of complete insignificance. Federal and state MCLs are clearly acceptable regulations protective of public health, but they are not set solely based on public health considerations. Economic and technological feasibility are also taken into account when setting MCLs.[6] NSF bases its TACs

[4] RDEIR at p. 4.4-18; µg/L is also expressed as parts per billion or ppb.
[5] RDEIR at 4.4-18 (emphasis provided).
[6] Health & Saf. Code §116365; 42 U.S.C. § 300g-1; the factors evaluated in determining the U.S. EPA MCL standards include: human exposure and risks of adverse health effects in the general

and SPACs on the MCL for adults set by the U.S. EPA and the maximum allowable contamination ("MAC") level set by Health Canada MAC and thus are not set exclusively based on public health considerations. In addition, NSF itself takes into account additional industry concerns regarding technical and economic feasibility when setting its standards.[7]

In California, the Office of Environmental Health Hazard Assessment ("OEHHA") is designated as the expert state agency for identifying, quantifying and recommending *health-based standards* for chemicals in the environment.[8] The Governor's 1991 Reorganization Plan moved OEHHA to CAL EPA in order to create an independent entity to "evaluate the health risks of chemicals in the environment" and to "provide information to environmental regulators and the public about the adverse health effects that result from environmental exposures to noninfectious agents."[9] Because CBSC does not have expertise in toxicology and risk assessment, it should have consulted with OEHHA in assessing the risk posed to consumers from drinking water contaminated with MTBE leached from PEX.

C-3
Cont'd

OEHHA's mission is to "provide functional and organizational separation of risk assessment from risk management," as recommended by the National Academy of Sciences report, Risk Assessment in the Federal Government: Managing the Process.[10] "Risk Assessment" is defined as "the characterization of the potential adverse health effects of human exposures to environmental hazards." In contrast, "risk management" is defined as "the process of evaluating alternative regulatory actions and selecting among them ... [using] value judgments on such issues as the acceptability of risk and the reasonableness of the costs of control."[11]

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population and sensitive subpopulations; analytical methods of detection; technical feasibility; and impacts of regulation on water systems, the economy and public health.

[7] See Comments of Thomas Reid on Chlorinated Polyvinyl Chloride ("CPVC") Pipe Draft EIR (August 27, 1998) at pp. 22-34; see also Peggy Lopipero, M.P.H. & Martyn T. Smith, Ph.D, Comments on the Draft EIR for CPVC Pipe Use for Potable Water Piping in Residential Buildings (August 1998) at pp. 6-7 (identifying at least six NSF standards that fail to reduce health risks to a level of insignificance).

[8] Governor's Reorganization Plan, No. 1 of 1991, eff. July 17, 1991, 4 Stats. 1001, Appendix G; see also OEHHA Department Description, http://www.oehha.ca.gov/about/description.html [as of October 30, 2008].

[9] Governor's Reorganization Plan, No. 1 of 1991, eff. July 17, 1991, 4 Stats. 1001, Appendix G.

[10] *Id.*, citing National Academy of Sciences, *Risk Assessment in the Federal Government: Managing the Process* (1983) at pp.3, 18-19.

[11] Governor's Reorganization Plan, No. 1 of 1991, eff. July 17, 1991, 4 Stats. 1001, Appendix G.

OEHHA, for example, considers the carcinogenic health risk from an air or water contaminant to be significant if the lifetime probability of contracting cancer due to exposure to the contaminant is greater than one in one million.[12] However, ten in one million may be considered an acceptable health risk level for the *risk management* purposes of setting regulation, if further reduction of the risk level would be infeasible due to economic or technological limitations.[13] The greater risk levels allowed by some regulations do not mean that the risk is completely below a level of significance, but rather are a determination that an increased risk level is "acceptable" due to economic or technological considerations.

California drinking water law provides functional and organizational separation of risk assessment from risk management by requiring OEHHA to set Public Health Goals ("PHGs") based exclusively on public health considerations and then requiring the Department of Public Health ("DPH") to use PHGs as one of the factors in establishing MCLs.[14] A PHG is an "estimate of the level of the contaminant in drinking water that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant risk to health."[15] In contrast, as discussed above, DPH must set its MCLs by balancing public health concerns with questions of technological feasibility and cost of compliance.[16] PHGs may be the same as the later established MCLs (as is the case with MTBE), or they may be more restrictive than MCLs, depending upon the outcome of DPH's review of the non-health specific factors.

C-3
Cont'd

CEQA provides a similar function of separating risk assessment from risk management. Risk assessment is the purpose of the EIR under CEQA. Risk management, on the other hand, comes into play when determining feasible mitigation or adopting a statement of overriding considerations. Accordingly, for purposes of CEQA, the appropriate standard to apply in determining whether a project may have a significant impact on drinking water is the PHG for drinking water contaminants.

Because NSF 61 is a private risk *management* standard, it is not appropriate to rely on it for an assessment of public health risk. NSF's standards setting and

[12] OEHHA, *Guide to Public Health Goals (PHGs) for Chemicals in Drinking Water* (October 2003); OEHHA, *A Guide to Health Risk Assessment* (2001) at pp. 11-12.
[13] *Id.*
[14] Health & Saf. Code, § 116365.
[15] Health & Saf. Code, § 116365, subd. (c)(1).
[16] Health & Saf. Code, § 116365, subds. (b)(1) – (b)(3).

testing-processes are dominated and almost entirely funded by the manufacturers of plumbing products listed and tested by NSF.[17] The NSF 61 threshold level is the result of industry balancing what it believes is an acceptable level of risk with the economic and technological limitations of reducing that risk further.[18] As a result of its reliance on industry consensus, however, many of the threshold levels set by NSF 61 through industry consensus are considered by experts to be too high to adequately protect human health.[19] Accordingly, it is not surprising that NSF has set a higher MTBE threshold level than the PHG identified by OEHHA.

NSF 61 standards are further inappropriate for use in risk assessment because they set their standards solely based upon potential consumption by healthy adults and they fail to take into account synergistic or additive effects.[20] On the other hand, when setting its PHGs, OEHHA, is required by statute to consider potential health effects on pregnant women, young children, the elderly, or persons with pre-existing illnesses, who may be especially susceptible to the chemical's adverse effects.[21] OEHHA is also required by statute to consider synergistic and additive effects.[22] Because the Project would approve the installation of PEX pipe in homes, schools, hospitals and care facilities, CBSC must consider impacts on sensitive populations when determining the significant impacts of this Project under CEQA.

C-3
Cont'd

While OEHHA does not itself have regulatory authority, it is designated as the state agency responsible for risk assessment.[23] Moreover, the Legislature has specifically charged OEHHA with determining the appropriate risk threshold for assessing MTBE contamination of drinking water. In 1997, the Legislature expressly required OEHHA to set a PHG for MTBE contamination of public

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[17] See Comments of Thomas Reid on Chlorinated Polyvinyl Chloride ("CPVC") Pipe Draft EIR (August 27, 1998) at pp. 22-34.
[18] *Id.*
[19] See Peggy Lopipero, M.P.H. & Martyn T. Smith, Ph.D, Comments on the Draft EIR for CPVC Pipe Use for Potable Water Piping in Residential Buildings (August 1998) at pp. 6-7 (identifying at least six NSF standards that fail to reduce health risks to a level of insignificance).
[20] *Id.*; see also NSF, *MTBE Oral Risk Assessment Document* (2008) at pp. 3, 48.
[21] Health & Saf. Code § 116365, subd. (c)(1)(C); (OEHHA, Guide to Public Health Goals (PHGs) for Chemicals in Drinking Water (October 2003).
[22] Health & Saf. Code § 116365, subd. (c)(1)(C).
[23] Governor's Reorganization Plan, No. 1 of 1991, eff. July 17, 1991, 4 Stats. 1001, Appendix G; see also OEHHA Department Description, http://www.oehha.ca.gov/about/description.html [as of October 30, 2008].

drinking water.[24] After careful consideration and expert review of available literature and studies, OEHHA set the PHG for MTBE at 13 µg/L.[25]

If the RDEIR's intention is to reject the risk assessment PHG set by OEHHA, this decision lacks foundation. CBSC has no toxicological or risk assessment expertise, while OEHHA employs qualified health experts who specialize in risk assessment for drinking water contaminants.[26] While CBSC did engage a toxicology expert to help them independently assess leaching impacts, the toxicologist they engaged consistently applied the California MCL for MTBE for his analysis of this impact.

C-3 Cont'd

This application of the California MCL for MTBE is particularly notable because, in the same document, CBSC's toxicology expert expressly rejects the application of the California drinking water notification level for TBA on the grounds that it is inappropriately restrictive for setting a threshold of significance.[27] The toxicology expert's rejection of the California TBA notification level in the same document that he applies the California MTBE MCL indicates that he agreed that the California MCL for MTBE was an appropriate threshold of significance.

### B. The RDEIR Fails to Evaluate Public Health Risks from Short Term Exposure to MTBE

The RDEIR's conclusion that MTBE leaching from PEX is not a significant impact also lacks foundation because it is based upon the inaccurate assumption that short term exposure to MTBE does not have the potential to cause significant adverse impacts on human health. This assumption is contrary to the very NSF documents upon which the RDEIR relies.

C-4

The RDEIR makes this assumption because California MCLs are based on PHGs set at a level that ensures that continuous exposure to the regulated chemical at or *below* the PHG level over a 70-year lifetime would not result in any significant adverse health impacts.

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[24] Health & Saf. Code § 116610.
[25] Joan Denton, Ph.D, OEHHA, *Memorandum re Adoption of a Public Health Goal for Methyl Tertiary Butyl Ether in California Drinking Water* (March 9, 1999).
[26] See CBSC, Staff, http://www.bsc.ca.gov/abt_bsc/abt_stff.htm [as of November 13, 2008]; see also RDEIR, p. 8-1 (Preparers of the Environmental Document).
[27] Ishrat Chaudhuri, *Memorandum re NSF over time testing results for TBA in PEX* (September 26, 2008).

However, this does not mean that exposure to a regulated chemical *above* the PHG would have to occur for 70 years in order to have an adverse impact. The risk resulting from exposure above the PHG would depend on the particular regulated chemical, the particular health effects, the amount of exposure, the length of exposure and whether the risk posed from exposure is cumulative or if each exposure poses the same risk. Moreover, the 70-year lifetime risk is only utilized to assess carcinogenic risks. For carcinogens, OEHHA determines that a significant health risk is one excess case of cancer per million people per a 70-year lifetime, the so-called "de minimis" level.[28] For non-carcinogenic health impacts, however, PHGs are set at a level at which no known or anticipated adverse effects on health will occur, with an adequate margin of safety.[29]

Without a meaningful analysis of these variables, no foundation exists for assuming that exposure to a regulated chemical *above* the PHG would have to occur for 70 years in order to have an adverse impact. The RDEIR, however, does not evaluate short term or mid-term impacts of MTBE exposure at all.

C-4
Cont'd

Furthermore, NSF's own documents reveal that short term health standards for MTBE exposure are *identical* to the long term standards.[30] In other words, it doesn't matter if MTBE leaching would quickly fall below the California standard because short term exposure to MTBE poses the same risk as long term exposure.

Short term or "acute" exposure is addressed under NSF 61 by its STEL standards, not by its NSF 61 TAC and SPAC standards.[31] NSF 61 TAC and SPAC standards address exposure from long term leaching. NSF 61 requires that products meet the long term TAC and SPAC standards after the first 106 days of PEX use.[32]

For many chemicals, the STEL, or short term exposure standards are significantly higher than the TAC/SPAC long term standards. In the case of MTBE, however, NSF's short term exposure standard is the same as its long term exposure standard.[33] In its MTBE Oral Risk Assessment Document, NSF expressly finds

[28] OEHHA, *Guide to Public Health Goals (PHGs) for Chemicals in Drinking Water* (October 2003); OEHHA, *A Guide to Health Risk Assessment* (2001).
[29] *Id.* Because each component that supplies data to the risk assessment provides uncertainty, a margin of safety is necessarily incorporated to ensure no significant health impacts are likely.
[30] NSF, *MTBE Oral Risk Assessment Document* (2008) at p. 48.
[31] *Id.* at pp. 2-3.
[32] *Id.*
[33] *Id.*

that *it is not appropriate to set a short term exposure standard for MTBE higher than the long term exposure standard* because MTBE is a genotoxic carcinogen.[34]

Because it is not appropriate to set a short term exposure standard for MTBE higher than its long term exposure standard, the threshold of significance for MTBE leaching must be the same regardless if the leaching falls below the threshold in 90 days or 70 years.

Accordingly, the RDEIR must be revised to evaluate the short term impacts from MTBE leaching. Moreover, short term impacts must be defined by whatever limits are put on PEX approval. Some of the PEX samples evaluated in the NSF PEX leaching test, for example, exhibited "short term" leaching above California standards for almost 107 days. One hundred and seven days of exposure is significantly greater than what is generally considered "acute exposure." Acute exposure is defined as "a single period of exposure of a duration measured in seconds, minutes, hours, or days," not months or years.[35]

C-4
Cont'd

An evaluation of short term impacts also requires disclosure of initial MTBE leaching levels. Because NSF 61 does not test for leaching until after a pipe has been conditioned and flushed out for 16 days, PEX pipe initially may not meet even the short term NSF STEL standards.[36] PEX installed in homes is not first conditioned with formulated water for 16 days and thus workers and occupants who first use these pipes are almost certainly exposed to higher initial levels than disclosed by NSF. In order to adequately evaluate short term leaching impacts, leaching from PEX must thus be evaluated from day one of installation rather than after 16 days of conditioning.

Evaluation of initial leaching levels is particularly important from the public health perspective of construction workers. Construction workers are often the first persons to consume water from newly installed pipe. Moreover, because construction workers move from one job site to the next, they will be repeatedly exposed to these higher levels of MTBE leaching over the course of their work career. Elevated initial leaching levels may also pose a particular risk to sensitive populations, such as infants, children, elderly or the infirm.

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[34] *Id.*
[35] Cal. Code Regs., tit. 22, § 64400.
[36] See PEX DEIR Comment Letter from Lori Bestervelt, NSF, to Valerie Namba (June 23, 2008) at p. 3.

### C. The RDEIR Lacks Foundation for Its Assumption That the Concentration of MTBE Leaching from PEX Quickly Falls Below 13 µg/L

The RDEIR assumes, without adequate foundation, that all current and future types of PEX will meet the California health and safety standard for MTBE within 90 days. The RDEIR makes this assumption based upon a limited test study that NSF International performed on just ten samples of PEX.[37] NSF International provided the results of this test in a letter dated August 6, 2008 ("the NSF PEX leaching report").[38] The NSF PEX leaching report found that after 107 days (not 90 days as reported in the RDEIR), all of the ten samples of PEX had "normalized" MTBE leaching levels of under 13 µg/L.

As explained below, the NSF PEX leaching report fails to provide sufficient information to support the RDEIR's assumptions regarding the leaching of MTBE.

#### 1. The NSF PEX Leaching Report Provides Data Relevant Only to Just a Tiny Fraction of the PEX Formulations That Would Be Allowed Under the Project

C-5

The NSF PEX leaching report is extremely limited in scope and usefulness. The report provides test results for just ten unidentified samples of PEX. Unfortunately, the Project does not limit its approval of PEX to the ten formulations evaluated in the NSF PEX leaching report. Currently, there are over 271 types of PEX on the market that could be approved under this regulatory action.[39] Accordingly, over 96% of current PEX formulations have not been reviewed or evaluated by this report.

PEX formulations and manufacturing methods can vary significantly from manufacturer to manufacturer, product to product and batch to batch. PEX is a generic term for plastic pipe that is made by cross-linking polyethylene.[40] There are currently three commercial methods of cross-linking:

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[37] RDEIR at p. 4.4-18.
[38] Clifton McLellan, NSF International, Letter to PPFA (August 6, 2008).
[39] PEX DEIR at p. 4.4-9; see also NSF, Letter to Department of General Services (June 23, 2008) at p. 1 (stating that NSF alone certifies over 280 PEX products). Other entities such as IAPMO also certify PEX products. See Neil Bogatz, IAPMO, Letter to California Building Standards Commission (August 25, 2008) at p. 3.
[40] DEIR at p. 3-6.

- PEX-a, the so-called Engel method, where the polyethylene resin and a chemical additive are heated to produce cross-linking;

- PEX-b, the silane method which produces silicon-oxygen cross-link bonds; and

- PEX-c, where cross-linking is initiated by gamma or electron beam radiation.

In addition to the variations in classes of PEX, manufacturers also use varying recipes of stabilizers, fillers and other additives for making PEX within each class. The differences in manufacturing methods, additives and recipes result in differing chemical compositions and create a potential for a wide variation in leaching results.[41]

The test results provided by NSF provide no information at all regarding the levels of MTBE leaching for the more than 261 other types of PEX that were not evaluated under the NSF PEX leaching report. Moreover, the NSF PEX leaching report never claims or suggests that its findings regarding the ten PEX samples tested are applicable to other formulations of PEX. Nor is any information or foundation provided to support an assumption that the leaching results from the ten PEX samples tested are applicable to other formulations of PEX. C-5 Cont'd

Moreover, these tests provide no assurance that future versions of PEX would exhibit the same leaching characteristics as the ten samples evaluated in the NSF PEX leaching report. The proposed regulation approves PEX generically as long as it meets certain standards, including NSF 61. Accordingly, this regulatory action approves not just the more than 271 types of PEX that currently exist on the market, but also any new types of PEX that may enter the market in the future, as long as they meet the requirements of NSF 61.

The more pertinent disclosure by NSF is not the leaching found in the limited, preliminary tests of ten unidentified PEX formulas, but rather the maximum short term and long term levels of leaching allowed by NSF 61. Since NSF 61 allows the *long term leaching* of MTBE at concentrations up to 100 μg/L, the Project would allow the installation of PEX pipes that leach at levels much

[41] See Comments of Coalition for Safe Building Materials on the DEIR on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing (June 23, 2008) at Exhibits A to G.

higher than the California drinking water standard of 13 μg/L long after the first 107 days of use.

Nothing in the NSF PEX leaching report states that such formulations would not be possible or do not currently exist. The Director of Toxicology for NSF has stated that NSF assumes that plastic pipe leaching rates level off after 90 or so days.[42] For that reason NSF requires drinking water products to meet its long term leaching standards after day 106.[43] Accordingly, a fair argument exists that MTBE leaching from some existing or future formulations of MTBE may level off at a leaching rate that exceeds the California drinking water standards for health or taste and odor. The NSF PEX leaching report provides no evidence that such formulations do not or could not exist. The only information that is provided is that such formulations would, in fact, meet NSF 61 requirements and would be approved under the Project.

Even if one accepted the inaccurate assumption that MTBE has only long term health impacts, CBSC would need to require that all versions of PEX meet the California drinking water standard for MTBE after the first 90 or so days in order to substantiate its conclusion that PEX leaching would not result in any health impacts. By identifying PEX samples that would meet this requirement, the NSF PEX leaching report demonstrates that such a restriction would be technologically and economically feasible. It does not, however, provide sufficient information to support a finding that such a restriction would be unnecessary.

C-5
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Unless the Project approval is limited to the ten PEX formulations evaluated under the NSF PEX leaching report, these test results fail to provide sufficient foundation for the RDEIR's assumption that PEX approved under the Project would not leach MTBE over the California drinking water standards of 13 μg/L after 90 days. At a minimum, the actual test data used to certify the more than 271 types of PEX to meet NSF 61 standards must be disclosed and evaluated before any assumption can be made regarding the validity of these preliminary results. In lieu of such disclosure, performance standards such as proposed in the DEIR must be imposed. In lieu of such evaluation, performance standards such as proposed in the DEIR must be imposed.

[42] McClellan, Clifton, Director of Toxicology Services, NSF International (August 6, 2008), letter to Kelley Taber of Somach Simmons & Dunn.
[43] See NSF, *MTBE Oral Risk Assessment Document* (2008).

### 2. The NSF PEX Leaching Report Fails to Provide Critical Information Necessary to Allow Meaningful Evaluation of Its Findings

The RDEIR's reliance upon the NSF PEX leaching report also lacks foundation because the report fails to provide critical information necessary to allow meaningful evaluation of its findings.

First, the report lacks foundation because it fails to disclose the actual leaching levels detected by the tests. Instead, the report provides "normalized results." The report provides no description or explanation of the normalization process or how the "normalized results" differ from the actual detected levels of MTBE. Without disclosure of how and why test results were "normalized" the results provided are virtually meaningless. The information that is known about NSF normalization calculations suggests that they may significantly underestimate exposures for residential plumbing installations.[44] Moreover, the failure to provide this information precludes the Lead Agency or the public from independently assessing the appropriateness of relying on NSF's normalized results instead of the test's actual leaching results.

C-6

Second, the NSF PEX leaching report does not provide any information regarding the samples. The report does not even identify which type of PEX they are (PEX-a, PEX-b or PEX-c), much less provide any description of their formulas or additives.

Third, the report fails to provide any description of the testing methodology used to obtain the data provided. As a result, it is impossible to meaningfully evaluate the accuracy and reliability of the test results.

Fourth, the report fails to explain why performance of these new tests was even necessary when all formulations of PEX pipe on the market already have this information readily available pursuant to their initial and ongoing NSF 61 certifications. The very fact that these new tests were even performed rather than simply providing existing NSF certification data raises more questions than these new tests answer.

[44] See Comments of Thomas Reid on Chlorinated Polyvinyl Chloride ("CPVC") Pipe Draft EIR (August 27, 1998) at pp. 22-34.

## II. THE RDEIR LACKS FOUNDATION TO SUPPORT ITS FINDING THAT THE EXCEEDANCE OF CALIFORNIA DRINKING WATER STANDARDS FOR TASTE AND ODOR IS NOT A SIGNIFICANT IMPACT

Even minute amounts of MTBE are known to give water an offensive taste similar to paint thinner and an offensive odor similar to turpentine.[45] As a result, California has set a secondary drinking water MCL for MTBE of 5 µg/L to address taste and odor impacts.[46] The DEIR concluded unequivocally that the exceedance of the California secondary MCL for taste and odor is a significant impact that requires mitigation.[47]

After industry expressed its opposition to the DEIR's proposed mitigation of this impact, the RDEIR, in a complete reversal of the DEIR's prior findings, now holds that the exceedance of the California secondary MCL for MTBE is not a significant impact requiring mitigation.[48] As a result of this reversal, the RDEIR has deleted the proposed mitigation measure that would have barred approval of any PEX formulations that leach MTBE in amounts exceeding the secondary MCL of 5 µg/L.[49] C-7

The RDEIR attempts to justify this reversal on three grounds: (1) the concentration of MTBE leaching from PEX declines rapidly with time; (2) the 5 µg/L secondary standard relates only to the aesthetic taste and odor qualities of water and not human health; and (3) there are no known consumer complaints of taste and odor impacts from PEX tubing.[50] None of these grounds is valid.

First, the RDEIR lacks foundation for its conclusion that any exceedance of the 5 µg/L taste and odor threshold would only be temporary. As discussed in detail, *supra*, the NSF PEX leaching report is insufficient to support broader

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[45] See Comments of Coalition for Safe Building Materials on the DEIR on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing (June 23, 2008), Appendix 1, MTBE Fact Sheet, California Department of Boating and Watercraft (December 8, 2003).
[46] See Comments of Coalition for Safe Building Materials on the DEIR on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing (June 23, 2008), Appendix 2, California Department of Health Services – MTBE: Drinking Water Regulations and Monitoring Results (Nov. 3, 2003).
[47] DEIR at p. 4.4-16.
[48] RDEIR at pp. 7-2, 7-9.
[49] RDEIR at pp. 7-2, 7-9.
[50] RDEIR at p. 4.4-19.

conclusions regarding the leaching characteristics of all types of PEX because it evaluates only ten unidentified PEX formulations. Moreover, of the ten samples evaluated in the report, 40% of the samples fail to reach 5 µg/L by day 107. No evidence was provided as to leaching levels after 107 days. Accordingly, it is speculative to assume that MTBE leaching from PEX will always decline "rapidly" to below 5 µg/L regardless of the formulation used to produce the pipe.

Furthermore, the RDEIR's reliance on "temporary" impacts is vague and arbitrary. The RDEIR does not define what it considers a "temporary" taste and odor impact. Is one week temporary? How about three months or three years?

In addition, the RDEIR is mistaken in its suggestion that temporary impacts are not significant impacts. CEQA requires an EIR to disclose *all* significant effects of the proposed project, not just permanent or long term impacts.[51] CEQA is thus regularly applied to both temporary impacts (such as temporary construction traffic impacts) and permanent impacts.

C-7
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Second, the RDEIR is erroneous in assuming that CEQA applies to only human health impacts and not to taste and odor impacts. The RDEIR improperly concludes that the Project's taste and odor impacts are less than significant because such impacts "are aesthetic, and do not directly pertain to public health risks."[52]

CEQA, however, does not apply just to public health impacts. CEQA has long been applied to aesthetic impacts such as visual impacts and odor impacts. The Environmental Checklist Form in CEQA Guidelines Appendix expressly lists aesthetic impacts as one of the environmental factors to be reviewed for significance. In addition, the Checklist expressly asks if the Project would potentially create objectionable odors. Thus, the RDEIR's conclusion that the Project's taste and odor impacts are less than significant because such impacts are "aesthetic" is a clear violation of CEQA.

Moreover, the California Legislature has expressly held that drinking water should be free of MTBE taste and odor impacts. In 1991, the Legislature passed SB 1189, which expressly required DPH to establish a secondary drinking water

[51] Pub. Resources Code, § 21100, subd. (b)(1); *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192.
[52] RDEIR at p. 4.4-4; 4.4-20.

standard for MTBE.[53] The Legislature further directed that the secondary MCL would not allow taste and odor effects beyond "a common acceptance level."[54] In response to this directive, DPH set the MTBE secondary MCL at 5 µg/L. Because the Legislature has already determined that MTBE taste and odor impacts are significant enough to require specific regulation, the RDEIR lacks foundation for concluding that such aesthetic impacts are not significant. Moreover, the Court of Appeal has upheld the 5 µg/L secondary MCL as consistent with the Legislature's mandate.[55]

Third, the RDEIR's claim that there are no known consumer complaints of taste and odor impacts from PEX tubing is simply incorrect. To the contrary, "as plastic has started to replace metal as the material of choice for water pipes, complaints about drinking-water quality have been on the rise."[56] According to Gary A. Burlingame, a water-quality scientist at the Philadelphia Water Department, when utilities investigate calls from customers that their water tastes or smells different, the source of the problem is often not found to be the utility's water, but rather the customer's plumbing.[57]

C-7
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A recent commentary on PEX manifold plumbing systems also complained about taste impacts from PEX. After installing a PEX manifold system in his home, plumber Eric Helton wrote that his one complaint was the taste of the water in the morning when he brushed his teeth.[58]

PEX taste and odor issues have not just led to complaints; they have also led to lawsuits. In an Arizona lawsuit, Upnor Wirsbo ("Wirsbo"), a major PEX manufacturer, was sued for its product's alleged contamination of drinking water with MTBE, TBA and benzene.[59] Wirsbo is the manufacturer of AQUAPEX and is one of the largest North American PEX distributors. According to her complaint,

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[53] Health & Saf. Code § 116610. At the time SB 1189 was passed, DPH was called the Department of Health Services.
[54] *Id.*
[55] *Western States Petroleum Assoc. v. State Dept. of Health Services* (2002) 99 Cal.App.4th 999.
[56] Bethany Halford, *Plastic Plumbing Can Make Water Nasty: New Research Reveals Which Pipes Give Drinking Water Odd Tastes and Odors*, Chemical & Engineering News (August 24, 2007), http://pubs.acs.org/cen/news/85/i35/8535news11.html [as of November 6, 2008].
[57] *Id.*
[58] Eric Helton, *Home-Run Plumbing*, Building Science (Sept. 3, 2008).
[59] See Comments of Coalition for Safe Building Materials on the DEIR on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing (June 23, 2008), Appendices 10 and 11.

plaintiff Joyce Defren purchased a house from Trimark Homes in Scottsdale, Arizona. The house was plumbed with AQUAPEX.

Ms. Defren found the water to have a bad taste causing her to become concerned that her water was contaminated. When a lab tested the water, it was found to contain several organic chemicals, including MTBE, TBA, and various benzene-type aromatic hydrocarbons. Wirsbo then disclosed that MTBE and TBA are by-products of the manufacturing process that may have leached from the PEX pipe into drinking water.[60]

The RDEIR itself finds that exceedance of the secondary MTBE standard results in water tasting like turpentine.[61] Based upon this finding, the question before the Lead Agency is not if there have been any official consumer complaints, but rather if turpentine tasting drinking water constitutes a significant taste impact.

C-7
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Moreover, evidence of official consumer complaints is not necessary to determine whether MTBE leaching from PEX may have a significant taste and odor impact. Numerous independent scholarly reports and studies have confirmed that MTBE leaching from PEX does, in fact, result in significant taste and odor impacts.

A pair of controlled leaching tests in Norway found high leaching levels of volatile organic components ("VOCs") migrating into drinking water from PEX tubing resulting in significant taste and odor issues and possible health risk.[62] Most of the VOCs were not identified, but the reports did identify MTBE as one of the leachates. MTBE was found in concentrations as high as 47.6 µg/L, more than nine times the concentration allowed under California's secondary MCL for MTBE. The Norwegian studies found that the leaching from PEX pipes gave an "intense" unwanted odor to the test water.[63]

A 2007 study conducted by the Civil and Environmental Engineering Department of Virginia Tech University also confirmed that leaching of MTBE and ethyl tertiary butyl ether ("ETBE") from PEX could result in significant taste and

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[60] See Comments of Coalition for Safe Building Materials on the DEIR on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing (June 23, 2008), Appendix 12 at 3.
[61] RDEIR at p. 4.4-19, Table 4.4-5.
[62] See Comments of Coalition for Safe Building Materials on the DEIR on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing (June 23, 2008), Appendices 18 and 19.
[63] *Id.*

odor impacts.[64] The study found that the "chemical/solvent-like" odors persisted even after multiple flushing periods. The study also confirmed that panelists could detect MTBE and ETBE in drinking water at levels as low as 5 µg/L.

The authors of the Virginia Tech University study concluded that "taste and odor testing of plumbing materials prior to use in residential housing systems is necessary."[65] NSF 61, however, does not consider taste and odor impacts when setting its standards.[66] Additional mitigation is thus necessary to ensure that PEX formulations that fail to meet the California secondary MCL for MTBE are not permitted under the proposed Project approval. C-7 Cont'd

## III. THE RDEIR LACKS FOUNDATION FOR ITS UNEXPLAINED DELETION OF THE DEIR'S ANALYSIS AND MITIGATION OF PROPOSITION 65 CHEMICALS THAT MAY LEACH FROM PEX

The RDEIR is further deficient because it deletes, without explanation or foundation, the DEIR's analysis and mitigation of numerous Proposition 65 chemicals that were identified as having the potential to leach from PEX pipe.

The DEIR found that PEX has the potential to leach Proposition 65 chemicals in concentrations higher than allowed under the Proposition 65 statute and its implementing regulations.[67] The DEIR identified the following Proposition 65 chemicals as having the potential to leach from PEX piping: (1) benzene; (2) carbon disulfide; (3) trichloroethylene; (4) 4,4-methylenedianiline; (5) bis(2-ethylhexyl)phthalate; (6) butyl benzyl phthalate; (7) toluene diamine; (8) carbon black; (9) benzo(a)pyrene; (10) mercury; (11) cadmium; (12) chloroform; and (13) toluene.[68] C-8

[64] M L Durand & A M Dietrich, *Contributions of Silane Cross-Linked PEX Pipe to Chemical/Solvent Odours in Drinking Water* (2007) 55 Water Sci Technology, pp. 153-60; Bethany Halford, *Plastic Plumbing Can Make Water Nasty: New Research Reveals Which Pipes Give Drinking Water Odd Tastes and Odors*, Chemical & Engineering News (August 24, 2007), http://pubs.acs.org/cen/news/85/i35/8535news11.html [as of November 6, 2008].
[65] *Id.*
[66] See NSF, *MTBE Oral Risk Assessment Document* (2008).
[67] DEIR at p. 4.4-15.
[68] RDEIR at p 4.4-11, Table 4.4-1.

The DEIR, however, stated that data on the leaching of these chemicals from PEX had not been provided to them at the time of the DEIR publication.[69] As a result, the DEIR had no choice but to conclude that leaching of these chemicals could result in significant impacts.[70] The DEIR then recommended that this impact be mitigated by requiring all PEX installed pursuant to this Project to be certified to meet Proposition 65 safe harbor levels or other applicable Proposition 65 levels for those chemicals.

The RDEIR, without explanation, deletes the DEIR's entire discussion of potential Proposition 65 violations. In its place, the RDEIR provides a new discussion that evaluates three of the thirteen Proposition 65 contaminants identified in the DEIR as potentially leaching from PEX: (1) carbon black; (2) butyl benzyl phthalate; and (3) toluene diamine. The RDEIR, citing to letters from NSF and a technical review by the Lead Agency's toxicology consultant, finds that carbon black would not leach in a manner that would trigger Proposition 65. The RDEIR also finds, based upon a letter from NSF, that butyl benzyl phthalate and toluene diamine are not found in any known brands of PEX, nor would NSF expect to see these chemicals in any formulation of PEX.

C-8
Cont'd

Whether or not the RDEIR's new findings regarding carbon black, butyl benzyl phthalate and toluene diamine are legitimate, these findings do not address the elimination of the DEIR's findings regarding the ten remaining Proposition 65 contaminants identified in the DEIR as potentially leaching from PEX: (1) benzene; (2) carbon disulfide; (3) trichloroethylene; (4) 4,4-methylenedianiline; (5) bis(2-ethylhexyl)phthalate; (6) benzo(a)pyrene; (7) mercury; (8) cadmium; (9) chloroform; and (10) toluene. The RDEIR's analysis of carbon black, butyl benzyl phthalate and toluene diamine also fails to justify the elimination of the DEIR's mitigation addressing the remaining potential Proposition 65 contaminants.

In our comments on the DEIR, we criticized the Lead Agency for publishing the DEIR prior to obtaining the data necessary to evaluate leaching of these Proposition 65 chemicals. As we stated in our prior comments, the DEIR's excuse that the data has been "requested" but was "not available at the time of DEIR publication" was not a valid explanation. Under CEQA, a DEIR is not to be published until it is complete. Arbitrary deadlines for completing a DEIR may not

[69] DEIR at p. 4.4-15.
[70] See *Leonoff v. Monterey County Bd. of Supervisors* (1990) 222 Cal.App.3d 1337, 1348 (deficiencies in the record enlarge the scope of fair argument by lending a logical plausibility to a wider range of inferences).

be used to evade and defer disclosure and analysis of a project's impacts until after the EIR's certification.

Now, instead of finally obtaining this missing data and performing the required CEQA analysis, the RDEIR instead attempts to pretend that these remaining ten Proposition 65 chemicals are not an issue after all. The complete elimination of any discussion or mitigation of the ten remaining Proposition 65 chemicals is arbitrary and capricious. No foundation or explanation, whatsoever, is provided to support the deletion of these sections of the DEIR. C-8 Cont'd

The RDEIR must be revised to evaluate the ten remaining Proposition 65 contaminants identified in the DEIR as potentially leaching from PEX and adequate mitigation must be imposed to address the potential impacts from such leaching.

## IV. THE DEIR/RDEIR ALSO REMAINS LEGALLY INADEQUATE FOR THE REASONS PRESENTED IN THE COALITION'S JUNE 23, 2008 COMMENT LETTER ON THE DEIR

With the exception of the comments on leaching of MTBE, TBA and Proposition 65 chemicals, which are superseded by the comments made herein, the Coalition's June 23, 2008 comment letter remains applicable to both the RDEIR and the DEIR. We thus hereby resubmit, by reference, the Coalition's June 23, 2008 comment letter and supporting appendices and exhibits.

In addition to the deficiencies of the RDEIR discussed herein, the DEIR/RDEIR remains legally inadequate due to the following deficiencies discussed in detail in the Coalition's June 23, 2008 comment letter: C-9

- Inadequate description of the Project, including failure to describe all variations of PEX approved by the Project and failure to describe PEX fittings approved by the Project;
- Failure to evaluate or disclose potentially significant health, taste, and odor impacts of ETBE leaching from PEX pipes;
- Improper deferral of analysis and mitigation of Proposition 65 chemicals that may leach from certain PEX formulations;

- Failure to evaluate the potential for PEX to leach Bisphenol A in amounts within the range of concern for infant and children exposure;

- Inadequate evaluation and mitigation of the risk of PEX failure due to exposure to numerous commonly encountered materials and environmental conditions, including sunlight, high temperatures, chlorine, petroleum products, firestop material and asphalt;

- Failure to meaningfully evaluate reports of widespread failures of PEX and PEX fittings;

- Failure to evaluate the risk of illness due to higher biomass and more abundant virus-like particles found in PEX pipe compared to copper or CPVC pipe;

- Failure to adequately evaluate the direct and indirect solid waste impacts of the Project; and

- Failure to adequately evaluate the risk of toxic smoke when PEX is burned in building fires.

C-9 Cont'd

## V. CONCLUSION

It is critical to the health and safety of the California public that the potential impacts of PEX be fully disclosed, evaluated and mitigated before these materials are approved for use throughout California. The RDEIR and DEIR fail in their duty under CEQA to provide this required review due to the numerous omissions, factual errors, arbitrary assumptions and unsupported conclusions contained in these documents.

C-10

The RDEIR arbitrarily and capriciously reverses the few reasoned conclusions contained in the initial DEIR. The prior DEIR at least recognized that PEX formulations installed in California should comply with California drinking water regulations. The RDEIR, however, ignores the expert determinations of OEHHA as to the appropriate level of drinking water safety in California and instead concludes that industry should be allowed to set this level themselves.

As a result of the changes made in the RDEIR, the Project will now approve PEX formulations that leach chemicals in amounts that exceed California drinking water standards for health, taste and odor. Approving such PEX formulations unnecessarily increases the risk of harm to consumers. The technology clearly exists to formulate PEX piping in a manner that would meet California drinking water standards. Such pipes are already on the market and thus would meet the stated goals of the Project.

The RDEIR's revised evaluation of PEX leaching impacts is legally inadequate and requires significant revision. The RDEIR must also be revised to disclose and evaluate the numerous other potential impacts that were inadequately evaluated or improperly dismissed in the DEIR. For all of these impacts, feasible and enforceable mitigation measures must be identified to reduce all Project impacts to a level of insignificance. Because the required revisions would be substantive and substantial, the revised DEIR/RDEIR must be again recirculated for public review and comment. C-10 Cont'd

We appreciate this opportunity to comment and remain available to provide any further information that may be needed to complete this process.

Sincerely,

Thomas A. Enslow

TAE:cnh
Attachments

**C-1** The commenter identifies Coalition members, provides general information about the environmental process, summarizes the analyses and conclusions of the DEIR, and raises concerns about the RDEIR analysis. Please see responses to comments C-2 through C-10 for detailed responses to comments on the environmental issues raised in comment letter C.

**C-2** This comment is a prefatory summary of topics that are discussed more fully in comments C-3 through C-6. Please see responses to comments C-3 through C-6.

The commenter suggests the RDEIR's reversal of the DEIR's determinations regarding MTBE leaching impacts is arbitrary and lacks foundation. The evidence and analysis supporting the RDEIR's revised determination about MTBE leaching impacts is set forth at page 1-1 of the RDEIR. The RDEIR describes the new evidence received by the lead agency and explains why, based on that evidence, certain mitigation measures initially proposed in the initial DEIR are no longer deemed necessary. As described on page 1-1 of the RDEIR, the DEIR was circulated for public review and comment for a period of 45 days that ended June 23, 2008. During and until the end of the review period, comments were received on the DEIR. The BSC reviewed those comments to identify specific environmental concerns and determine whether any additional environmental analysis would be required to respond to issues raised in the comments. The comment letters raised issues that resulted in the addition of significant new information to the EIR. This new information relates to: 1) the nature and rate of leaching of chemicals from PEX tubing, 2) the applicability and appropriateness of DEIR thresholds of significance for water quality, and 3) the determination that certain chemicals are no longer considered constituents of concern because they are not used in PEX.

This new information resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact. Please see responses to comments C-3 through C-7 for further discussion.

**C-3** The commenter claims that the RDEIR's reversal of the DEIR's MTBE leaching findings is deficient based on the commenter's interpretation of the findings as relying on NSF 61 standards over California drinking water standards. In fact, the revised water quality significance threshold addresses the potential for public health impacts and considers the California primary maximum contaminant level (MCL) of 13 µg/L for MTBE (also defined as the California Office of Environmental Health Hazard Assessment [OEHHA] Public Health Goal [PHG], in this case), the NSF MTBE standard of 100 µg/L, and other evidence (as described herein). As stated on page 4.4-9 of the RDEIR, the "proposed project would result in a significant effect related to water quality if it would cause or substantially contribute to the exceedance of a water quality standard such that implementation of the proposed project would result in a level of a contaminant in drinking water that would *cause a substantial impact on human health*." Water quality impacts that would not cause a substantial impact on human health would be considered less than significant. CEQA requires that, for each significant impact identified in the EIR, the EIR must discuss feasible measures to avoid or substantially reduce the project's significant environmental effect. Mitigation measures are not required for effects which are not found to be significant (CEQA Guidelines Section 15126.4[a]).

As described on page 4.4-16 of the RDEIR, testing by NSF was initiated in April 2008 (about the time of DEIR release) to determine if, and at what rate, the levels of MTBE and TBA that leach from PEX decline, and to determine if it is a reasonable assumption that levels would decline to concentrations at or below California criteria within a limited period of time. More specifically, the over-time testing was conducted to determine the point at which the TBA extraction result would be equal to, or lower than 12 µg/L (the California notification level), and the MTBE extraction result would be equal to, or lower than 13 µg/L (the California primary MCL and PHG for MTBE). Testing of ten samples of PEX tubing to evaluate the over-time extraction (i.e., leaching) of MTBE and TBA was completed in August 2008. The 90-day timeframe was chosen because any chemicals that are likely to leach from the tubing would be expected to do so within 90 days, allowing identification of a trend. The test protocols utilized are those specified in NSF/ANSI Standard 61, the drinking water health effects standard that has been incorporated into the California Plumbing Code and is used in California and throughout the United States to certify the safety of plumbing products. The California Code of Regulations, Title 22, Section 64591, also requires drinking water system components to be tested and certified to NSF/ANSI Standard 61 (Bestervelt, pers. comm., 2008). Please see response to comment 25-8 for additional information on NSF/ANSI Standard 61.

The test results show a steady decline in the concentrations of TBA and MTBE for each PEX sample over time. All ten samples reached the 13 µg/L primary MCL for MTBE by day 90, and six of ten samples reached the 5 µg/L secondary MCL for MTBE taste and odor by day 90. As described on page 4.4-18 of the RDEIR, because over-time test results show that concentrations of TBA and MTBE decline over-time, and by day 90, all ten PEX samples were below the 13 µg/L MCL for MTBE; the NSF standard for MTBE of 100 µg/L is protective of public health; and short term exposure to MTBE at levels exceeding California standards would not cause a substantial adverse impact on human health, MTBE leaching impacts are considered less than significant.

In general, drinking water standards are based on daily drinking water exposure over a lifetime (see RDEIR page 1-3). For example, the NSF's Total Allowable Concentration (TAC) for MTBE of 100 µg/L is based on the possibility of developing one excess tumor per 100,000 people (i.e., the "ten-in-one-million risk level) from a lifetime of drinking two liters of water per day (Chaudhuri, pers. comm., 2008a). The OEHHA PHG for MTBE considers the health effects that may result from MTBE exposure and estimates the level of the contaminant in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime. Furthermore, as stated in OEHHA's *Guide to Public Health Goals for Chemicals in Drinking Water*, both the "one-in-a-million" risk level and the "ten-in-one-million" risk levels are considered acceptable by health and scientific authorities (OEHHA 2003:4):

> For example, suppose the actual level of a contaminant in many drinking water sources were high enough to pose a "ten-in-one-million" cancer risk. (At that level, not more than ten cancer cases would be expected in a population of one million people as a result of drinking water containing that level of the contaminant daily for 70 years). As explained on page 3, OEHHA typically establishes the PHG for cancer-causing contaminants at the "one-in-one-million" risk level. However, "ten-in-one-million" risk is widely considered by health and scientific authorities to be acceptable as long as it is not feasible to further reduce the risk. State law would allow DHS [Department of Public Health] to set the MCL for the contaminant at the level posing a "ten-in-one-million" risk of cancer if it were not feasible to set the standard at a lower level.

CEQA requires that "[a]ll public agencies . . . adopt by ordinance, resolution, rule or regulation, objectives, criteria, and procedures for the evaluation of projects and the preparation of

environmental impact reports and negative declarations. . .” (Pub. Resources Code, §21082. CEQA thus provides agencies with general authority to adopt criteria for determining whether a given impact is “significant.” These criteria are the “thresholds of significance.”

The Office of Planning and Research (OPR) has described “thresholds of significance of significance” as a “quantitative or qualitative standard, or set of criteria, pursuant to which the significance of a given environmental effect may be determined.” (OPR, Thresholds of Significance: Criteria for Defining Environmental Significance (CEQA Technical Advice Series, September 1994), p. 4.) Thus, CEQA gives a lead agency discretion in formulating its thresholds of significance.

“‘[A] lead agency’s use of existing environmental standards in determining the significance of a project’s environmental impacts is an effective means of promoting consistency in significance determinations and integrating CEQA environmental review activities with other environmental program planning and resolution.”’ (*Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1107.)

In this case, BSC relied in part on NSF standards in developing thresholds of significance pertaining to the potential leaching of MTBE and TBA. BSC acted within its discretion in taking this approach.

The RDEIR acknowledges the applicability of the California drinking water standard of 13 µg/L for MTBE because it is a promulgated standard. However, the RDEIR notes that the NSF standard for MTBE of 100 µg/L is also based on a valid risk assessment approach. The primary difference between the NSF and California standards for MTBE is that the NSF standard is based on a target cancer risk level of one in one-hundred thousand ($1 \times 10^{-5}$), and the California MCL is based on a target cancer risk level of one in a million ($1 \times 10^{-6}$). Both of these target cancer risk levels are considered to be acceptable by U.S. EPA and California EPA in setting health criteria. Therefore, both of these standards for MTBE would be considered adequately protective of public health (Chaudhuri, pers. comm., 2008a).

The commenter notes that the California drinking water standard for MTBE is based on *risk assessment* criteria and implies that the NSF standard for MTBE is invalid because it is based on *risk management* criteria, stating “because NSF 61 is a private risk management standard, it is not appropriate to rely on it for an assessment of public health risk.” Although “risk management” criteria generally account for considerations other than impacts to human health (e.g., feasibility of achieving certain limits, economic feasibility), this is not the case with MTBE. The primary MCL for MTBE is based solely on health-based risk assessment. The MCL and the PHG are the same. NSF standards for MTBE are also based on risk calculations without consideration of economic or other factors. NSF’s calculation of the TAC for MTBE is discussed in its document entitled “Methyl Tertiary Butyl Ether, Oral Risk Assessment Document, February 2008” (see RDEIR, Appendix H). As discussed above, the primary difference between the NSF and California standards for MTBE is that the NSF standard is based on a target cancer risk level of one in one-hundred thousand ($1 \times 10^{-5}$), and the California MCL is based on a target cancer risk level of one in a million ($1 \times 10^{-6}$). Both of these target cancer risk levels are considered to be acceptable by U.S. EPA and California EPA in setting health criteria, and are considered by regulatory agencies to be protective of public health. Therefore, both standards are valid and are appropriate for consideration in the EIR.

As stated above, the over-time testing of PEX pipes conducted by NSF demonstrated that MTBE concentrations in all of the tested pipe samples were below the California MCL value of 13 µg/L within 90 days. Slightly elevated levels of MTBE were observed in the first few days of testing in

a few of the samples before concentrations dropped to below acceptable levels. Short-term exposure to MTBE at concentrations above an established standard for several days would not typically be expected to result in cancer concerns, and it is unlikely that exposure to such concentrations of MTBE could cause substantial health risks (Chaudhuri, pers. comm., 2008b). Therefore, the over-time testing results for MTBE showed compliance with both the California MCL and the NSF standard within 90 days, and this short term exposure to MTBE at levels exceeding California standards would not cause a substantial adverse impact on human health (see response to comment C-4 for additional information and discussion on short-term exposure to MTBE).

The commenter states that BSC should have consulted with OEHHA in assessing the human health risk associated with concentrations of MTBE leaching from PEX. In fact, BSC coordinated with the California Department of Public Health (DPH) (formerly known as Department of Health Services [DHS]), a CEQA state responsible agency for the project, during preparation of the DEIR and RDEIR. It is the responsibility of DPH to assess risk management and to adopt an MCL as close as technically and economically feasible as possible to the PHG. As stated above, the MCL and PHG for MTBE are the same. Therefore, DPH's MCL is as stringent as OEHHA's risk assessment-based PHG. Because DPH considers risk assessment information during development of primary drinking water standards, and adopted an MCL for MTBE that is as stringent as the PHG, it was appropriate for BSC to coordinate directly with DPH during the EIR process. Please see page 4.4-4 of the DEIR for additional discussion.

In addition, as described in Section 2.5, "Public Review Process" of the DEIR, and Section 1.3, "Relationship to the DEIR" of the RDEIR, consistent with the requirements of CEQA, BSC has made a good faith effort to contact affected agencies that may have an interest in the project. BSC held three public hearings on the DEIR and followed all CEQA public noticing procedures for the DEIR and RDEIR. The State Clearinghouse circulated both the DEIR and the RDEIR to various state agencies, including DPH, for review. As shown in Table 2-1 of this FEIR, no comments were received on the EIR from DPH or OEHHA.

The commenter asserts that NSF 61 standards are solely based upon potential consumption by healthy adults (see page 7, paragraph 2 of comment letter C). NSF 61 standards are developed using standard risk equations similar to drinking water standards set by regulatory agencies, such as OEHHA. Risk equations include chemical-specific toxicity values, such as cancer slope factors and reference doses, which are designed to be protective of sensitive individuals such as children and the elderly. For chemicals with existing drinking water standards, NSF uses drinking water standards developed by U.S. EPA or Health Canada. NSF only develops standards for chemicals that do not have U.S. EPA or Health Canada standards. NSF's methods for standard development follow standard risk assessment practices (Chaudhuri, pers. comm., 2008a).

The commenter also suggests that the EIR does not consider impacts on sensitive populations (such as children and the elderly) as well as synergistic or additive effects. As discussed above, NSF 61 and OEHHA drinking water standards are developed using risk equations that include cancer slope factors and reference doses which are designed to be protective of sensitive individuals (Chaudhuri, pers. comm., 2008a). Regarding synergistic or additive effects, no peer-reviewed scientific journal articles, third-party reports, or other evidence are provided to demonstrate that these potential effects are a concern for PEX. In the absence of specific facts, this comment does not identify an impact or concern that must be analyzed under CEQA.

Finally, the commenter addresses analysis provided by Dr. Ishrat Chaudhuri on MTBE and TBA standards (see page 8 of comment letter C). California EPA's criteria for MTBE and TBA are different in that the criterion for MTBE is an MCL, whereas the criterion for TBA is a

notification level which does not have the regulatory authority of an MCL. In addition, there are significant technical issues associated with the TBA notification level. California EPA's notification level of 12 µg/L for TBA is based on a carcinogenic mode of action specific to male rats and is not considered relevant to humans (Bestervelt, pers. comm., 2008). The critical carcinogenic effect selected for the derivation of the notification level was male rat kidney tumors observed in a cancer bioassay. NSF notes that the weight of evidence indicates that the male rat kidney tumors are caused by alpha-2u-globulin, which is a mode of action specific to male rats and is not considered relevant to humans. U.S. EPA guidance (EPA 1991) has specified that alpha-2u-globulin-related tumors in male rats are not relevant to humans. Furthermore, California EPA's documentation for TBA (see RDEIR, Appendix G) states that this is "an interim assessment with preliminary calculations." As stated in OEHHA's TBA risk assessment memorandum (1999a):

> In response to your request of May 19, 1999, we have summarized an interim assessment that the Office of Environmental Health Hazard Assessment (OEHHA) staff made last year in connection with our assessment of methyl tertiary butyl ether (MTBE) and based on limited data available at that time. While this is still an *interim assessment with preliminary calculations*, and by no means represents a full risk assessment, it may be suitable for the purposes stated in your request.

Therefore, it is possible that a more complete and up-to-date assessment by OEHHA may result in a different notification level. NSF based its criterion for TBA on noncancer effects, specifically kidney weight and histopathology effects in female rats (NSF 2003: vi). The NSF approach appears to be consistent with current risk assessment practice. The NSF report was peer-reviewed by an external board of peer reviewers, including toxicologists from U.S. EPA, Health Canada and California EPA (Chaudhuri, pers. comm., 2008a).

**C-4** As described on page 4.4-18 of the RDEIR, short-term exposure to MTBE at levels exceeding California standards would not cause a substantial impact on human health because over-time test results show that concentrations of MTBE decline over-time, and by day 90, all ten PEX samples met the 13 µg/L MCL for MTBE; the NSF standard for MTBE of 100 µg/L is protective of public health; and short term exposure to MTBE at levels exceeding California standards would not cause a substantial adverse impact on human health. The commenter suggests that short term exposure to MTBE would be a significant adverse impact (including impacts to construction workers and sensitive populations), but offers no specific evidence to substantiate this claim. The RDEIR and supporting evidence described herein thoroughly evaluates short-term MTBE impacts.

As described in comment C-3 above, over-time test results show that concentrations of MTBE leaching from new PEX pipe decline rapidly with time. By day 90, all 10 samples were below the 13 µg/L MCL and Public Health Goal for MTBE. Although the test results show that MTBE concentrations for some samples are initially higher than the California MCL for MTBE, the MCL is defined based on long-term exposure (consumption of two liters per day over a period of 70 years) at that level; short-term exposure at a level higher than a California standard is not a valid indicator of human health risk. Thus, this standard is not a reasonable threshold of significance for purposes of the EIR. Again, the California MCL for MTBE is based on long-term exposure, and "estimates the level of the contaminant in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime" (OEHHA 1999b). In addition, a risk assessment performed by NSF in February 2008 for MTBE resulted in a standard of 100 µg/L. Both the California MCL of 13 µg/L and the NSF standard of 100 µg/L are acceptable given current U.S. EPA risk management criteria and are protective of public health (see response to comment C-3 for further information).

The NSF over-time testing results show that MTBE concentrations above the NSF drinking water criterion lasted only for a few days until the concentrations declined to below both the NSF and California EPA drinking water criteria for MTBE (see Table 1 of NSF's May 2, 2008 memorandum at Appendix F of the DEIR). Because MTBE drinking water standards are based on carcinogenic effects which are typically associated with long-term exposure, it is highly unlikely that exposure to higher concentrations for eight days could result in significant risk of cancer. As noted in response to comment C-3 and in DEIR comments provided by NSF (Bestervelt, pers. comm., 2008:4), both the California and the NSF standards for MTBE are considered by toxicological experts to be adequately protective of public health (Chaudhuri, pers. comm., 2008a).

Over-time testing results provided by NSF indicate that by day 90, MTBE concentrations in water extracted from the tested pipes fell to below the NSF Total Allowable Concentration (TAC) of 100 µg/L and also California's Public Health Goal of 13 µg/L (McLellan, pers. comm., 2008a). Over-time testing results provided by NSF on nine PEX samples showed that by Day 8, all nine samples had MTBE concentrations of less than 100 µg/L (McLellan, pers. comm., 2008c). It is important to note that the MTBE TAC of 100 µg/L is based on the possibility of developing one excess tumor per 100,000 people (cancer risk level of $1 \times 10^{-5}$) from a lifetime of drinking 2 liters of water per day. One excess tumor per 100,000 people is already a low incidence of tumors, especially compared to the American Cancer Society (ACS) estimate that the lifetime probability of contracting cancer in the U.S. is one-in-two for men and one-in-three for women (ACS 2008). Therefore, the possibility of developing tumors from exposure to MTBE in drinking water for approximately eight days is very low. Typically, cancer effects are more of a concern from long-term exposure. Exposures on the order of a few days are typically not expected to result in cancer concerns (Chaudhuri, pers. comm., 2008a).

At page nine, paragraph three, the commenter states that "NSF's own documents reveal that short-term health standards for MTBE exposure are identical to the long term standards. In other words, it doesn't matter if MTBE leaching would quickly fall below the California standard because short-term exposure to MTBE poses the same risk as long term exposure." It is not clear why NSF did not develop a Short Term Exposure Limit (STEL) for MTBE. NSF's risk assessment document for MTBE simply states that because the long-term TAC is based on a cancer risk value, it was not appropriate to develop a STEL (NSF 2008). In addition, California typically does not derive STELs for chemicals in drinking water (Chaudhuri, pers. comm., 2008d). As stated above, the MTBE TAC of 100 µg/L is based on the possibility of developing one excess tumor per 100,000 people (cancer risk level of $1 \times 10^{-5}$) from a lifetime of drinking two liters of water per day. Therefore, because the 100 µg/L criterion is based on a lifetime of exposure, it would not be reasonable to conclude that short-term exposure to slightly elevated levels of MTBE for a period of one or two days or weeks would result in a substantial health impact.

According to NSF's over-time testing data (McLellan, pers. comm., 2008a), the highest concentration of MTBE detected in any sample was 290 µg/L at initial sampling. On subsequent exposure days, the highest concentration of MTBE detected in any sample was 150 µg/L. On day eight, the highest concentration of MTBE detected in any sample was 76 µg/L. The highest concentrations detected at initial sampling were approximately 2- and 3-fold higher than the NSF TAC of 100 µg/L. Therefore, the exceedances were not orders of magnitude higher than 100 µg/L. It is unlikely that exposure for a short period of time to these relatively small exceedances would cause substantial health risks (Chaudhuri, pers. comm., 2008b). Therefore, short-term exposure (i.e., less than 90 days) to MTBE at levels exceeding California standards would not cause a substantial adverse impact on human health (including construction workers).

Please refer to response to comment C-3 regarding exposure of sensitive populations to short-term elevated levels of MTBE.

**C-5** The commenter questions the testing methodology used by NSF to evaluate the long-term extraction of MTBE and TBA from PEX tubing (see RDEIR Appendix F, NSF testing report of August 6, 2008). The commenter also questions technical details of the "over-time" testing protocol, and asserts that the testing only applies to a fraction of PEX tubing on the market, and therefore is not representative of all 271 types of PEX. The discussion below explains the NSF sampling methodology for this testing and addresses the technical issues raised by the commenter. As explained below, the over-time testing evaluated all PEX formulations, including all 271 types of PEX on the market.

As described on page 4.4-11 of the RDEIR, testing by NSF was conducted to determine if, and at what rate, levels of MTBE and TBA leaching from PEX decline, and to determine if it is a reasonable assumption that levels would decline to concentrations at or below California drinking water criteria within a limited period of time. This line of questioning is relevant because California standards are defined using estimates of contaminants in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime. NSF conducted the "multiple time point protocol" for over-time testing in accordance with established NSF/ANSI Standard 61 protocols. The multiple time point protocol (also referred to as the "over-time" test) is described in Section 4.5.4.3 of NSF/ANSI Standard 61, *Drinking Water System Components – Health Effects* (NSF 2007). Section 4.5.4.3 states:

> When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable level when evaluated as a single time point exposure, determination of the contaminant leaching rate using a multiple time point exposure shall be considered.

NSF/ANSI Standard 61 also includes multiple time point conditioning/exposure protocols and normalization procedures. As described in Section 4.7.1, the concentration of analytes detected in the extraction water shall be multiplied by a calculated normalization factor to account for differences between laboratory and field surface-area-to-volume ratios. The normalization factor shall be based on calculations and assumptions relevant to the end use of the product (NSF 2007). In other words, the normalization procedure is used to produce data that more closely reflects non-laboratory, "at the tap" conditions.

In February 2008, the Department of General Services (DGS) sent a letter to NSF requesting NSF testing results for any PEX tubing that leaches chemicals in amounts exceeding California drinking water criteria. NSF was not able to provide actual testing results for specific products because such results are considered proprietary information by PEX manufacturers and are not available for public review. NSF's response to the letter included a summary of test data for PEX tubing tested between January 1, 2005 and December 31, 2007. NSF obtained the test results through the testing of PEX for certification to NSF/ANSI Standard 61. NSF reported that MTBE and TBA were the only chemicals that leached from PEX in concentrations greater than the California standards, and found that 4% of the samples had MTBE concentrations between 13 and 20 µg/L. No samples had concentrations greater than 20 µg/L. NSF's March 12, 2008 letter to DGS provides additional information on the specific NSF protocol used for these certification tests (McLellan, pers. comm., 2008a).

The summary testing data accounted for all of the data that was available for all PEX materials and pipe (including the 271 PEX products produced at 47 manufacturing sites) that were tested between January 2005 and December 2007. The 271 products include private-labeled products, products with identical formulations using alternate trade names, and duplicative products

certified to additional, non-NSF 61 performance standards. Therefore, there are not 271 chemically distinct PEX products, but 27 PEX formulations made by 19 different manufacturers (including PEX-a, -b, and -c , as described on page 3-6 of the DEIR). NSF certifies all of the PEX sold as certified in the United States. Other third party certifiers exist, but their product certifications are based on NSF's testing standards and criteria (McLellan, pers. comm., 2008b). The NSF website provides a frequently asked questions (FAQ) page with additional information on NSF listings and certifications (NSF 2004).

As reported in the March 12, 2008 NSF letter, concentrations of MTBE were below 13 µg/L in 96% of the tests. These PEX samples would therefore meet the 13 µg/L California standard, and were not selected for additional testing. Samples with the greatest potential to extract MTBE based on their formulations and their high initial MTBE extraction levels were selected for over-time testing. Samples that did not exhibit elevated levels of MTBE were not selected for the over-time testing because those samples would not have produced decay data. Therefore, the ten samples used for the over-time testing, representing ten manufacturers, are representative of the samples that could extract MTBE (McLellan, pers. comm., 2008b).

The commenter also raises concerns about possible, undefined, future formulations of PEX. No evidence is presented by the commenter that different formulations are likely, and no information is provided as to what new chemicals might be included in future PEX formulations. Therefore, in the absence of such evidence, the notion is considered too speculative for evaluation, and further consideration is not necessary (CEQA Guidelines §15145). As described in response to comment 25-15, NSF procedures identify all chemicals used in PEX and potential extractants are identified based on a PEX formula review. Formulation information on all water contact material would be provided by the manufacturer to identify potential extractants, and would include detailed information on composition, known or suspected impurities, and manufacturing processes for all wetted components in products submitted for evaluation (Bestervelt, pers. comm., 2008). Periodic future formulation reviews would ensure that chemicals in any future PEX formulations would be identified as potential extractants. NSF tests only for those chemicals that are expected to be present in the PEX formulation. Therefore, although there may be chemicals for which California standards are more stringent than NSF standards, many of these chemicals are not tested by NSF because they are not present in PEX. For any given chemical, the standard used by NSF would change as new toxicology information becomes available. For example, NSF uses drinking water standards developed by U.S. EPA and Health Canada. If these standards change in the future, NSF would use the latest available information and drinking water standards.

The commenter states that concentrations of MTBE leaching from some formulations of PEX may level off at rates that exceed California drinking water standards. Based on the over-time testing data, the EIR reasonably concludes that concentrations of MTBE continue to decline with time, and any exceedance of relevant drinking water standards for the small proportion of pipe that may leach at such levels, would do so for a limited time (fewer than 90 days). The suggestion that rates of leaching would level off at concentrations that would exceed standards over the long term is unsupported by evidence and further consideration is not necessary.

Finally, the commenter raises additional technical questions associated with over-time testing. The over-time test is referred to as 90-day test (not a 107-day test) because the first 17 days of the test are used to establish a curve of decay (rate at which concentration of the constituent is reduced over time). The decay testing performed according to the NSF 61 protocol results in eight data points in the first 17 days of testing to establish a curve of decay. Then, samples are taken every two weeks thereafter for at least 90 days to establish data points, resulting in more than the five data points referenced in the NSF 61 standard. Based on the equation in the decay curve, an

extrapolation is made to calculate the timeframe in which the constituents drop below applicable levels (Chaudhuri, pers. comm., 2008a).

Please see response to comments C-3 and C-4 for discussions of MTBE leaching and short-term MTBE exposure, respectively.

**C-6** The commenter raises issues similar to those raised in comment C-5. Please see response to comment C-5 for discussion concerning over-time testing samples, testing methodology, and related concerns.

Regarding normalization, this is a process by which data are multiplied by a factor to account for differences between laboratory and field conditions. The term was added to make it clear that the values were "at-the-tap" estimates. In this case, the normalization factor was "1" because the product tested was at the same surface-area-to-volume ratio as the field conditions. In other words, the lab values and the normalized values were equal (McLellan, pers. comm., 2008b). The normalization procedure is used to produce data that more closely reflects non-laboratory, "at-the-tap" conditions.

The multiple time point protocol (over-time test) is described in Section 4.5.4.3 of NSF/ANSI Standard 61, *Drinking Water System Components – Health Effects* (NSF 2007). Section 4.5.4.3 states:

> When the normalized concentration of a contaminant exceeds, or is expected to exceed, its acceptable level when evaluated as a single time point exposure, determination of the contaminant leaching rate using a multiple time point exposure shall be considered.

NSF/ANSI Standard 61 also includes multiple time point conditioning/exposure protocols (Section 4.5.7), and normalization procedures. As described in Section 4.7.1, the concentration of analytes detected in the extraction water shall be multiplied by a calculated normalization factor to account for differences between laboratory and field surface-area-to-volume ratios. The normalization factor shall be based on calculations and assumptions relevant to the end use of the product (NSF 2007).

**C-7** The commenter asserts that the RDEIR lacks foundation to support its finding that the exceedance of California secondary drinking water standards for taste and odor is not a significant impact. As described in comment C-3, testing by NSF was initiated in April 2008 (about the time of DEIR release) to determine if, and at what rate, MTBE and TBA levels decline, and to determine if it is a reasonable assumption that levels would decline to concentrations at or below California criteria within a limited period of time. Testing of 10 samples of PEX tubing to evaluate the over-time extraction (i.e., leaching) of MTBE and TBA was completed in August 2008. The test results show a steady decline in the concentrations of TBA and MTBE for each PEX sample over time. All 10 samples reached the 13 µg/L primary MCL for MTBE by day 90, and 6 of 10 samples reached the 5 µg/L secondary MCL for taste and odor for MTBE by day 90. Based on these results, it is reasonable to assume that concentrations of MTBE would continue to decline rapidly with time, and any exceedances of secondary MCLs for taste and odor would be temporary. Under the significance thresholds for water quality (see page 4.4-9 of the RDEIR), a temporary exceedance of a water quality standard for taste and odor would not be substantial. In addition, only samples with the greatest potential to extract MTBE based on their formulations and their high initial MTBE extraction levels were selected for over-time testing. Samples that did not exhibit elevated levels of MTBE were not selected for the over-time testing because those samples would not have produced decay data. Therefore, the ten samples used for the over-time testing, representing ten manufacturers, are representative of the samples that could extract

MTBE (McLellan, pers. comm., 2008b). As reported in the March 12, 2008 NSF letter (McLellan, pers. comm., 2008a), concentrations of MTBE were below 5µg/L in approximately 75% of the tests. Therefore, most PEX would not result in even temporary exceedances of secondary MCLs for taste and odor.

As described on pages 4.4-19 and 4.4-20 of the RDEIR, taste and odor impacts are aesthetic impacts, and are not health impacts. Moreover, evidence presented in the EIR support the conclusion that, if an exceedance of the secondary taste and odor standard were to occur, it would be temporary. California Health and Safety Code, Section 116275(d), describes the purpose of establishing a secondary MCL. The statute states:

> Secondary drinking water standards may apply to any contaminant in drinking water that may adversely affect the odor or appearance of the water and may cause a substantial number of persons served by the public water system to discontinue its use, or that may otherwise adversely affect the public welfare.

Thus, secondary drinking water standards are aesthetic, and do not directly pertain to public health risks, and any temporary exceedances of secondary MCLs for taste and odor would not cause a substantial impact on human health. The EIR adopted thresholds of significance that reflect public health. With the exception of "mandatory findings of significance" set forth in CEQA Guidelines section 15065, agencies have the discretion to devise thresholds of significance. CEQA provides agencies with general authority to adopt criteria for determining whether a given impact is "significant." (Pub. Resources Code, § 21082.) Thus, the BSC has discretion to emphasize public health concerns over aesthetic concerns when devising its thresholds of significance.

Finally, there is no record of consumer complaint regarding any adverse taste and odor impacts attributable to PEX tubing in California. A significant amount of PEX tubing is currently installed in California, and there is no evidence that any person (or a substantial number of persons) has experienced frequent taste and odor impacts attributable to PEX tubing (see public hearing comments PH 3-1, 3-4, and 3-3). Additionally, the City of Grand Terrace provided comments on the RDEIR indicating that the City has received no complaints associated with odors or bad taste from PEX (Shields, pers. comm., 2008). Based on the substantial amount of PEX that has been installed in California and the lack of consumer complaints, it is apparent that any exceedance of secondary drinking water MCLs for MTBE resulting from PEX is not reasonably likely to cause a "substantial number of persons served by the public water system" to discontinue use of the system, or that use of PEX will otherwise adversely affect the public welfare. (See Cal. Health & Safety Code § 116275[d]).

The commenter cites several instances of taste and odor impacts associated with plastic plumbing pipe. However, none of the cases cited by the commenter occurred in the state of California. Because the performance of PEX tubing in Philadelphia, Arizona, Norway, and Virginia Tech University is subject to different environmental conditions, testing conditions, drinking water regulations, and circumstances than PEX found in California, these other studies can not be used to evaluate the potential for taste and odor impacts of PEX in California. In addition, the cited studies performed in Norway and at Virginia Tech University are not necessarily relevant because PEX pipes need to first be certified in accordance with NSF 61 standards to be available for use as described in the EIR (see DEIR page 1-1).

Regarding the Wirsbo lawsuit, the case appears to involve a single plaintiff in the state of Arizona. No information is provided to fully substantiate the credibility of the claims made by the plaintiff, and it is not clear if the allegations made are credible. Assuming the claim was credible,

a single instance of bad tasting drinking water associated with PEX in the state of Arizona would not constitute a substantial contribution to the exceedance of a water quality standard for taste and odor.

**C-8** Based on information received during and after circulation of the DEIR, the Proposition 65 chemicals identified in Table 4.4-1 of the DEIR are no longer considered constituents of concern for PEX, and not considered further in the EIR. Of the 13 Proposition 65 chemicals identified as having the potential to leach from PEX piping, it was determined that eight are not found in PEX. These chemicals include benzene, carbon disulfide, trichloroethylene, 4,4-methylenedianiline, bis(2-ethlyhexyl)phthalate, butyl benzyl phthalate, and toluene diamine. To the extent that carbon black may be present in some PEX products, it would not be present in a form that would allow it to be released into water, and thus is not a concern for drinking water, or environmental or human health. The remaining five chemicals were either not detected in PEX or were found at levels below California or NSF standards, and therefore do not require further consideration under Proposition 65. These chemicals include benzo(a) pyrene, mercury, cadmium, chloroform, and toluene.

As described in response to comment 27-1, the chemicals listed in Table 4.4-1, "Chemicals Potentially Present in PEX Tubing," were compiled from scientific journal articles that discussed leaching from PEX *and other types* of plastic pipes. The table is simply a listing of chemicals potentially present in PEX, and does not identify the specific chemicals associated with each type of plastic. This list was believed to be the best information available at the time, and it is now known to contain many chemicals not found in PEX.

NSF was asked to provide a list of the chemicals that have been detected at concentrations exceeding the relevant California criteria identified in Table 4.4-1. In a letter dated March 12, 2008, Clif McLellan at NSF stated that the only chemicals found to exceed the California standards in some proportion of pipes tested were MTBE and TBA.

Based on the information available at the time the DEIR was prepared, there were three Proposition 65 compounds (butyl benzyl phthalate, toluene diamine, and carbon black) believed to be used in some PEX formulations for which no California or federal drinking water criteria exist (see DEIR page 4.4-13). Because the project would have resulted in a significant impact related to water quality if it would "violate any water quality standards such that implementation of the proposed project would result in a level of a contaminant that exceeds…a Proposition 65 Safe Harbor or other relevant Proposition 65 level," and three chemicals were identified that may leach from PEX tubing, the DEIR conservatively identified a potentially significant impact associated with the three chemicals, and Proposition 65 language was included in the DEIR's Mitigation Measure 4.4-1 to reduce potentially significant impacts to less-than-significant levels. For the reasons discussed herein, Mitigation Measure 4.4-1 has since been deleted from the EIR (see RDEIR page 4.4-18).

As described in response to comment 27-1, Table 4.4-1 of the DEIR lists chemicals potentially present in PEX tubing, including butyl benzyl phthalate and toluene diamine. Since publication of the DEIR, additional information on Proposition 65 compounds and PEX was identified. In a June 23, 2008 DEIR comment letter from NSF (see comment letter 27), butyl benzyl phthalate and toluene diamine were identified as chemicals not found in PEX tubing. As stated in the letter, NSF has 20 years of experience in evaluating PEX piping. Based on NSF's experience in reviewing the formulations of these products and conducting testing on PEX tubing, NSF has not seen and would not expect to see butyl benzyl phthalate or toluene diamine in the formulation for PEX or in chemical extraction test results of PEX tubing. Furthermore, these compounds are associated with polyurethane, and polyurethane is not an ingredient in PEX nor is it used as a

liner or coating for PEX in potable water applications (Bestervelt, pers. comm., 2008). Therefore, no leachate results for butyl benzyl phthalate and toluene diamine are available from NSF. Because NSF has not seen and would not expect to see butyl benzyl phthalate and toluene diamine in the formulation for PEX or in chemical extraction results of PEX tubing, and the commenter does not cite any evidence indicating the presence of these compounds in the PEX formulation or in PEX leachate, it can be concluded that butyl benzyl phthalate and toluene diamine do not leach from PEX. Therefore, butyl benzyl phthalate and toluene diamine are no longer considered constituents of concern, and are not considered further in this EIR.

As discussed on page 4.4-12 of the RDEIR, carbon black is also identified in the DEIR as a substance potentially present in PEX tubing, and is listed on the Proposition 65 list of "Chemicals Known to the State to Cause Cancer or Reproductive Toxicity." However, carbon black's risks relate to inhalation of airborne, unbound particles of respirable size (CAS No. 1333-86-4). Carbon black is not believed by NSF to be used in PEX tubing. In addition, reports of its potential use in some brands of PEX would not be a concern because the particles would be bound within the matrix of the pipe, and exposure to airborne particles of carbon black would not occur. Therefore, the Proposition 65 listing for carbon black as airborne unbound particles of respirable size does not apply to PEX tubing, and because any carbon black that could potentially be contained in PEX tubing is considered bound, any potential leaching of carbon black from PEX tubing is not a concern under Proposition 65.

**C-9** This FEIR also includes responses to the comments contained in the Coalition's June 23, 2008 letter. Please see responses to comments 25-1 through 25-34.

**C-10** Please refer to responses to comments C-1 through C-9. Based on the analysis therein, and on responses to comment letters 1 through 31 and A through C, we conclude that the DEIR and the RDEIR provided a thorough analysis of the proposed project and its potential impacts on the environment using the best available information. No comments have been raised that would result in revised conclusions in the EIR. The severity of the environmental impacts of the project would not substantially increase (they would not increase at all) based on the comments; no feasible alternatives or mitigation measures have been raised that would substantially reduce impacts of the project; and the conclusions of the EIR were based on substantial evidence in the record. Impacts associated with water quality, public health, hazards, solid waste, and air quality, and all other issues raised by the commenter were thoroughly evaluated in the DEIR and RDEIR and are sufficiently addressed herein.

1

GAMBRO

MAY 2 2 2008

REAL ESTATE
SERVICES DIVISION

14143 Denver West Parkway
Lakewood, CO 80401
USA
www.gambro.com
**Tel:** 800-525-2623
**Fax:** 303-231-4310

May 15, 2008

California Department of General Services
Real Estate Services Division
Professional services branch, Environmental services section
Attn – Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

This letter is in response to the publication of the Draft Environmental Impact Report (DEIR) for the use of PEX and the related codes published by the California Building Standards Commission.

My comment is in regard to the Project Description section of the DEIR. This section refers to several proposed changes to section 604 of the state plumbing code. My comment is that this listing is incomplete. In addition to the proposed changes to section 604, section 613.1 should also be updated.

The current verbiage of 613.1 reads "*Dialysis water feedlines shall be PVC, glass, or Stainless Steel and sized to provide minimum velocity of 1.5 ft per second.*"

1-1

This section (as worded today) contradicts the proposed changes to section 604 allowing PEX. It is also redundant to 613.7 which states that Dialysis Water systems must meet relevant AAMI (Association for the Advancement of Medical Instrumentation) standards -- these AAMI standards already include requirements on dialysis water feedline materials (including PEX), configuration, and design; some of which contradict the outdated text in 613.1. Additionally, section 613.1 (as worded today) violates the Code of Federal Regulations 21-CFR-808 which states that *"no State or political subdivision of a State may establish or continue in effect any requirement with respect to a medical device intended for human use having the force and effect of law (whether established by statute, ordinance, regulation, or court decision), which is different from, or in addition to, any requirement applicable to such device under any provision of the act and which relates to the safety or effectiveness of the device or to any other matter included in a requirement applicable to the device under the act [emphasis added]."*

Proposed changes are to either eliminate section 613-1 altogether or to amend it to state *"Dialysis water feedlines shall be constructed to meet relevant AAMI and/or FDA guidelines"*.

1-1 (Cont.)

Gambro has petitioned OSHPD several times over the last 5 years to change section 613.1. However, OSHPD has denied the petitions due (in part) to the current wording of 604.1 prohibiting PEX. Clearly any proposed change to section 604.1 should also apply to 613.1.

Please contact me if you have any questions or need any further supporting information

Best Regards

Bob Chambers
Director, Americas Water Division
Gambro
303-231-4921
Bob.chambers@us.gambro.com

| Letter 1 Response | Gambro<br>Bob Chambers, Director, Americas Water Division<br>May 22, 2008 |
|---|---|

**1-1** The comment suggests that the project description be expanded to address Section 613.1 code language concerning medical devices and machines. As defined in the DEIR, the proposed project involves adoption of new state plumbing code regulations that would authorize the statewide use of PEX tubing for various hot and cold water (including potable water) plumbing applications in residential, commercial, and institutional buildings. (See DEIR pages 3-4 and 3-5).

The proposed regulations do not address certain other potential uses of PEX tubing, such as for medical devices and machines (see Section 3.6 of the DEIR, page 3-8). Uses other than cold and hot water plumbing for commercial, residential, and institutional buildings are beyond the scope of the project and this EIR. This comment is acknowledged.

2

May 22, 2008

Ms. Valerie Namba, Senior Environmental Planner
California Department of General Services, Real Estate Services Division
Professional Service Branch, Environmental Service Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052
(916) 376-1607

REF: Proposed Adoption of PEX Tubing to the (CPC) Title 24, Part 5

Dear Ms. Namba,

I am a lifelong resident of the State of California. My wife and I are in the process of building our long awaited "dream home" in a rural area of Madera County.
Making the decision to construct a new home in an uncertain economy is very risky but considering our backgrounds in real estate and manufacturing, we believe we can manage the uncertainty. However, in order to fulfill our dream we must be able to control every detail of construction to include construction material.

When we submitted our drawings to plan check we were told that we would not be allowed to use PEX tubing in any of the plumbing. Ms. Namba, the cost of the alternatives is unimaginable! Our plumbing contractor estimates that the use of copper pipe will exceed 300% of our original budget estimate! This cost does not include engineering, interest or scheduling while waiting for the plumbers to sweat copper pipe. 2-1

I have learned that the residents of California were mislead into believing that certain construction materials pose an unsubstantiated health hazard supported by innuendo or political expediency. I was also informed by our local jurisdiction that up until 1/1/2008 PEX tubing was widely used in virtually every jurisdiction in the State of California excluding those with strong union influence.

This is unacceptable. The State of California has an obligation to provide the atmosphere of growth; it has a responsibility to unleash the technology that provides safe effective and energy efficient alternative materials to contractors, developers and most of all to the tax payers.

I ask the State of California to follow the steps of thousands of jurisdictions across the country and in Europe, and adopt PEX tubing to the 2007 plumbing code (CPC) California Code of Regulations, Title 24, Part 5.

Thank you for your prompt attention to this matter as many California residents are eager to have this resolved.

Regards,

MAY 29 2008

REAL ESTATE
SERVICES DIVISIO

John & Lori Silva
18675 Avenue 18½
Madera, CA 93637

FRESNO CA 937
28 MAY 2008 PM 3 T

Ms. Valerie Namba
Ca. Dept of General Services Rg. Div.
707 Third Street, Third Floor MS 509
West Sacramento, Ca. 95605-9052

95605+2811

**Letter 2 Response**

John and Lori Silva
May 29, 2008

**2-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

3

Griffin Industries

JUN - 3 2008

REAL ESTATE SERVICES DIVISION

6-02-08

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Attn: Valerie Namba, Senior Environmental Planner

RE: Comments on Draft Environmental Impact Report on PEX Tubing

My comments on the DEIR are as follows:

I have been installing CROSS-LINKED POLYETHYLENE (**PEX**) tubing since 1998. During that time, I have installed approximately 4000 residential and 1850 multi family systems. To date we have not had any call backs from end users complaining about taste and odor from their PEX water distribution system ***(as is common for copper and galvanized water delivery systems. This is undoubtedly resulting from the use of flux and lead based soldering compounds or pipe sealing compounds used in conjunction with galvanized piping).***

Since we have been installing **PEX** water distribution systems we have not had any call backs due to premature failures of the system. We have had numerous failures of copper systems over the past 30 years and in areas where copper or galvanized piping is failing, the PEX water distribution system has virtually eliminated any and all call backs. We continue to replace failing copper and galvanized systems with PEX tubing, where approved, with great success and to the satisfaction of the end users. 3-1

At Griffin Industries PEX tubing is being installed above slab with one exception, isolated kitchen islands. **In that condition our QA program requires sleeving in 3" ABS.** This eliminates the following Concerns:

**Underground damage from other trades*
**Any possibility of permeation of contaminated or per-treated soils.*

Since we have been installing **PEX** tubing, we have not experienced any failures of **PEX** tubing, connections or fittings of any type, whether installed in a typical water distribution system or in a recirculation system. The California Energy

24005 Ventura Boulevard, Calabasas, California 91302 • 818/591-2500 • FAX 818/591-0087

Griffin Industries

Code requires automatic valves on recalculating pumps when hot water is not needed. Additionally our QA protocol specifies the use of only PEX systems that have passed the **NSF P171 protocol.** PEX tubing's high performance capabilities at high operating pressures and temperatures of 160psi at 73F, **100psi at 180F**, and **80psi at 200F** (as noted for SDR 9 tubing in ASTM F876) are responsible for its outstanding dependability.

3-1 (Cont.)

I can not state the same thing for copper installations. We have replaced numerous copper systems due to pinhole leaks that have occurred in as little as 6 months.

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Thank you for your consideration.

Sincerely,

Kim A. Nielsen
Operations
Griffin Industries
24005 Ventura Blvd
Calabasas Ca. 91302
818-591-2500 ext 208

| Letter 3 Response | Griffin Industries<br>Kim Nielsen, Operations<br>June 3, 2008 |
|---|---|

**3-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

4

ORANGE PACIFIC PLUMBING, INC.
901 VIA RODEO • PLACENTIA, CA • 92870 • (714) 996-6891 • S.C.L. #439226

May 29, 2008

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PROJECT MANAGEMENT
BRANCH
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JUN - 3 2008
REAL ESTATE
SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento. CA 95605-9052

Attn: Valerie Namba, Senior Environmental Planner
RE: Comments on Draft Environmental Impact Report on PEX Tubing

My comments on the DEIR are as follows:

We have been installing Uponor Wirsbo AquaPEX tubing since 2002. During that time, we have installed approximately 1100 systems and have not had any call backs from end users complaining about taste and odor from their PEX water distribution system. Additionally, since we have been installing PEX water distribution systems we have not had any call backs due to premature failures of the system. We have had numerous failures of copper systems over the past 20 years and in areas where copper is failing, the PEX water distribution system has virtually eliminated any call backs. We continue to replace failing copper systems with PEX tubing, where approved, with great success and to the satisfaction of the end users. 4-1

In most applications PEX tubing is being installed above slab, eliminating the concern of permeation of contaminated soils. The exception is the installation of PEX tubing to island sinks. In these applications, we have not experienced any call backs concerning permeation of any chemicals into the potable water system. Since the island sinks are in the interior of the slab, the tubing is virtually protected from coming into contact with harmful contaminates that are applied after the structure is built.

Since we have been installing PEX tubing, we have not experienced any failures of PEX tubing, whether installed in a typical water distribution system or in a recirculation system. I can not state the same thing for copper installations. We have repaired numerous copper systems due to pinhole leaks that have occurred in as little as 24 months.

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Thank you for your consideration.

Sincerely,

Steven R. Hartshorn, President

**4-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

5

ELEVATING INDUSTRY EXPECTATIONS

PACIFIC PRODUCTION PLUMBING

June 3, 2008

Valerie Namba, Senior Environmental Planner
California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS509
West Sacramento, CA 95605-9052

RE: Comments on Draft Environmental Impact Report on PEX Tubing

Dear Ms. Namba:

Herein are my comments on the Draft Environmental Report on PEX Tubing. We have been installing Uponor Wirsbo/Vanguard AquaPEX tubing since 1993. During that time, we have installed approximately 35,000 systems and have not had any call backs from end users complaining about taste and/or odor from their PEX water distribution system. Additionally, in our experience installing PEX water distribution systems call backs due to premature failures of the system are nil. However, we have had numerous failures of copper systems over the past 20 years and in areas where PEX tubing replaces failing copper, the PEX water distribution system has virtually eliminated further call backs. We continue to replace failing copper systems with PEX tubing, where approved, with great success and to the satisfaction of end users.

Most PEX tubing applications are being installed above slab, removing the concern of permeation of contaminated soils. The exception is the installation of PEX tubing to island sinks. Since island sinks are in the interior of the slab, the tubing is virtually protected from coming into contact with harmful contaminates that are applied after the structure is built. In these applications, we have not experienced any call backs concerning permeation of any chemicals into the potable water system. 5-1

Whether installed in a typical water distribution system or in a recirculation system, our experience using PEX tubing has proven to be failure free. Not so with copper systems which we have replaced in as little as 12 months due to pinhole leaks.

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Sincerely,

Tobin T. Whitt
Chief Executive Officer

INLAND EMPIRE . SAN DIEGO . IMPERIAL VALLEY . HIGH DESERT . COACHELLA VALLEY

4055 TRAIL CREEK ROAD, RIVERSIDE, CA 92505 T (951) 509 3100 F (951) 509 3130 WWW.PACIFICPRODUCTION.COM

**5-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

6

Lucile Packard Children's Hospital AT STANFORD

STANFORD HOSPITAL & CLINICS
Stanford University Medical Center

Purna Prasad, M.S., C.C.E
Director
Department of Clinical Technology & Biomedical Engineering
Stanford University Medical Center
HF 006, M/C 5651
300, Pasteur Drive,
Palo Alto, CA-94305

JUN 0 3 2008
REAL ESTATE SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Service Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
Wes Sacramento, CA 95605-9052

May 21, 2008

Dear Ms. Namba;

This letter is in response to the Draft Environmental Impact Report (DEIR) pertaining to the use of PEX as currently outlined in the California Building Standards Commission (CBSC) sections 604 as well as section 613.1 as it relates specifically to applications as a medical device in hospitals in the State of California.

Stanford University Hospital and Lucile Packard Children's Hospital strive to provide world class state of the art health care. State of the art care in the dialysis field is increasingly related to lower and lower levels of microbiological content. Periodic chemical disinfection is the traditional method for achieving this goal. Chemical disinfection is no longer regarded as state of the art. Instead, heat has been identified as the superior disinfection method. The materials allowed under sections 604 and 613.1 are neither heat tolerant, nor economically attractive. In addition, these materials are structurally inferior to PEX and actually help promote microbiological growth. 6-1

We strongly support any effort to revise these sections so that major health care institutions like Stanford can truly provide state of the art care for their patients.

We would also recommend that any new language adopted through this process be broad enough so as to allow the use of similar, not yet available, materials.

Finally, we are also concerned about the awkward juxtaposition of FDA and its authority over approved medical devices like dialysis water purification systems, and CBSC authority over building construction codes. In those cases where a clearly defined and federally approved medical device somehow conflicts with construction codes it would be helpful to have some clause or provision that would help establish clear precedence. Under the current code, building standards trump medical equipment and manufacturing standards, and this is simply NOT an appropriate application of building construction codes. The overlap is simply inappropriate and unreasonable. Language should be included in these standards to somehow help alleviate this problem.

Stanford University Medical Center and Lucile Packard Children's Hospital's are fully committed to providing state of the art health care in the state of California. With the changes offered above, our quest for these goals is substantially improved.

6-1 (Cont.)

Sincerely,

Purna Prasad, M.S., C.C.E

Stanford University Medical Center
Purna Prasad, Director, Department of Clinical Technology and Biomedical Engineering
June 3, 2008

**6-1** Please see response to comment 1-1 regarding Section 613.1 code language concerning medical devices and machines. As described in Section 3.6 of the DEIR (see page 3-8), adoption of regulations for use of PEX in medical devices and machines is not proposed. This comment is acknowledged.

7

JUN 06 2008
REAL ESTATE SERVICES DIVISION

DEPARTMENT OF
BUILDING & SAFETY,
PUBLIC WORKS
AND HOUSING

22795 Barton Road
Suite B
Grand Terrace
California 92313-5295
Civic Center
(909) 825-3825
Fax (909) 825-7506

June 2, 2008

California Department of General Services, Real Estate Services Division
Professional Services Branch, Environmental Services Division
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

**Attn: Valerie Namba, Senior Environmental Planner**

**RE: Comments on Draft Environmental Impact Report on Pex Tubing.**

My comments on the DEIR are as follows:

As Building Official for numerous jurisdictions over the past 16 years, I have been exposed to pipe failures in domestic water supply systems that incorporated the use of copper pipe and the installation of new domestic water systems using nonmetallic pipe. Over the years, I have been involved with the expanded use of CPVC piping.

Pex Tubing has become very popular due to its ease of use and the lack of any glue for connections. I have been approving the use of Pex Tubing since 1996 when it was first introduced in our region from plumbing contractors who were using this pipe in Nevada and Arizona on dwelling construction.

Pursuant to the plumbing code, an alternative material approval is required to allow Pex Tubing that is now widely used across the Inland Empire. I have allowed this materials use in many home projects using the alternative approach and have never seen or have ever received any evidence of product failure do to the correct installation of Pex Tubing materials. I have never received complaints or experienced any odors or bad taste generated from Pex Tubing. However, I have received complaints regarding copper pipe having a metallic taste and odor. 7-1

At this present time, I require each applicant to provide a water test examining the make up of the water for corrosion reasons. Each time a report is provided, the water is defined as hard in nature and corrosive. The recommendations in the reports are to use a nonmetallic material for domestic water supply. The code only recognizes CPVC which is a good nonmetallic material alternative. However, Pex Tubing is a better choice due to the ease of installation in its ability to be installed in tight areas for re-piping and new construction. Requiring the project applicants to pay additional money for testing and research coupled with time loss is not fair when Pex Tubing is already approved in manufactured homes and in most parts of the country.

In the past jurisdiction that I have worked, there was a company that rehabilitated kidney dialysis machines from all over the world. As you know, these machines are used to circulate blood for patients with kidney problems. I was shocked when I was informed by the owner of company that these machines use Pex Tubing in the circulation system because of its lack of carcinogens. If Pex Tubing is used in kidney dialysis machines with no effect on the patient, why would we not be able to approve its use for domestic water supply in the plumbing code. And, if Pex materials are already widely used in our state for other product uses we may not have been informed about, then an environmental study should support its continued expanded use.

When Pex pipe is installed on a project it is not likely to be stolen and recycled as is copper pipe today. The effects of copper pipe being stolen is far more of an environment problem than Pex tubing being placed in land fill areas or burning in an accidental home fire that are limited in nature. Much like CPVC piping material, Pex will be existing in homes it was originally installed in for many years beyond metallic pipe life because it is immune to corrosion attacks from aggressive water. There have been no documented failures reported or tracked in the rest of the country that has been shared with the building industry that would change minds on Pex Tubing performance. Only unsubstantiated talk that rodents have eaten through the pipe in an attic. If this is true, the pipe would not have been eaten if the attic was properly protected as required by code to stop rodents from entering. 7-1 (Cont.)

I attended a water symposium that reported, in order to kill new bacteria showing up in water systems today, chloramines are being used to kill this bacteria that can harm human consumption. The chloramines are attacking the Patina build up inside the copper pipe. Patina protects the pipe from corrosive attacks. Pursuant to water experts, the loss of Patina builds up in the pipe allows the pipe to be exposed to hard water and eventually pin hole leaks appear. Only having one additional solution to re-piping a home using CPVC application is not fair or reasonable when there is Pex piping that can be used to access hard to get areas and is generally easier to install in any type of application, new or re-pipe.

As a building official I highly recommend that the use of Pex Tubing be allowed in the plumbing code not only to allow more choices in domestic water material but to also mitigate the problems of failing metallic pipe that continues to evade property owners.

I strongly encourage the adoption of Pex Tubing into the California Code.

Should you have any questions, please feel free to contact me at (909) 825-3825.

Sincerely,

Richard Shields

Richard Shields, CBO
Building Official

| Letter 7 Response | City of Grand Terrace<br>Richard Shields, Building Official<br>June 6, 2008 |
|---|---|

**7-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

8

**GOLDEN WEST PLUMBING, INC.**
**1247 N Batavia Street, Orange, CA 92867**
**Phone 714-997-9991 Fax 714-997-7626**
CSLB#317026 C-36

JUN 06 2008
REAL ESTATE SERVICES DIVISIO

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Attn: Valerie Namba, Senior Environmental Planner

RE: Comments on Draft Environmental Impact Report on PEX Tubing

My comments on the DEIR are as follows:

We have been installing Uponor Wirsbo AquaPEX tubing since 2001. During that time, we have installed approximately 1,000 systems and have not had any call backs from end users complaining about taste and odor from their PEX water distribution system. Additionally, since we have been installing PEX water distribution systems we have not had any call backs due to premature failures of the system. We have had numerous failures of copper systems over the past 20 years and in areas where copper is failing, the PEX water distribution system has virtually eliminated any call backs. We continue to replace failing copper systems with PEX tubing, where approved, with great success and to the satisfaction of the end users.

In most application PEX tubing is being installed above slab, eliminating the concern of permeation of contaminated soils. The exception is the installation of PEX tubing to island sinks. In these applications, we have not experienced any call backs concerning permeation of any chemicals into the potable water system. Since the island sinks are in the interior of the slab, the tubing is virtually protected from coming into contact with harmful contaminates that are applied after the structure is built. 8-1

Since we have been installing PEX tubing, we have not experienced any failures of PEX tubing, whether installed in a typical water distribution system or in a recirculation system. I can not state the same thing for copper installations. We have replaced numerous copper systems due to pinhole leaks that have occurred in as little as 6 months.

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Thank you for your consideration.

Sincerely,

Wayne Taylor

Wayne Taylor, General Manager
Golden West Plumbing, Inc.

| Letter 8 Response | Golden West Plumbing Inc.<br>Wayne Taylor, General Manager<br>June 6, 2008 |
|---|---|

**8-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

9

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

JUN 06 2008
REAL ESTATE SERVICES DIVISION

Attn: Valerie Namba, Senior Environmental Planner

RE: Comments on Draft Environmental Impact Report on PEX Tubing

My comments on the DEIR are as follows:

We have been installing Uponor Wirsbo AquaPEX tubing since 2000. During that time, we have installed approximately 1,500 systems and have not had any call backs from end users complaining about taste and odor from their PEX water distribution system. Additionally, since we have been installing PEX water distribution systems we have not had any call backs due to premature failures of the system. We have had numerous failures of copper systems over the past 20 years and in areas where copper is failing, the PEX water distribution system has virtually eliminated any call backs. We continue to replace failing copper systems with PEX tubing, where approved, with great success and to the satisfaction of the end users.

In most application PEX tubing is being installed above slab, eliminating the concern of permeation of contaminated soils. The exception is the installation of PEX tubing to island sinks. In these applications, we have not experienced any call backs concerning permeation of any chemicals into the potable water system. Since the island sinks are in the interior of the slab, the tubing is virtually protected from coming into contact with harmful contaminates that are applied after the structure is built. 9-1

Since we have been installing PEX tubing, we have not experienced any failures of PEX tubing, whether installed in a typical water distribution system or in a recirculation system. I can not state the same thing for copper installations. We have replaced numerous copper systems due to pinhole leaks that have occurred in as little as 36 months.

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Thank you for your consideration.

Sincerely,

Glen Freyermuth
Granite Homes
Vice President of Purchasing and Product Development

GRANITE HOMES
Building Quality For A Lifetime

17891 Cartwright Road #200 • Irvine, CA 92614 • 949.250.9229 • Fax 949.250.9231

GRANITEHOMES.COM

| Letter 9 Response | Granite Homes<br>Glen Freyermuth, Vice President of Purchasing and Product Development<br>June 6, 2008 |
|---|---|

**9-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

10

Saber
Plumbing Company, Inc.

325 NORTH MARKET PLACE • ESCONDIDO, CALIFORNIA 92029 • (760) 480-5716 • FAX (760) 480-2278

JUN 06 2008
REAL ESTATE
SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Attn: Valerie Namba, Senior Environmental Planner

RE: Comments on Draft Environmental Impact Report on PEX Tubing

My comments on the DEIR are as follows:

*We have been* installing Uponor *Wirsbo* AquaPEX tubing since January, 2002. During that time, we have installed approximately 1250 systems and have not had any call backs from end users complaining about taste and odor from their PEX water distribution system. Additionally, since we have been installing PEX water distribution systems we have not had any call backs due to premature failures of the system. We have had endless failures of copper systems over the past 20 years and in areas where copper is failing, the PEX water distribution system has virtually eliminated any call backs. We continue to replace failing copper systems with PEX tubing, where approved, with great success and to the satisfaction of the end users.

In most application PEX tubing is being installed above slab, eliminating the concern of permeation of contaminated soils. The exception is the installation of PEX tubing to island sinks. In these applications, we have not experienced any call backs concerning permeation of any chemicals into the potable water system. Since the island sinks are in the interior of the slab, the tubing is virtually protected from coming into contact with harmful contaminates that are applied after the structure is built. 10-1

Since we have been installing PEX tubing, we have not experienced any failures of PEX tubing, whether installed in a typical water distribution system or in a recirculation system. I can not state the same thing for copper installations

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Thank you for your consideration.

Sincerely

John Zlomek C.O.O.

Saber Plumbing Company, Inc.
John Zlomek, Chief Operating Officer
June 6, 2008

**10-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

11

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

JUN 06 2008

REAL ESTATE
SERVICES DIVISION

Attn: Valerie Namba, Senior Environmental Planner

RE: Comments on Draft Environmental Impact Report on PEX Tubing

My comments on the DEIR are as follows:

We have been installing Uponor Wirsbo AquaPEX tubing since 2003. During this time, we have installed approximately 600 systems and have not had any call backs from end users complaining about taste and odor from their PEX water distribution system. Additionally, since we have been installing PEX water distribution systems we have not had any call backs due to premature failures of the system. We have had well over 100 failures of copper systems over the past 20 years and in areas where copper is failing, the PEX water distribution system has virtually eliminated any call backs. We continue to replace failing copper systems with PEX tubing, where approved, with great success and to the satisfaction of the end users.

In most application PEX tubing is being installed above slab, eliminating the concern of permeation of contaminated soils. The exception is the installation of PEX tubing to island sinks. In these applications, we have not experienced any call backs concerning permeation of any chemicals into the potable water system. Since the island sinks are in the interior of the slab, the tubing is virtually protected from coming into contact with harmful contaminates that are applied after the structure is built. 11-1

Since we have been installing PEX tubing, we have not experienced any failures of PEX tubing, whether installed in a typical water distribution system or in a recirculation system. I can not state the same thing for copper installations. We have replaced numerous copper systems due to pinhole leaks that have occurred in as little as 10 months.

We strongly encourage the adoption of PEX tubing into the California Plumbing Code.

Thank you for your consideration.

Sincerely,

Mark Pulver
Purchasing Manager
Warmington Homes California

3090 PULLMAN STREET
COSTA MESA, CALIFORNIA 92626

| Letter 11 Response | Warmington Homes<br>Mark Pulver, Purchasing Manager<br>June 6, 2008 |
|---|---|

**11-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

12

**OSBORNE COMPANY-LODI**

812 Virginia Ave, Lodi, Ca 95242

June 13, 2008

JUN 18 2008

REAL ESTATE SERVICES DIVISION

Calif. Dept of General Services
Real Estate Service Division
Professional Services Branch
Environmental Services Section
Attn: Valerie Namba

Dear Ms Namba:

I wish to comment on the draft EIR prepared for the purpose of PEX tubing being reviewed for the Calif. Plumbing Code . Specifically, I believed you've overstated the potential effects of chlorine degradation in hot water recirculation.

The Osborne Company is the manufacturers Representative for Grundfos pumps in N.Calif. and N. Nevada. This is that area north of Kern County to Oregon. In its home area, N. Calif., Grundfos commands a 85-90% market share for hot water circulators in new home construction. We sold 11,000 pumps last year. Though this sounds like a sizeable number, this pales in comparison with the actual number of single family homes built in this area. Note, that this also includes the Reno area of N. Nevada where recirculation pumps are mandated as a water conservation measure.

12-1

In 2007 sales, less than 5% of the pumps sold did not also have either a timer or aquastat installed with it. We suggest that most of those were sold as replacements for older, worn out pumps. Though the California Energy Code Title 24 requirements do not outlaw constant hot water recirculation in potable water systems, they seriously discourage it. Title 24 sees constant recirculation as a needless energy draw. They place economic constraints on it installations.

In Nevada, where both PEX and hot water recirculation have been code for almost 10 years, there have been no known failures due to chlorine issues.

Sincerely,

Jim Casey
Area Manager-Osborne/Lodi

Osborne Company
Jim Casey, Area Manager
June 18, 2008

**12-1** The commenter asserts that the DEIR overstates the potential effects of chlorine degradation in hot water circulation systems. The commenter states that hot water recirculation systems and PEX tubing have been allowed by the plumbing code in Nevada for almost 10 years with no known failures due to chlorine degradation, implying that PEX tubing used in such systems does not fail. As described in Section 4.2, "Public Health and Hazards" and specifically Impact 4.2-3 of the DEIR (see page 4.2-12), without attack from chlorine or aggressive water, copper pipes are known to outlast the buildings in which they are installed. In addition, plumbing materials certified to ASTM F2023 and NSF P171 standards can have service lifetimes of 40 to 80 years. However, no data are available to show the actual life expectancy of CPVC and PEX, and plastic pipe has not been in use in the United States long enough to provide data on long-term performance over time. Because PEX tubing used in continuously recirculating, hot chlorinated water systems within jurisdictions that use chlorine may have shorter product lives than copper, CPVC, or PEX in traditional domestic applications, mitigation is recommended to address this potentially significant impact (see page 4.2-13 of the DEIR).

13

STEVE MOSIMAN

**SHEEHAN** CONSTRUCTION, INC.

GENERAL CONTRACTOR

LICENSE # 767115

TOM SHEEHAN

JUN 18 2008

REAL ESTATE
SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section

June 17, 2008

Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

**RE: DEIR (Draft Environmental Impact Reporting) for PEX Tubing**

Dear Valerie,

My company has been in business for ten years. We employ 400 employees in California. 13-1

We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008.

Sincerely,

Victor A. Franco
Sheehan Construction, Inc.
221 Gateway Rd West, Ste 405
Napa, CA 94558

221 Gateway Rd. West, Suite 405, Napa, CA 94558-6623
Phone (707) 603-2610 Fax (707) 603-2614

**13-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

14

CALPASC
CALIFORNIA

California Professional Association of Specialty Contractors

Author's Email: bwick@calpasc.org
Author's Phone #: (909)-793-9932

JUN 19 2008
REAL ESTATE SERVICES DIVISION

June 17, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

RE: **DEIR (Draft Environmental Impact Report) for PEX Tubing**

Dear Valerie,

CALPASC is a non-profit trade association of specialty contractors, their suppliers, and other affiliated members. We have 525 member companies in California, who employ approximately 75,000 construction personnel.

CALPASC has conducted a survey of our Plumbing Contractor members regarding the use of PEX. The findings are as follows:

1. The average number of years in business of the respondents is 18.
2. The average number of years these companies have been installing PEX tubing systems is 7.
3. The respondents have installed PEX tubing systems in 26,950 housing units in California. 14-1
4. There have been no premature failures in the PEX tubing system.
5. There have been no odor or taste claims from homeowners for these installations.
6. There have been 120 problems with a certain fitting that was used early on. Since changing to a different type of fitting, there have been no other leak claims. There have been no permeation claims from these installations.

Additional commentary from respondents is as follows:

A great benefit of PEX systems over copper tubing, is that you find potential leaks when the system is pressure tested during construction. This means having virtually no leaks develop after the homeowner takes possession. Every respondent reports installing PEX systems

California Professional Association of Specialty Contractors (CALPASC)
Bruce Wick, Director of Risk Management
June 19, 2008

**14-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

15

California Tile Company

5555 Magnatron Boulevard Ste. F San Diego, California 92111 p858.715.2828 f858.715.282

JUN 19 2008

REAL ESTATE
SERVICES DIVISIO

June 18, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

RE: DEIR (Draft Environmental Impact Report) for PEX Tubing

Dear Valerie,

My company has been in business for 47 years. We employ approximately 60 employees in California.
We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 15-1

Gregory R. Colgate, President
California Tile Company
10755 Scripps Poway Pkwy, #419
San Diego, CA 92131

CALPASC
SAN DIEGO

BiA

**15-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

16

# Robbins Plumbing

*and Heating Contractors, Inc.*

In Business Over 40 Years

JUN 19 2008

REAL ESTATE
SERVICES DIVISIO

June 17, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

RE: DEIR (Draft Environmental Impact Report) for PEX Tubing

Dear Valerie,

My company has been in business for 44 years. We employ approximately 75 employees in California.
We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 16-1

Therese LeMieux
Robbins Plumbing
10765 Laurel Ave.
Santa Fe Springs, CA 90670

*10765 Laurel Avenue, Santa Fe Springs, CA 90670-4003*
*Phone:(562)944-9793 Fax:(562)944-3084 State License No. 234793*

Robbins Plumbing and Heating
Therese LeMieux
June 19, 2008

**16-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

17

**VILORIA CONSTRUCTION INC.**
27101 Burbank, Foothill Ranch, Ca. 92610
(949) 859-3486 (Fax) 859-3489
B659115

JUN 19 2008
REAL ESTATE SERVICES DIVISION

6/17/08
California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052
RE: DEIR (Draft Environmental Impact Report) for PEX Tubing
Dear Valerie,
My company has been in business for 16 years. We employ approximately 100 employees in California.
We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 17-1

Regards,

Ben Viloria

Viloria Construction Inc.
Ben Viloria
June 19, 2008

**17-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

18

422 South Pierce Street
El Cajon, CA 92020-4129
Phone 619.460.1240, Ext. 15 • Fax 619.462-4536
mkaplan@aspeninsbrokers.com • License #0D60834

June 17, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

JUN 20 2008
REAL ESTATE SERVICES DIVIS

RE: **DEIR (Draft Environmental Impact Report) for PEX Tubing**

Dear Valerie,

CALPASC is a non-profit trade association of specialty contractors, their suppliers, and other affiliated members. We have 525 member companies in California, who employ approximately 75,000 construction personnel.

CALPASC has conducted a survey of our Plumbing Contractor members regarding the use of PEX. The findings are as follows:

18-1

1. The average number of years in business of the respondents is 18.
2. The average number of years these companies have been installing PEX tubing systems is 7.
3. The respondents have installed PEX tubing systems in 26,950 housing units in California.
4. There have been no premature failures in the PEX tubing system.
5. There have been no odor or taste claims from homeowners for these installations.
6. There have been 120 problems with a certain fitting that was used early on. Since changing to a different type of fitting, there have been no other leak claims. There have been no permeation claims from these installations.

422 South Pierce Street
El Cajon, CA 92020-4129
Phone 619.460.1240, Ext. 15 • Fax 619.462-4536
mkaplan@aspeninsbrokers.com • License #0D60834

Additional commentary from respondents is as follows:

A great benefit of PEX systems over copper tubing is that you find potential leaks when the system is pressure tested during construction. This means having virtually no leaks develop after the homeowner takes possession. Every respondent reports installing PEX systems above ground, except for kitchen islands, which have specialized procedures to protect the tubing. The difference in claims experience between PEX tubing systems and copper systems is enormous. Leakage claims continue for copper systems, as well as leaching claims. One member used the term phenomenal as the measure of improvement between PEX systems when compared to copper tubing systems. 18-1 (Cont.)

CALPASC sincerely appreciates all of the work and effort that have gone into preparing the DEIR. CALPASC strongly supports PEX systems being approved as rapidly as possible for the foregoing reasons

Sincerely,

Marc Kaplan, President of Aspen Insurance, CALPASC (California Professional Association of Specialty Contractors) Member, and Insurer of Many Plumbing Contractors

Aspen Insurance Brokers
Marc Kaplan, President
June 20, 2008

**18-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

19

BAYSIDE CONCRETE
CONSTRUCTION COMPANY

JUN 20 2008
REAL ESTATE
SERVICES DIVISION

June 17, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

**RE: DEIR (Draft Environmental Impact Report) for PEX Tubing**

Dear Valerie,

Bayside Concrete Construction Company has been in business for more than 24 years. We employ approximately 150 employees in California. 19-1

We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008.

Sincerely,

Kary Yergler

Bayside Concrete Construction Company

20631 Cañada Road ▪ Lake Forest, California 92630-8100 ▪ (949) 770-4700 ▪ Fax (949) 770-7518
Yergler Corporation dba Bayside Concrete Construction Company
LICENSE NUMBER 447830 C-8

**19-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

20

# CASA PLUMBING, INC.

STATE LICENSE NUMBER809831

06/17/08

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn. Valerie Namba, Senior Environmental Planner
707 Third Street, third floor, MS 509
West Sacramento, CA. 95605-9052

JUN 20 2008
REAL ESTATE SERVICES DIVISION

RE: DEIR for PEX tubing

Dear Ms. Namba,

My company has been in business for 7 years. We have employed as many as 250 people, although, due to the recent housing slump, our ranks are greatly reduced.

We agree and support the comments expressed in the letter from CALPASC to you dated 06/07/08.

20-1

Not only is PEX a better product because it will not react to the questionable water chemistry that is causing pinhole leaks in copper, it is more user friendly to install and the cost is between $700 and $1500 less per house than copper. The liability issue alone for copper makes PEX the better product by far.

Sincerely,

James Kanell

James Kanell
President
Casa Plumbing, Inc.
856 N. Elm St. #L
Orange, CA 92867

| Letter 20 Response | Casa Plumbing, Inc.<br>James Kanell, President<br>June 20, 2008 |
|---|---|

**20-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

21

FRONTIER
PLUMBING

June 18, 2008

JUN 20 2008
REAL ESTATE
SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

RE: DEIR (Draft Environmental Impact Report) for PEX Tubing

Dear Valerie,

Frontier Mechanical, Inc. DBA Frontier-Plumbing has been in business for 22 years. We employ approximately 30 employees in California. 21-1

We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008.

Thank you,

Richard C. Palmer

Richard C. Palmer
Frontier Mechanical, Inc.
6309 Seven Sea Avenue
Bakersfield, CA 93308

**21-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

22

GH PLUMBING INC

Residential Plumbing Contractor
CCL 494767

June 16, 2008

JUN 20 2008
REAL ESTATE SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

RE: DEIR (Draft Environmental Impact Report) for PEX Tubing

Dear Valerie,

Our company has been in business for 14 years. We employ approximately 15 employees in California.

We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 22-1

We have been exclusively installing Pex water piping in our new homes for 8 years and have relaized the benefits of this type piping. We also beleive our customers have benfited from a pure piping system which is free from leaching minerals as in lead, copper, & zinc.

Thank You,

Gerrold E. Hopping Jr.
President - GH Plumbing Inc
2100 March Road
Roseville, CA 95747
Office (916)781-7771
Fax (916)781-7753
CCL 494767

GH Plumbing Inc.
Gerrold Hopping, Jr., President
June 20, 2008

**22-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

23

Laurence - Hovenier, Inc.

www. Framing Contractors .com

June 18, 2008

California Department of General Services
Real Estate Division
Professional Services Branch, Environmental Services Section

JUN 2 0 2008
REAL E
SERVICES

Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Re: DEIR (Draft Environmental Impact Report) for PEX Tubing

Dear Valerie,

My company has been in business since 1979. We employ approximately 200 employees in California. We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 23-1

Respectfully Submitted,

Fred Hovenier
Vice President

179 N. Maple Street, Corona, CA 92880 • State License 375486
(951) 736-2990 • FAX (951) 736-0973

Laurence-Hovenier Inc.
Fred Hovenier, Vice President
June 20, 2008

**23-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

24

Richard's PLUMBING, INC.
4447 N. BRAWLEY • FRESNO, CA 93722
Telephone (559) 277-1645
CONT. LICENSE NO 427519

June 17, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA. 95605-9052

RE: (Draft Environmental Impact Report) for PEX Tubing

Dear Valerie,

My company has been in business for 33 years. We employ approximately 22 employees in California. We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 24-1

Terry Fletcher, President
Richard's Plumbing, Inc.
4447 N. Brawley Ave.
Fresno, Ca. 93722

JUN 20 2008
REAL ESTATE SERVICES DIVISION

| Letter 24 Response | Richard's Plumbing Inc.<br>Terry Fletcher, President<br>June 20, 2008 |
|---|---|

**24-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

25

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715
TEL: (916) 444-6201
FAX: (916) 444-6209
tenslow@adamsbroadwell.com

DANIEL L. CARDOZO
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
LOULENA A. MILES
GLORIA D. SMITH

FELLOW
RACHAEL E. KOSS

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL

SO. SAN FRANCISCO OFFICE
601 GATEWAY BLVD., SUITE 1000
SO. SAN FRANCISCO, CA 94080
TEL: (650) 589-1660
FAX: (650) 589-5062

June 23, 2008

**VIA EMAIL AND HAND DELIVERY**

Ms. Valerie Namba, Senior Environmental Planner
California Department of General Services, Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Re: Comments of Coalition for Safe Building Materials on Draft Environmental Impact Report on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing

Dear Ms. Namba:

The following comments on the Draft Environmental Impact Report on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing are respectfully submitted on behalf of the Coalition for Safe Building Materials ("Coalition"). The members of the Coalition include the California Pipe Trades Council, Consumer Federation of California, California Professional Firefighters, Planning and Conservation League, Center for Environmental Health, Sierra Club of California and Communities for a Better Environment, along with their individual members.

The Coalition's comments also include and incorporate by reference the expert comments of Thomas Reid of TRA Environmental Sciences, Inc., Dr. Robert A. Clark of GT Engineering and Michael Krause of Veritox. These comments also reference a number of supporting technical documents that are submitted as separately bound appendices.

We thank you for this opportunity to comment.

Sincerely,

Thomas A. Enslow

TAE:cnh
Enclosure

2057-024d

printed on recycled paper

**Comments of**

# COALITION FOR SAFE BUILDING MATERIALS

**(California Pipe Trades Council, Consumer Federation of California, Planning and Conservation League, California Professional Firefighters, Center for Environmental Health, Sierra Club of California and Communities for a Better Environment)**

on the

Draft Environmental Impact Report

on the

Adoption of Statewide Regulations Allowing the Use of PEX Tubing

**VOLUME I**

*COMMENTS PREPARED BY:*


Daniel L. Cardozo
Thomas A. Enslow
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Dr. Robert A. Clark
GT Engineering
18372 Redmond - Fall City Road
Redmond, WA 98052

Thomas S. Reid
TRA Environmental Sciences, Inc.
545 Middlefield Road, Suite 201
Menlo Park, CA 94025

Michael Krause
Veritox
18372 Redmond - Fall City Road
Redmond, WA 98052


June 23, 2008

2057-022d

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## I. INTRODUCTION

On behalf of the Coalition for Safe Building Materials ("Coalition"), this letter provides comments on the May 2008 "Draft Environmental Impact Report on the Adoption of Statewide Regulations Allowing the Use of PEX Tubing" ("DEIR"). The DEIR evaluates the potential impacts of the proposed adoption of regulations that would amend the current California Plumbing Code ("CPC") to permit the use of cross-linked polyethylene ("PEX") tubing for potable water pipe ("Project") in residential, commercial and institutional buildings.

The Coalition members include the California Pipe Trades Council, the Sierra Club, the Planning and Conservation League, California Professional Firefighters, Communities for a Better Environment, the Consumer Federation of California, and the Center for Environmental Health. The environmental, consumer, public health and labor organizations that make up the Coalition represent literally millions of Californians concerned about the safety of new building materials.

The California Building Standards Commission ("CBSC") has prepared the DEIR as the lead agency under the California Environmental Quality Act ("CEQA"). The DEIR states that it may be relied upon for approval of PEX in occupancies under the jurisdictions of the Department of Housing and Community Development ("HCD"), Division of the State Architect ("DSA"), Office of Statewide Health Planning and Development ("OSHPD"), Department of Public Health ("DPH") and the Department of Food and Agriculture ("DFA"). 25-1

The Coalition commends CBSC for preparing the DEIR. The DEIR corroborates many of the concerns that the Coalition has long raised regarding this product. These concerns include the leaching of methyl tertiary-butyl ether ("MTBE") and tert-butyl alcohol ("TBA") in amounts that exceed the state standards for taste, odor and health, the permeation of PEX pipe by outside contaminants and the potential premature degradation and rupture of PEX pipe. For the first time, this DEIR proposes measures to attempt to mitigate these hazards. This represents a welcome turnaround from HCD's now abandoned 2006 Negative Declaration on the statewide approval of PEX and PEX-AL-PEX, which mysteriously ignored the undisputed evidence of these health, safety and performance issues.

Unfortunately, the DEIR has only partially performed its duties under CEQA. Numerous potential impacts of this Project are simply ignored or are dismissed without foundation. In addition, mitigation measures relied upon to address admitted impacts are inadequate, improperly deferred or lack enforceability. The failure to meaningfully analyze or mitigate numerous potential impacts renders this document legally inadequate.

As discussed in more detail later in this document, the legal inadequacies of the DEIR include:

- Inadequate description of the Project, including failure to describe all variations of PEX approved by the Project and failure to describe PEX fittings approved by the Project;

- Inadequate mitigation of potential direct and cumulative contamination of drinking water due to the leaching of chemicals such as MTBE and TBA;

- Failure to evaluate or disclose potentially significant impacts of Ethyl tertiary butyl ether ("ETBE") leaching from PEX pipes;

- Improper deferral of analysis and mitigation of Proposition 65 chemicals that may leach from certain PEX formulations;

- Failure to evaluate the potential for PEX to leach Bisphenol A in amounts within the range of concern for infant and children exposure;

- Inadequate mitigation of the risk that drinking water may be contaminated due to the permeation of PEX piping by solvent-based pesticides and termiticides, benzene, gasoline constituents and other toxic substances; 25-1 (Cont.)

- Inadequate evaluation and mitigation of the risk of PEX failure due to exposure to numerous commonly encountered materials and environmental conditions, including sunlight, high temperatures, chlorine, petroleum products, firestop material and asphalt;

- Failure to meaningfully evaluate reports of widespread failures of PEX and PEX fittings;

- Failure to evaluate the risk of illness due to higher biomass and more abundant virus-like particles found in PEX pipe compared to copper or CPVC pipe;

- Failure to adequately evaluate the direct and indirect solid waste impacts of the Project; and

- Failure to adequately evaluate the risk of toxic smoke when PEX is burned in building fires.

The DEIR must be revised to evaluate these deficiencies and recirculated for public review and comment.

We have prepared these comments with the assistance of technical experts. Their *curriculum vitae* are attached as Exhibits H, I & J.

Exhibits A, B & C contain the comments and analysis of the leaching and permeation issues prepared by chemist Thomas Reid of TRA Environmental Services, Inc. ("Reid Comment Letter"). Mr. Reid received his training in chemical engineering at Yale University and his training in biological sciences at Stanford. He has prepared environmental studies for over 30 years and he has studied the chemistry and the associated environmental impacts of plastic plumbing for over 25 years. He also has over 20 years of experience providing expert testimony to agencies on building materials and building standards issues. Mr. Reid's curriculum vita is attached as Exhibit H.

California courts have recognized Mr. Reid's expertise on plastic plumbing pipe materials for more than a decade.[1] Most recently, the Court of Appeal in the *Plastic Pipe and Fittings Association. v. California Building Standards Commission* case recognized Mr. Reid as a qualified expert on the potential dangers of PEX pipe, including the potential for chemical leaching, permeation, mechanical failure and fire hazards.[2] The court held that "there is no reasonable question that Mr. Reid is qualified to state his opinion on these subjects."[3] Mr. Reid's comments are incorporated by reference and are hereby made a part of the Coalition's comments. 25-1 (Cont.)

Exhibits D, E & F contains the technical comments of Dr. Robert Clark on the propensity of PEX piping to prematurely degrade and rupture ("Clark Comment Letter"). Dr. Clark is a principal and founding member of GT Engineering. Dr. Clark holds a Bachelors of Science degree in metallurgy, a Masters of Science degree in materials science and engineering, and a Ph.D. in materials science and engineering with a metallurgy specialization and a minor in mechanical engineering, all from the University of California at Berkeley. His specialty is the investigation and determination of cause for degradation and failure in materials. This has included extensive work involving failures in engineered plastic or polymeric products such as molded parts, tubing, woven products and cordage. Dr. Clark has testified in cases across the United States as a court qualified expert in materials science, mechanical engineering, metallurgy, corrosion and accident reconstruction. Most recently, Dr. Clark has served as an expert consultant and investigator for numerous litigation cases involving PEX piping failures in Washington State. Dr. Clark's curriculum vita is attached as Exhibit I. Dr. Clark's comments are incorporated by reference and are hereby made a part of the Coalition's comments.

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[1] See *ABS Institute v. City of Lancaster* (1994) 24 Cal.App.4th 285.
[2] *Plastic Pipe and Fittings Assn. v. California Building Standards Com.* ("*PPFA v. CBSC*") (2004) 124 Cal.App.4th 1390.
[3] *Id.*

Exhibit G contains the technical comments of Michael Krause on the propensity of PEX piping to promote the growth of biofilm and biomass containing potentially dangerous pathogens ("Krause Comment Letter"). Mr. Krause is a Senior Industrial Hygienist with Veritox and has more than 25 years of experience providing industrial hygiene consulting and training. Mr. Krause has provided industrial hygiene, safety, asbestos management, and indoor air quality services to firms in the aerospace, metals and wood products industries; to schools and universities; building owners and managers; contractors; utilities; hospitals; labor unions; and government agencies.

Mr. Krause holds a Master of Science degree in Public Health / Industrial Hygiene and Safety from the University of Washington. He is a Certified Industrial Hygienist, a Canadian Registered Occupational Hygienist and a certified OSHA Institute trainer. Mr. Krause is a full member of the American Academy of Industrial Hygiene and the American Industrial Hygiene Association ("AIHA"). He currently serves on the national AIHA Noise Committee. He has served as President and Director of the 350-member AIHA Pacific Northwest Section. Michael is an affiliate member of the American Conference of Governmental Industrial Hygienists. 25-1 (Cont.)

Mr. Krause's curriculum vita is attached as Exhibit J. Mr. Krause's comments are incorporated by reference and are hereby made a part of the Coalition's comments.

Please note that these experts' comments supplement the issues addressed below and must be addressed and responded to separately. These comments also reference a number of additional supporting technical documents, reports and other evidence that are attached hereto as appendices. These supporting appendices are also incorporated by reference and hereby made a part of the comments of the Coalition.

It is critical to the health and safety of the California public that the potential impacts of PEX be fully disclosed, evaluated and mitigated before these materials are approved for use throughout California. The DEIR must be revised to disclose and evaluate impacts that were improperly ignored or dismissed and to identify feasible and enforceable measures to reduce all Project impacts to a level of insignificance. Because such revisions would be substantive and substantial, the revised DEIR must then be recirculated for additional public review and comment.

## II. THE DEIR FAILS TO COMPLY WITH THE FUNDAMENTAL INFORMATIONAL AND PUBLIC DISCLOSURE REQUIREMENTS OF CEQA

CEQA is designed to inform decision-makers and the public about the potential, significant environmental effects of a project.[4] "CEQA's fundamental goal [is] fostering informed decision-making."[5] "The purpose of CEQA is not to generate paper, but to compel government at all levels to make decisions with environmental consequences in mind."[6]

An EIR is "the heart of CEQA,"[7] and "serves as the informational tool to facilitate informed decision-making."[8] The EIR acts as an "environmental 'alarm bell' whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological points of no return."[9] 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.[10] The EIR also serves "to demonstrate to an apprehensive citizenry that the [agency] has analyzed and considered the ecological implications of its action."[11] Thus, an EIR "protects not only the environment but also informed self-government."[12]

25-2

To fulfill this function, the discussion of impacts in an EIR must be detailed, complete, and "reflect a good faith effort at full disclosure."[13] CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.[14] A significant environmental impact is "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."[15]

A legally adequate EIR "must contain sufficient detail to help ensure the integrity of the process of decision-making by precluding stubborn problems or

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[4] 14 Cal. Code Regs. ("CEQA Guidelines") § 15002, subd. (a)(1).
[5] *Laurel Heights Improvement Assn. v. Regents of University of California ["Laurel Heights I"]* (1988) 47 Cal.3d 376, 402.
[6] *Bozung v. LAFCO* (1975) 13 Cal.3d 263, 283.
[7] *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.
[8] *Dusek v. Anaheim Redevelopment Agency* (1985) 173 Cal.App.3d 1029, 1037.
[9] *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1220.
[10] Pub. Resources Code § 21002.1(a); CEQA Guidelines § 15002(a), (f).
[11] *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 86.
[12] *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.
[13] CEQA Guidelines § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.
[14] Pub. Resources Code § 21100, subd. (b)(1); CEQA Guidelines § 15126.2, subd. (a).
[15] CEQA Guidelines § 15382.

serious criticism from being swept under the rug."[16] Mere conclusory pronouncements are not sufficient. An adequate EIR must contain facts and analysis that provide a road map to how an agency has reached its conclusions.[17]

CEQA also imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.[18] If an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures and alternatives sufficient to minimize these impacts.[19] This requirement is the heart of CEQA. Without an adequate analysis and description of feasible mitigation measures, it would be impossible for agencies relying upon an EIR to meet this obligation.

Mitigation measures must be designed to minimize, reduce or avoid an identified environmental impact or to rectify or compensate for that impact.[20] A public agency may not rely on mitigation measures of uncertain efficacy or feasibility.[21] "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.[22]

Mitigation measures must be specific and fully enforceable through permit conditions, agreements or other legally binding instruments.[23] Mitigation measures that are vague or so undefined that it is impossible to evaluate their effectiveness are legally inadequate.[24] 25-2 (Cont.)

While we commend CBSC for producing an EIR that acknowledges many of the hazards of PEX use and appears to make a good faith effort to mitigate these hazards, the combined deficiencies in the DEIR still result in a document that fails to meet the basic informational and public disclosure requirements of CEQA. As explained in detail in each of the sections that follow and in the attached technical exhibits, the DEIR fails to include an accurate or complete Project description,

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[16] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 733.
[17] See *Citizens of Goleta Valley v. Board of Supervisors*, *supra*, 52 Cal.3d at 568.
[18] 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, supra,* 52 Cal.3d at 564; *Laurel Heights I, supra,* 47 Cal.3d at 400.
[19] Pub. Resources Code §§ 21002.1, subd. (a), 21100, subd. (b)(3).
[20] CEQA Guidelines § 15370.
[21] *Kings County Farm Bureau v. City of Hanford, supra,* 221 Cal.App.3d at 727 (finding groundwater purchase agreement inadequate mitigation measure because no record evidence existed that replacement water was available).
[22] CEQA Guidelines § 15364.
[23] CEQA Guidelines § 15126.4, subd. (a)(2).
[24] *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61, 79.

wholly fails to address a number of Project impacts and inadequately addresses others, and relies on mitigation measures that, although seemingly well-intentioned, are inadequate and ill-conceived. 25-2 (Cont.)

## III. THE DEIR PROVIDES AN INADEQUATE AND MISLEADING PROJECT DESCRIPTION

The DEIR is legally deficient because it fails to accurately describe the Project. The DEIR fails to completely and accurately describe all the variations of PEX that would be approved by the Project. The DEIR fails to describe and disclose the PEX fittings that would also be approved by the Project. The DEIR also fails to fully disclose the scope of the Project's approval of PEX, which allows PEX not just in buildings and under slab, but also underground from the water meter to the building structure.

The failure to provide an accurate and consistent project description renders an EIR legally deficient.[25] 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 . . .."[26]

The definition of the project under review in a DEIR 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."[27] 25-3

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.[28]

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[25] CEQA Guidelines §15124; *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.
[26] CEQA Guidelines § 15378.
[27] *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.
[28] *County of Inyo v. City of Los Angeles, supra*, 71 Cal.App.3d at p. 193; see *also City of Santee v. County of San Diego, supra*, 214 Cal.App.3d at pp. 1450-1455.

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."[29]

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 DEIR and frustrates the core goals of CEQA.

PEX is a generic term for plastic pipe that is made by cross-linking polyethylene.[30] The DEIR, however, fails to adequately describe the variations in PEX formulations and manufacturing methods permitted under the proposed regulations.

There are currently three commercial methods of cross-linking: 25-3 (Cont.)

- PEX-a, the so-called Engel method, where the polyethylene resin and a chemical additive are heated to produce cross-linking;

- PEX-b, the silane method which produces silicon-oxygen cross-link bonds; and

- PEX-c, where cross-linking is initiated by gamma or electron beam radiation.

In addition to the variations in classes of PEX, manufacturers also use varying recipes of stabilizers, fillers and other additives for making PEX within each class. The differences in manufacturing methods, additives and recipes result in differing chemical compositions and create a potential for a wide variation in health and environmental effects.[31]

While the DEIR describes the three methods of cross-linking PEX, it fails to describe or evaluate the 271 variations in PEX formulations.[32] The lack of detail provided on the chemical additives contained in the various PEX products makes it impossible for either the public or public agency decision-makers to fully evaluate the potential impacts of this Project.

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[29] *Santiago County Water District v. County of Orange, supra,* 118 Cal.App.3d at p. 830.
[30] DEIR at p. 3-6.
[31] Exhibits A to G.
[32] See DEIR at p. 4.4-9.

Moreover, the DEIR fails to consider that new or revised formulations of PEX may be introduced into the market that would also be allowed pursuant to this Project. The DEIR must define the full range of options for PEX manufacturing and formulation that would be authorized by the Project in order to take into account future variations of PEX. 25-3 (Cont.)

The Project description is also inadequate because the DEIR fails to fully describe the complete plumbing system proposed for authorization. The proposed Project would approve both PEX piping and PEX fittings.[33] PEX fittings vary in type and material and include the brass insert fittings that have recently suffered widespread failures throughout the United States resulting in numerous class action suits.[34] The DEIR's failure to address all components of the PEX plumbing system presents a misleading picture of the full scope of potential impacts. By failing to include PEX fittings in the Project description, the DEIR fails to disclose to the public the true scope of the Project and impermissibly evades environmental analysis of a significant component of the Project.

The Project description is further deficient because it fails to fully disclose the entire scope of the Project's approval of PEX. The DEIR discloses that the Project would allow PEX in buildings and under slab, but fails to disclose that it would also allow the installation of PEX underground from the water meter to the building structure. The Project proposes approval of PEX pipe and fittings for use in both building water distribution piping and building water supply piping.[35] The DEIR describes the use of PEX for building distribution piping, which includes hot and cold water distribution systems within a building or under slab. However, it fails to disclose that the Project would also approve the use of PEX for building supply piping, which is defined as "the pipe carrying water from the water meter or other source of water supply to a building."[36] This failure is significant because of the susceptibility of PEX to permeation from contaminated soil or water. A complete description of the scope of the proposed Project approval is critical in order to ensure that mitigation is suitably crafted to encompass all PEX that may be at risk from permeation. 25-4

Without a complete Project description, the environmental analysis in the DEIR is impermissibly narrow, thus understating the Project's impacts and undermining public review and disclosure and informed decision-making.[37] These

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[33] DEIR at p. 3-5; 24 Cal. Code Regs., Part 5, §§ 604.1, 604.11, 604.11.1 & Table 6-4.
[34] See Section VI.H, *infra*.
[35] DEIR at p. 3-4; see also 24 Cal. Code Regs., Part 5, § 204, 604.1 & Table 6-4.
[36] 24 Cal. Code Regs., Part 5, § 204 (definition of Building Supply); see also 24 Cal. Code Regs., Part 5, § 204, 604.1 & Table 6-4.
[37] See, e.g., *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376.

errors must be corrected in a revised DEIR and an opportunity must be provided to the public to comment on the whole of the action. 25-4 (Cont.)

## IV. THE DEIR FAILS TO ADEQUATELY DISCLOSE AND MITIGATE LEACHING OF CHEMICALS FROM PEX PIPE INTO THE DRINKING WATER

### A. The DEIR Corroborates that PEX Pipe May Leach Significant Amounts of MTBE and TBA Directly From PEX Pipe and Result in Contaminated Drinking Water

The DEIR finds that MTBE and TBA may leach out of PEX pipe and contaminate drinking water at levels that greatly exceed California standards for health, odor and taste. The DEIR concludes that this is a significant impact of the Project.[38] This finding substantiates findings of the Coalition's prior comments submitted on this issue. It also reverses HCD's puzzling claim in the abandoned 2006 PEX negative declaration that MTBE and TBA leaching from PEX was not a potentially significant impact.

Independent laboratory tests released by NSF International confirm that PEX may leach MTBE at levels that exceed both California's taste and odor threshold for MTBE of 5 parts per billion and California's health-based Maximum Contaminant Level ("MCL") for MTBE of 13 ppb.[39] Reports on leaching tests conducted in Norway have also found MTBE in concentrations as high as 47.6 ppb, almost four times the level allowed under California's health-based MCL.[40] These studies found that VOCs leaching from PEX pipes gave an "intense" unwanted odor to the test water.[41] 25-5

In addition to taste and odor impacts, the leaching of MTBE into PEX may have adverse effects on human health. A University of California study concluded

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[38] DEIR at p. 4.4-16.
[39] DEIR, Appendix F; Appendix 1, MTBE Fact Sheet, California Department of Boating and Watercraft (Dec. 8, 2003); Appendix 2, California Department of Health Services – MTBE: Drinking Water Regulations and Monitoring Results (Nov. 3, 2003); and Appendix 3, OEHHA - all PHGs developed as of April 23, 2004.
[40] Appendix 5, Skjevrak, et al, *Volatile Organic Components Migrating from Plastic Pipes* (HDPE, PEX and PVC) into Drinking Water, 37 Water Research (2003) at p. 1917.
[41] Appendix 4, Hem, *Potential Water Quality Deterioration of Drinking Water Caused by Leakage of Organic Compounds from Materials to Contact with the Water*, Proceedings, 20th NoDig conference, Copenhagen (May 28-31, 2002); Appendix 5, Skjevrak, et al, *Volatile Organic Components Migrating from Plastic Pipes* (HDPE, PEX and PVC) into Drinking Water, 37 Water Research (2003) at p. 1917.

that MTBE is an animal carcinogen with the potential to cause cancer in humans.[42] The U.S. Environmental Protection Agency ("EPA") has also stated the MTBE has the potential to cause cancer in humans.[43] OSHPD stated in its 2006 review of PEX pipe that the leaching of MTBE into potable water for the hospitals, care facilities and nursing homes under its jurisdiction was a concern because of its potential to cause cancer.[44] Studies on animals suggest that MTBE has the potential to cause developmental toxicity.[45] As a result of these health concerns, the California Department of Public Health[46] has set a health-based MCL on MTBE of 13 ppb.[47] The California Office of Environmental Health Hazard Assessment ("OEHHA") has also adopted a public health goal for MTBE of 13 ppb for drinking water.[48]

25-5 (Cont.)

NSF data also reveal significant leaching of TBA from PEX pipe in amounts that exceed California health standards. The leaching tests released by NSF International revealed normalized concentrations of TBA ranging up to 6900 ppb.[49] The leaching of TBA may also have adverse affects on human health. Studies have found evidence of a carcinogenic response to TBA.[50] As a result, DPH has adopted an action level on TBA of 12 ppb.[51] The NSF data reveals PEX leaches TBA in amounts almost 600 times this level.[52]

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[42] Appendix 1, MTBE Fact Sheet, California Department of Boating and Watercraft (Dec. 8, 2003); Appendix 6, OEHHA Methyl Tertiary Butyl Ether (MTBE) (Feb. 2, 2001).
[43] Exhibit B; Appendix 1, MTBE Fact Sheet, California Department of Boating and Watercraft (Dec. 8, 2003); Appendix 10, Department of Health Services, Final Statement of Reasons, Primary Maximum Contaminant Level for MTBE (Feb. 2000).
[44] Appendix 7, OSHPD, ISOR, 2007 Code Cycle – Part 5 (9/1/06) at p. 3.
[45] Appendix 6, OEHHA Methyl Tertiary Butyl Ether (MTBE) (Feb. 2, 2001), Appendix 9, Material Safety Data Sheet - Tert-Butanol (revised March 18, 2003); Appendix 10, Department of Health Services, Final Statement of Reasons, Primary Maximum Contaminant Level for MTBE (Feb. 2000).
[46] Previously known as the California Department of Health Services.
[47] Appendix 2, California Department of Health Services – MTBE: Drinking Water Regulations and Monitoring Results (Nov. 3, 2003); Appendix 10, Department of Health Services, Final Statement of Reasons, Primary Maximum Contaminant Level for MTBE (Feb. 2000); see also Health & Saf. Code §§ 116365, 116610.
[48] Appendix 3, OEHHA - all PHGs developed as of April 23, 2004; Appendix 11, Denton, OEHHA, *Adoption of a Public Health Goal for Methyl Tertiary Butyl Ether in California drinking water* (March 9, 1999).
[49] Appendix 12, NSF International Report to WIRSBRO re PEX leaching test (July 3, 2000).
[50] Appendix 6, OEHHA Methyl Tertiary Butyl Ether (MTBE) (Feb. 2, 2001); Appendix 13, California Department of Health Services, DHS Drinking Water Action Levels (Jan. 2003).
[51] *Id.*; see also Health & Saf. Code § 116445.
[52] See DEIR, Appendix F.

The DEIR evaluates this evidence and concludes that leaching of MTBE and TBA from PEX at levels greater than California health standards and taste and odor standards is a significant impact and must be mitigated.[53]

25-5 (Cont.)

In addition, the DEIR acknowledges that the leaching of MTBE and TBA from PEX pipe at any detectable level may have a cumulative impact on water quality when combined with detectable levels of MTBE or TBA that are found in certain potable water supplies in California. The DEIR concludes that this cumulative impact is significant and must also be mitigated.

### B. The DEIR's Evaluation of the Leaching of Proposition 65 Chemicals Is Incomplete and Impermissibly Deferred

The DEIR also finds that PEX has the potential to leach Proposition 65 chemicals in concentrations higher than allowed under the Proposition 65 statute and its implementing regulations.[54] The DEIR concludes that this impact is potentially significant and must be mitigated.[55]

While we agree that the potential for PEX to leach Proposition 65 chemicals is a significant impact, the DEIR's disclosure and analysis of this impact fails to meet even the most basic requirements of CEQA.

25-6

An EIR prepared by the lead agency must include a detailed statement setting forth all significant effects of the proposed project.[56] Its purpose is "to provide the public and governmental decision-makers . . . with *detailed information* of the project's likely effect on the environment; to describe ways of minimizing significant effects; to point out alternatives to the project."[57]

Failure to disclose the details of a significant impact in an EIR deprives "the public, who relied on the EIR's representations, of meaningful participation . . .."[58] An EIR must disclose to the public and to decision-makers the details and scope of an impact, so that the public may have an opportunity to review and comment on the severity of the impact and the adequacy of mitigation measures. "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."[59]

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[53] DEIR at p. 4.4-16.
[54] *Id.*
[55] *Id.*
[56] Pub. Resources Code § 21100, subd. (b)(1).
[57] *County of Inyo v. City of Los Angeles*, *supra,* 71 Cal.App.3d at p. 192; emphasis added.
[58] *Mira Monte Homeowners v. County of Ventura* (1985) 165 Cal.App.3d 357, 365.
[59] *Karlson v. City of Camarillo* (1980) 100 Cal.App.3d 789, 804.

Additionally, the agency is required to make findings "with respect to each significant effect" that are based on substantial evidence in the record.[60] CEQA "contemplates serious and not superficial or pro forma consideration of the potential environmental consequences of a project."[61] "To facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions."[62]

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."[63]

In the case at hand, however, the DEIR's evaluation of the leaching of Proposition 65 chemicals fails to even identify what Proposition 65 chemicals leach from PEX. Instead, the DEIR vaguely refers to these chemicals as "certain Proposition 65 chemicals used in some PEX formulations." The DEIR identifies three Proposition 65 chemicals by name (butyl benzyl phthalate, toluene diamine, and carbon black), but makes clear that many other undisclosed Proposition 65 chemicals may also be leached by PEX. 25-6 (Cont.)

Moreover, the DEIR fails to provide any information on the levels that any of the disclosed or undisclosed Proposition 65 chemicals have been found to leach or are permitted to leach under current NSF standards.

Rather than disclose even the most basic information regarding this potential impact, the DEIR instead states that this data has been "requested" but was "not available at the time of DEIR publication." Under CEQA, however, a DEIR is not to be published until it is complete. Arbitrary deadlines for completing a DEIR may not be used to evade and defer disclosure and analysis of a Project's impacts until after the EIR's certification.[64]

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[60] Pub. Resources Code §§ 21081, subd. (a), 21081.5.
[61] *Leonoff v. Monterey County Bd. of Supervisors* (1990) 222 Cal.App.3d 1337, 1347-48.
[62] *Id.*
[63] *County of Inyo v. City of Los Angeles* (1984) 160 Cal.App.3d 1178, 1185.
[64] Emails obtained pursuant to the Public Records Act suggest that the premature release of the DEIR prior to obtaining all of the Project information and prior to completing evaluation of all of the Project's impacts may have been due to the unusual intervention of the Governor through the State and Consumer Services Agency to pressure the CBSC and other agencies to move forward with PEX approval. An email from the State and Consumer Services Agency to the Executive Director of the CBSC warned: "I know I keep emphasizing the overarching significance of our efforts and cooperation to reach the Governor's goal heree [sic], and I apologize if you're tired of hearing this; but...the Governor really wants to see the PEX project proceed promptly, successfully and with his administration acting in unison." (Appendix 14, Leslie Lopez email to

The complete failure to provide even the most basic information regarding which Proposition 65 chemicals leach from PEX pipe, and in what amounts, deprives the public of any opportunity to meaningfully participate in the CEQA process. The failure to disclose any of the details or scope of this impact renders the DEIR legally inadequate. 25-6 (Cont.)

### C. The DEIR Fails to Adequately Mitigate Leaching of MTBE, TBA and Proposition 65 Chemicals From PEX Pipe

As discussed above, the DEIR concludes that the leaching of MTBE, TBA and "certain proposition 65 chemicals" from PEX pipe is a significant impact. To address these leaching impacts, the DEIR proposes three mitigation measures that it asserts will reduce these impacts to a level of insignificance.

The DEIR proposes:

**Mitigation Measure 4.4-1: Noncompliance with Drinking Water Standards Resulting from Leaching.**
"The Building Standards Commission shall require that PEX installed in California for water for human consumption be physically marked in a manner that indicates that the pipe is certified for California human consumption water uses and meets all California drinking water criteria under the California Safe Drinking Water Act and Proposition 65." 25-7

"Adoption of Mitigation Measure 4.4.1 would reduce potential impacts relative to leaching of MTBE, TBA, or Proposition 65 chemicals to less than significant levels."

**Mitigation Measure 4.4-2: Adverse Taste and Odor Impacts.**
"Before using PEX for human consumption water uses, PEX must receive NSF certification that any leached concentrations of MTBE is below the secondary California MCL for this chemical. PEX manufacturers claim that MBTE and TBA levels leached from PEX decline over time. They may pursue testing by NSF to determine whether the levels decline to below California criteria within a limited time."

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Dave Walls (5/8/08) (elliptical in original.) Another email from the State Consumers Service Agency to the Department of Public Health's Office of Legal Services stated: "I'd like to make another pitch to expedite DPH's approval for its portion of the proposed Building Standards for the PEX project. The project is one of the Administration's priorities." (Appendix 14, Leslie Lopez email to Kathleen Keeshan (5/8/08).)

"Adoption of Mitigation Measure 4.4.2 would reduce taste and odor impacts on drinking water from leaching MTBE to less than significant."

**Mitigation Measure 5-1: Cumulative Noncompliance with Drinking Water Standards Resulting from Leaching.**
"For water service areas that have detectable levels of MTBE or TBA in drinking water or where there is known MTBE or TBA contamination of a source of drinking water, PEX tubing installed for human consumption uses must be certified not to leach detectable levels of MTBE or TBA." 25-7 (Cont.)

These proposed mitigation measures are an important and commendable step in the right direction. However, these measures are seriously flawed as currently proposed and fail to meet the requirements of CEQA.

### 1. The Reliance of Mitigation Measure 4.4-1 on Undisclosed and Unevaluated NSF Testing Protocols and Standards Results in an Improper Deferral of Mitigation

Mitigation Measure 4.4-1 requires PEX potable water pipe installed in California to "be physically marked in a manner that indicates that the pipe is certified for California human consumption water uses and meets all California drinking water criteria under the California Safe Drinking Water Act and Proposition 65." To meet this requirement, Mitigation Measure 4.4-1 requires the private standards-setting organization NSF to specially certify that PEX installed in California does not leach MTBE, TBA, or Proposition 65 chemicals above the relevant California MCL, notification, or Safe Harbor level or other applicable Proposition 65 level for those chemicals. 25-8

The DEIR then concludes: "Adoption of Mitigation Measure 4.4.1 would reduce potential impacts relative to leaching of MTBE, TBA, or Proposition 65 chemicals to less than significant levels."

This conclusion lacks foundation because Mitigation Measure 4.4-1 defers critical components of this mitigation to the judgment of NSF. NSF is a private testing organization that is not accountable to the public and that is almost entirely funded by manufacturers of plumbing products listed and tested by NSF. NSF does not make its test results available to the public or government regulators and limits its testing protocols based on undisclosed assumptions derived from information provided by manufacturers.

As explained in the attached comments of Mr. Reid, NSF uses test protocols, techniques and assumptions that may allow for certification of PEX that in actual

use would significantly exceed the stated maximum contaminant levels.[65] NSF uses a "normalization calculation" to estimate "at-the-tap" exposures that significantly underestimates exposures for residential plumbing installations. NSF also expressly retains the discretion to certify products to NSF 61 even where the exposure concentration is in excess of NSF's own established maximum acceptable level for the contaminant. As a result, current NSF testing protocols may underestimate leaching levels and allow for certification of products that exceed the certified maximum allowable levels.

Due to these concerns, CBSC may not rely on NSF certification without independently reviewing the proposed evaluation process. Such reliance on a private entity's judgment without any independent review violates CEQA's requirement that a lead agency exercise its own independent judgment.

25-8 (Cont.)

If the same test protocols, techniques and assumptions applied to NSF 61 were applied to the California certification required by Mitigation Measure 4.4-1, Mr. Reid's comments suggest that such certification would not ensure that such standards were always strictly met. Accordingly, the DEIR lacks foundation for its finding that this mitigation measure will reduce leaching impacts to a level of insignificance.

Moreover, the DEIR's reliance upon undisclosed testing protocols and assumptions to be designed by NSF deprives the public of the opportunity to review and comment on the suitability and sufficiency of the proposed mitigation. The DEIR must be revised to evaluate the NSF testing protocol upon which it intends to rely or to set forth more specific performance standards for meeting this certification requirement.

Mitigation Measure 4.4-1 is further deficient because it fails to set any performance standards for Proposition 65 chemicals that do not have safe harbor levels. Under Proposition 65, the OEHHA of the California EPA has developed numerical guidance levels known as "safe harbor numbers" for some, but not all, Proposition 65 chemicals. A business has "safe harbor" from Proposition 65 warning requirements or discharge prohibitions if exposure to a chemical occurs at or below these levels. These safe harbor numbers consist of no significant risk levels for chemicals listed as causing cancer and maximum allowable dose levels for chemicals listed as causing birth defects or other reproductive harm.

25-9

Mitigation Measure 4.4-1 requires that PEX installed in California must be certified to meet the safe harbor levels for Proposition 65 chemicals.

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[65] Exhibits A, B & C.

The DEIR, however, states that PEX may leach three Proposition 65 compounds for which no Proposition 65 safe harbor levels have been adopted: (1) butyl benzyl phthalate, (2) toluene diamine, and (3) carbon black. Because no safe harbor levels have been adopted for these contaminants, Mitigation Measure 4.4-1 must, itself, set a safe harbor performance standard for NSF testing. Such a standard must be based upon substantial evidence and the lead agency's independent evaluation of the underlying toxicity and testing data. Without such a standard, no foundation exists for concluding that Mitigation Measure 4.4-1 would reduce the impacts from leaching of butyl benzyl phthalate, toluene diamine, and carbon black to a level of insignificance.

25-9 (Cont.)

Rather than setting such a standard, the DEIR improperly relies upon NSF to set this standard. Such reliance is baffling given that the DEIR concludes that NSF's current standards fail to meet California health and safety standards for numerous hazardous compounds.

The DEIR states that NSF has adopted a total allowable concentration for butyl benzyl phthalate of 1 mg/L. However, the DEIR fails to evaluate whether this NSF standard would meet Proposition 65 requirements. Accordingly, the reference to this standard has no relevance to the impact being discussed. Moreover, NSF has not set any total allowable concentration limits for toluene diamine or carbon black. The DEIR states that NSF will need to conduct additional testing for these compounds.[66] This suggests that NSF does not currently even test for leaching of these compounds from PEX.

Without an independent review of the actual certification standards for these Proposition 65 compounds, CBSC simply has no basis under CEQA to conclude that the NSF process will meet Proposition 65 requirements.

25-10

Even apart from CEQA, a determination of the level of public drinking water contamination that would be allowed by the regulatory approval of a plumbing product coming in contact with that water constitutes an exercise of police power that cannot be delegated to a non-governmental entity.[67] The DEIR's reliance on NSF's current and future standards for these compounds would be constitutionally permissible only if the DEIR independently evaluated the adequacy of such standards to meet Proposition 65 requirements.[68]

NSF standards are established in a non-public, confidential process, by a non-governmental body without conducting any independent assessment of the basis for those standards, or their adequacy in protecting public health. Moreover,

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[66] DEIR at p. 4.4-13.
[67] 63 Ops.Cal.Atty.Gen. 566 (1980).
[68] *Id.* at pp. 580-582.

NSF disclaims any responsibility or liability to the public or public regulatory agencies relying on such standards. CEQA's requirement for the exercise of independent judgment by the lead agency, and the constitutional bar against the delegation of police powers to non-governmental bodies, are both intended to prevent just this kind of avoidance of public accountability.

25-10 (Cont.)

Mitigation Measure 4.4-1's blind reliance on NSF standards violates CEQA's requirement for the exercise of independent judgment by the lead agency, and violates the constitutional bar against the delegation of police powers to non-governmental bodies. In order for Mitigation Measure 4.4-1 to reduce this impact to a level of insignificance, the DEIR must first be revised to investigate and determine what level of leaching of butyl benzyl phthalate, toluene diamine and carbon black would trigger Proposition 65.

### 2. Mitigation Measure 4.4-2 for Taste and Odor Is Improperly Vague and Fails to Reduce Impacts to a Level of Insignificance

For reasons that are not disclosed, the DEIR provides a separate, slightly different mitigation measure to address leaching of MTBE at levels above the secondary California MCL for taste and odor. Like Mitigation Measure 4.4-1, Mitigation Measure 4.4-2 requires that PEX potable water pipe installed in California must receive a special NSF certification that any leached concentrations of MTBE are below the secondary California MCL for taste and odor. However, this mitigation measure adds a caveat that PEX manufacturers "may pursue testing by NSF to determine whether the levels decline to below California criteria within a limited time."

25-11

This caveat suggests that NSF may certify PEX pipe as complying with California standards even if such pipe actually violates California standards for several weeks, months or even years. This caveat renders Mitigation Measure 4.4-2 legally inadequate and contradicts the DEIR's finding that this measure would reduce taste and odor impacts on drinking water from leaching MTBE to less than significant.

The proposed mitigation measure for taste and odor does not reduce this impact to level of insignificance because it still allows violation of California standards for an unspecified period of time. Even minute amounts of MTBE are known to give water an offensive taste similar to paint thinner and an offensive

odor similar to turpentine.[69] As a result, the California Department of Public Health has set a taste and odor threshold for MTBE of 5 parts per billion.[70]

The DEIR states unequivocally that the exceedance of this threshold resulting in the contamination of drinking water with offensive taste and odor is a significant impact.[71] In addition, the DEIR adopts as a threshold of significance for this Project: the exceedance of a federal or state secondary MCL for taste and odor.[72]

The proposed mitigation measure on its face allows for significant taste and odor impacts. As currently fashioned, Mitigation Measure 4.4-2 would allow the installation of PEX pipe that exceeds California's taste and odor threshold for MTBE for some unknown period of time. Pursuant to the DEIR's own threshold of significance, this would result in a significant taste and odor impact during this unspecified period.

Accordingly, no foundation exists for the conclusion that Mitigation Measure 4.4-2 would reduce this impact below a level of significance. 25-11 (Cont.)

Mitigation Measure 4.4-2 is further legally inadequate because it improperly defers definition of "within a limited time" and improperly delegates determination of this definition entirely to a private non-governmental body. This blind reliance on NSF standards violates CEQA's requirement for the exercise of independent judgment by the lead agency, and violates the constitutional bar against the delegation of police powers to non-governmental bodies.[73]

Such impacts are thus not mitigated to a level of insignificance. Under CEQA, the public must be informed that the proposed Project, even with the mitigation, will likely result in short term taste and odor impacts. Because the Project would approve the installation of PEX in hospitals, schools, care facilities, nursing homes and other occupancies with vulnerable populations, the impact of such leaching on persons with compromised-immune systems must also be evaluated.[74]

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[69] Appendix 1, MTBE Fact Sheet, California Department of Boating and Watercraft (Dec. 8, 2003).
[70] Appendix 2, California Department of Health Services – MTBE: Drinking Water Regulations and Monitoring Results (Nov. 3, 2003).
[71] DEIR at p. 4.4-16.
[72] DEIR at p. 4.4-8.
[73] See 63 Ops.Cal.Atty.Gen. 566 (1980).
[74] Appendix 7, OSHPD, Initial Statement of Reasons ("ISOR"), 2006 Code Cycle, Part 5 (Sept. 1, 2006) at p. 3; Appendix 8, OSHPD, ISOR, 2004 Code Cycle, Part 5 (May 2004).

CEQA requires an EIR to disclose all significant effects of the proposed project.[75] The DEIR's failure to disclose that proposed Mitigation Measure 4.4-2 would result in taste and odor impacts for an unknown duration of time deprives the public of any opportunity to meaningfully participate in the CEQA process. The failure to disclose this impact and the improper deferral and delegation of the determination of how long such impacts will persist render the DEIR legally deficient. 25-11 (Cont.)

The DEIR must be revised to amend Mitigation Measure 4.4-2 to ensure that all PEX pipe installed in California shall meet California taste and odor standards for MTBE from the time of installation. NSF's own data demonstrates that such mitigation is feasible and that entire classes of PEX are readily available that would meet this standard.[76]

### 3. Mitigation for Cumulative MTBE and TBA Impacts Lacks Enforceability and Feasibility

The DEIR proposes an additional, separate and distinct mitigation to address its finding that any detectable leaching of MTBE or TBA from PEX pipe may result in significant cumulative impacts where a building's water supply also has detectable levels of MTBE or TBA. Mitigation Measure 5-1 would require that any PEX installed in a water service area that has detectable levels of MTBE or TBA in the drinking water must be certified not to leach detectable levels of MTBE or TBA.[77] 25-12

While a step in the right direction, Mitigation Measure 5-1 is vague as to certain critical details and suffers from a number of significant enforcement and implementation problems.

First, Mitigation Measure 5-1 must be revised to clarify that it intends to require that this special-certification be *NSF-certified* as is required by Mitigation Measures 4.4-1 and 4.4-2. In its current form, Mitigation Measure 5-1 does not expressly require NSF-certification that PEX pipe does not leach any detectable levels of MTBE or TBA. If the intention of Mitigation Measure 5-1 is not to require NSF or some other third party certification, the DEIR must explain why and evaluate how compliance will be ensured without such certification. As discussed

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[75] Pub. Resources Code § 21100, subd. (b)(1); *County of Inyo v. City of Los Angeles*, *supra,* 71 Cal.App.3d at p. 192.

[76] See, e.g., DEIR at p. 4.4-14 (stating that generally PEX-B and PEX-C are not expected to release MTBE); see also DEIR, Appendix F (NSF letter dated May 2, 2008 showing 5 out of 8 PEX samples well below California MTBE taste and odor standards).

[77] DEIR at p. 5-6.

above, even with NSF certification, such certification must be evaluated to ensure appropriate testing protocols and assumptions are applied.

Second, Mitigation Measure 5-1 must be revised to verify that the special-certification of PEX required under this measure must be physically marked on the PEX piping and fittings. Again Mitigation Measures 4.4-1 and 4.4-2 include such a requirement, but Mitigation Measure 5-1 fails to specify such markings. Without such markings, compliance with this measure would be impossible to enforce and difficult to follow. Even with such markings, enforcement of dual California-specific certifications will be difficult and burdensome.

To ensure that users install the appropriate PEX pipe, PEX pipe that meets Mitigation Measures 4.4-1 and 4.4-2 but has detectable levels of MTBE or TBA should be marked: "not certified for use with water supplies that have detectable levels of MTBE or TBA." Without such a mark, contractors would have no idea that PEX pipe certified to meet all California standards may still not be approved for use in the area where the installation is proposed.

25-12 (Cont.)

Third, Mitigation Measure 5-1 must be revised to ensure a reasonable likelihood of compliance and effectiveness. CEQA requires that public agencies adopt "feasible" mitigation measures that must "actually be implemented as a condition of development, and not merely adopted and then neglected or disregarded."[78] Mitigation measures 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.[79] "When the success of mitigation is uncertain, an agency cannot reasonably determine that significant effects will not occur."[80]

In the case at hand, Mitigation Measure 5-1 fails to address how this requirement would actually be implemented. Accordingly its success is uncertain and its likelihood of reducing this impact to a level of insignificance cannot reasonably be determined.

The proposed special-certification requirement for PEX pipe installed in buildings with MTBE or TBA contaminated drinking water creates obvious enforcement and compliance issues. Mitigation Measure 5-1 fails to address how contractors and building officials are to know if the water supply has detectable

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[78] *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261; see Public Resources Code § 21002.1, subd. (b).
[79] Pub. Resources Code, § 2106.1; CEQA Guidelines § 15364.
[80] Remy, Thomas & Moose, Guide to CEQA (1999), p.426; see *Sundstrom v. County of Mendocino, supra,* 202 Cal.App.3d at 306-308.

levels of MTBE or TBA and fails to address how contractors and building officials are to ensure that the correct type of PEX pipe is installed.

Current building code requirements do not include any provisions for informing a contractor or building official whether or not a building's water supply has detectable levels of MTBE or TBA. Without a requirement that building officials be provided such information, this mitigation measure is meaningless.

Accordingly, this measure should be amended to require that all contractors must install PEX specially-certified to have no detectable levels of MTBE or TBA unless they provide evidence that the building's water supply has no detectable levels of MTBE or TBA.

Such a requirement should follow the format that has been used for CPVC pipe in Section 604.1.1 of the California Plumbing Code. This code section requires the contractor or plumbing subcontractor to supply a written certificate of compliance with CPVC mitigation measures prior to the issuance of a building permit, requires the building permit to contain permit conditions requiring compliance with mitigation measures, and requires the building official to make findings of compliance prior to issuing final permit approval. This code section also requires building officials to cite contractors or subcontractors for any violations of this section. 25-12 (Cont.)

Following this format, Mitigation Measure 5-1 should be revised to include the following requirements:

> (a) Approved Materials: All PEX and PEX fittings installed for potable water building supply and building distribution systems shall be certified by NSF either: (1) to comply with all California drinking water standards (including public health goals, notification standards, and taste and odor standards) and all Proposition 65 standards; or (2) to not leach any detectable levels of MTBE or TBA *and* to comply with all California drinking water standards (including public health goals, notification standards, and taste and odor standards) and all Proposition 65 standards. Such certifications must be physically marked on the PEX pipe and fittings. In addition, PEX Pipe and fittings that leach any detectable levels of MTBE or TBA must also be physically marked: "not certified for use with water supplies that have detectable levels of MTBE or TBA." The Installation of PEX with any detectable levels of MTBE or TBA is prohibited unless the applicable public water agency certifies that a buildings water supply has no detectable levels of MTBE or TBA or unless a water quality test demonstrates that the building's water supply has no detectable levels of MTBE or TBA.

(b) Certification of Compliance: Prior to issuing a building permit that permits the installation of PEX piping and fittings, the Authority Having Jurisdiction or Enforcing Agency shall require as part of the permitting process that the contractor, or the appropriate plumbing subcontractors, provide one of the following: (1) a certified statement from the applicable public water system agency that the building's water supply has no detectable levels of MTBE or TBA; (2) a certified water quality report by a qualified third party testing laboratory demonstrating that the building's water supply has been tested and no detectable levels of MTBE or TBA have been found; or (3) signed written certification that they will only install PEX piping and fittings certified to have no detectable levels of MTBE or TBA leaching.

(c) Permit Conditions: Any Building Permit issued permitting the installation of PEX piping and fittings shall specify what type of PEX is permitted to be installed and shall indicate what evidence, if any, was provided to demonstrate that the building's water supply has no detectable levels of MTBE or TBA.

25-12 (Cont.)

(d) Findings of Compliance. The Authority Having Jurisdiction or Enforcing Agency shall not give final permit approval to installations of PEX piping or fittings without expressly determining that all PEX piping and fittings installed met the permit conditions.

(e) Penalties. If during the conduct of any building inspection the Authority Having Jurisdiction or Enforcing Agency finds that these requirements or any permit conditions regarding the installation of PEX piping and fittings have been violated, the contractor or subcontractor shall be cited for that violation.

These conditions would, of course, have to be further revised to address any additional measures imposed to mitigate other impacts discussed elsewhere in this letter, including other leaching impacts, permeation impacts, firestop incompatibility impacts, and premature failure impacts.

As demonstrated by these comments, Mitigation Measure 5-1 suffers from significant enforcement and compliance issues and requires substantial revision.

### D. The DEIR Fails to Evaluate or to Disclose Potentially Significant Impacts from the Leaching of ETBE from PEX Pipes

The DEIR is legally inadequate because it fails to evaluate or disclose potentially significant impacts from the leaching of ETBE from PEX pipes despite substantial evidence of this impact in the lead agency's own expert reports.

ETBE is a chemical compound similar to MTBE. Unlike MTBE, however, this substance has not been evaluated by the state and no maximum contaminant levels have been set regarding contamination of drinking water with this compound.

The DEIR states that ETBE has been found to leach from PEX in concentrations from 23 to 200 ug/L. The DEIR further admits "People were able to smell ETBE at a concentration of 5 ug/L."[81]

The potential adverse impact of ETBE contamination was evaluated in the April 7, 2008 Water Quality Memorandum prepared by Ishrat S. Chaudhuri, Ph.D., Senior Toxicologist with ENSR.[82] Dr. Chaudhuri is the water quality expert hired by the lead agency to evaluate potential leaching impacts in the DEIR. 25-13

In his memorandum, Dr. Chaudhuri found that PEX-b may leach concentrations of ETBE at a level that "could contribute to the taste and odor of drinking water, and potentially have adverse health implications."[83] He further found that water samples exposed to PEX-b demonstrated the presence of a distinct "chemical/solvent like" odor that "persisted even after multiple flushing periods."[84] Dr. Chaudhuri's findings are undisputed. No contrary evidence exists in the DEIR or any of its supporting documents.

Despite the lead agency's own expert's conclusion that leaching of ETBE from PEX represents a potentially significant health impact and may result in taste and odor impacts, the DEIR fails to evaluate this impact whatsoever.

Rather than disclosing, evaluating and mitigating this impact, the DEIR improperly dismisses this impact on the grounds that no state or federal drinking water standards exist for ETBE. The DEIR claims, "It would require speculation to reach a conclusion regarding the significance of any potential leaching of chemicals lacking drinking water standards into drinking water."[85]

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[81] DEIR at p. 4.4-14.
[82] DEIR, Appendix E.
[83] DEIR, Appendix E at pp. 2 & 7.
[84] DEIR, Appendix E at p. 7.
[85] DEIR at p. 4.4-14.

This claim lacks foundation and ignores the lead agency's own expert's opinion. Potential impacts must be evaluated in an EIR whenever substantial evidence in the record supports a "fair argument" that the Project may result in such impacts.[86] As a matter of law, "substantial evidence includes … expert opinion."[87]

The DEIR's claim that it would require speculation to rely upon any substantial evidence other than state or federal drinking water standards lacks any evidentiary foundation and is contrary to law. Moreover, the DEIR's claim would mean that even where there was overwhelming scientific consensus that a chemical was dangerous, an EIR would not be obligated to evaluate the leaching of this chemical if the state or federal government had not yet formally regulated it. Such a position violates CEQA's requirement to disclose all potential direct and indirect significant environmental impacts of a project.[88]

A very similar argument was rejected by the courts in the 2001 case, *Berkeley Keep Jets Over the Bay Committee v. Board of Commissioners*.[89] In *Berkeley Keep Jets*, the EIR argued that:

25-13 (Cont.)

> There is no approved, standardized protocol for assessing the risk associated with mobile source emissions of TACs, as there is for stationary-source emissions . . .. Furthermore, there is no standard for evaluating the significance of the risk associated with mobile-source emissions of TACs. Therefore, while the potential risk associated with mobile-source TAC emissions can be qualitatively discussed and can be considered by decision makers, a formal determination of the significance of the impact would be speculative and would not be based on accepted scientific principles or methodologies. The significance of this impact is thus considered unknown.[90]

Unsurprisingly, the Appellate Court rejected this argument as follows:

> The fact that a single methodology does not currently exist that would provide the Port with a precise, or "universally accepted," quantification of the human health risk from TAC exposure does not excuse the preparation of any health risk assessment-it requires the

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[86] Pub. Resources Code §§ 21100, 21064.
[87] Pub. Resources Code § 21080(e)(1); CEQA Guidelines § 15064(f)(5).
[88] See Pub. Resources Code § 21100, subd. (b)(1); CEQA Guidelines § 15126.2, subd. (a).
[89] *Berkeley Keep Jets Over the Bay Committee v. Board of Commissioners* (2001) 91 Cal.App.4th 1344.
[90] *Id*. at 1367-1368.

> Port to do the necessary work to educate itself about the different methodologies that are available. The Guidelines recognize that "[d]rafting an EIR . . . involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can." (Guidelines, § 15144, italics added.)[91]

The DEIR further attempts to dismiss its own expert's finding by narrowly defining the scope of the DEIR's environmental analysis. The DEIR states: "This DEIR evaluates and draws conclusions regarding the significance of the potential leaching of any chemical that is regulated by the federal government or the State of California."[92] CEQA, however, requires an EIR to disclose and evaluate *all* significant effects of the proposed project.[93] CEQA does not provide an exception for impacts caused by chemicals that are not regulated by the federal government or the State of California.

Finally the DEIR attempts to avoid finding ETBE leaching to be a significant impact by relying on an arbitrary threshold of significance. The DEIR states that its thresholds for determining if a leaching impact is significant are if such leaching would: 25-13 (Cont.)

- Violate any water quality standards such that implementation of the proposed project would result in a level of a contaminant in drinking water that exceeds a federal or state MCL, notification or response level, or a Proposition 65 safe harbor or other relevant Proposition 65 level; or

- Violate any water quality standards such that implementation of the proposed project would result in a level of a contaminant in drinking water that exceeds a federal or state secondary MCL for taste and odor.

A lead agency may formulate standards of significance for use in an EIR as long as a reasonable basis exists for using those standards. This requires that the agency make a policy judgment about where the line should be drawn for distinguishing adverse impacts deemed substantial from those that are not deemed substantial.[94] This judgment must, however, be based on scientific information and other substantial evidence.[95]

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[91] *Id.* at 1370.
[92] DEIR at p. 4.4-14.
[93] Pub. Resources Code § 21100, subd. (b)(1); *County of Inyo v. City of Los Angeles*, *supra,* 71 Cal.App.3d at p. 192.
[94] CEQA Guidelines § 15064, subd. (b).; *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal.App.4th 477.
[95] Kostka & Zischke, *Practice Under the California Environmental Quality Act*, § 13.2, p. 621.

Moreover, thresholds of significance only create a presumption of significance or insignificance. They do not relieve a lead agency of its duty to evaluate substantial evidence that may rebut this presumption.[96]

Nor do they apply where, as here, the threshold is inapplicable to the substantial evidence presented. "If evidence is submitted tending to show that the environmental impact might be significant despite the significance standard used in the EIR, the agency must address that evidence."[97]

Here, the DEIR's threshold of significance for leaching violates CEQA because this threshold arbitrarily ignores the substantial, unrebutted evidence in the state's own expert report that leaching of ETBE from PEX pipe may result in significant taste, odor and health impacts. CEQA does not permit a lead agency to ignore evidence of project impacts by formulating artificially narrow thresholds of significance. 25-13 (Cont.)

The DEIR must be revised and recirculated to disclose and evaluate this impact, to permit public review and comment and to identify feasible mitigation to address this impact. If the Department of Public Health has not set a threshold of significance for ETBE, the Lead Agency is fully authorized to develop its own threshold based upon a review of available substantial evidence.[98] Each responsible agency must be consulted in setting such a threshold to ensure that the special vulnerabilities of their occupants are taken into account. OSHPD occupancies, for example, would include immune-compromised occupants of hospitals, health care facilities and nursing homes.[99]

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[96] See *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1111.

[97] Kostka & Zischke, *Practice Under the California Environmental Quality Act*, § 13.2, p. 624; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1111.

[98] CEQA Guidelines §15064.7 ("Each agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects"); Pub. Res. Code § 21082 (directing agencies to adopt procedures and criteria for evaluating projects)

[99] See Appendix 7, OSHPD, ISOR, 2006 Code Cycle, Part 5 (Sept. 1, 2006) at p. 3; Appendix 8, OSHPD, ISOR, 2004 Code Cycle, Part 5 (May 2004).

### E. The DEIR Fails to Evaluate the Potential for PEX to Leach Bisphenol A in Amounts within the Range of Concern for Infant and Children Exposure

The DEIR is further deficient because it fails to evaluate the potential for PEX to leach Bisphenol A in amounts within the range of concern for infant and children exposure. In his April 7, 2008 Water Quality Memorandum, Dr. Chaudhuri finds that PEX may leach Bisphenol A.[100] Rather than evaluating this potential impact, Dr. Chaudhuri assumes that the NSF criterion for Bisphenol A would be considered protective in California since California does not have a drinking water criterion for this compound.[101] Dr. Chaudhuri, however, provides no factual or analytical basis for this assumption.

Dr. Chaudhuri states that NSF sets a Bisphenol A standard for PEX of 0.1 ppm.[102] However, he fails to independently review the NSF standard to determine if it is sufficient to reduce any health impacts to a level of insignificance.

The DEIR may not rely on NSF/ANSI standards without independently reviewing the underlying data and independently assessing the evaluation process. Such reliance on a private entity's judgment without any independent review violates CEQA's requirement that a lead agency exercise its own independent judgment. 25-14

Here, the DEIR never *independently* evaluates the level of Bisphenol A contamination accepted by NSF to determine its safety and never reviews the actual levels of leachate found in NSF testing. CBSC's reliance on a private entity for the fundamental health risk determination without any independent review of that determination violates CEQA's requirement that the DEIR reflect the lead agency's independent judgment and violates the constitutional bar against the delegation of police powers to non-governmental bodies.[103]

The DEIR's blind reliance on the NSF standard for Bisphenol A is particularly troublesome given its contradictory finding that numerous NSF leaching standards fail to meet California health and safety standards.[104]

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[100] DEIR, Appendix E at p. 5.
[101] *Id.*
[102] *Id.*; see also DEIR at p. 4.4-16.
[103] See *PPFA v. CBSC, supra,* 124 Cal.App.4th at 1399-1400 (appellate court upheld requirement of the California Building Standards Commission to independently review the potential environmental impacts from the approval of PEX plastic potable water pipe despite the fact that PEX met NSF standards).
[104] See DEIR at p. 4.4-13.

Mr. Reid concludes that NSF standards for unregulated contaminants may be unreliable because they are established largely on the basis of toxicity information and studies provided by and owned by the manufacturers of the regulated products.[105] NSF must be evaluated with the understanding that the industrial participants that have an economic stake in the results of the process dominate its standards setting and testing processes. Essentially, the fox is guarding the henhouse.

25-14 (Cont.)

These deficiencies demonstrate that NSF standards alone may not provide sufficient assurances regarding PEX's chemical leaching potential. Without an independent review of the basis for these standards, the DEIR has no foundation for concluding that the NSF Bisphenol A standard will protect drinking water consumers. An assessment of the toxicological data underlying the action levels established by the NSF must be conducted along with assessment of other available information on Bisphenol A, before this compound can be disregarded as of concern.[106]

In his attached comments, Mr. Reid calculates that the NSF criterion for Bisphenol A of 0.1 mg/L would roughly equate to intake of 200 ug/day for an adult, at 50 kg body weight, that is a dose of 4 ug/kg/day; double for a child.[107] Based on his review of the relevant literature, Mr. Reid concludes that this level is well within the range of concern for infant and children exposure.[108]

Mr. Reid's comments are substantial evidence that the leaching of Bisphenol A may be a significant impact even if it meets NSF standards. Such evidence must be evaluated in a revised DEIR.

### F. The DEIR Fails to Evaluate the Potentially Significant Impacts from Leaching of Other California Regulated Chemicals that May Occur in Future Formulations of PEX

25-15

The DEIR is further deficient because it fails to evaluate and mitigate foreseeable future leaching impacts from other California regulated compounds in addition to MTBE, TBA and Proposition 65 compounds.

The DEIR finds that numerous other NSF standards, in addition to MTBE and TBA fail to meet California drinking water standards.[109] The DEIR states that these include NSF standards for chemicals including benzene, cadmium, carbon

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[105] Exhibits B & C.
[106] See, e.g., Appendix 15, 63 Fed.Reg. 40 (March 2, 1998), p. 10282.
[107] Exhibit A.
[108] *Id.*
[109] DEIR at p. 4.4-13.

disulfide, 1,1-dichloroethane, ethyl benzene, di(2-ethylhexyl) phthalate, benzo(a)pyrene, and toluene.[110] The DEIR, however, fails to provide the entire list of compounds for which NSF standards fail to meet California standards.

The DEIR claims that only MTBE and TBA were found to exceed California standards in some proportion of the tests.[111] Nonetheless, this disclosure means that it is foreseeable that future variations of PEX could leach these other compounds in quantities that meet NSF standards but don't meet California standards. As proposed, the Project would approve any current or future versions of PEX that meet NSF standards. Because NSF standards would allow these compounds to leach at levels that violate California health or taste and odor standards, it is reasonably foreseeable that some future versions of PEX may violate these California standards. This is a significant impact that needs to be disclosed and mitigated. 25-15 (Cont.)

The potential impact from future variations of PEX must be identified and evaluated to ensure that any proposed mitigation encompasses such potential leaching problems. Mitigation Measure 4.4-1 is currently insufficient to mitigate this potential impact. Mitigation Measure 4.4-1 states that "PEX must receive NSF certification that any leached concentrations of MTBE, TBA or Proposition 65 chemicals is below the relevant [California] MCL, notification, or Safe Harbor level or other applicable Proposition 65 level for those chemicals." This measure must be clarified to ensure that the required NSF certification will require that all compounds potentially leached from PEX meet relevant California MCL, secondary MCL, notification, or Safe Harbor level or other applicable Proposition 65 levels for those compounds.

The DEIR must also be revised to fully identify all compounds that could leach from PEX for which NSF standards don't meet or exceed California standards. Without such disclosure, the DEIR violates CEQA's requirement to disclose all potential impacts of a project.

## V. THE DEIR FAILS TO PROVIDE ADEQUATE MEASURES TO MITIGATE PERMEATION OF PEX FROM OUTSIDE CONTAMINANTS

25-16

The DEIR is further deficient because it relies upon inadequate measures to mitigate permeation impacts.

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[110] DEIR at p. 4.4-13.

[111] The DEIR's claim that none of these other compounds leach from the 271 current versions of PEX in amounts that exceed California standards is not supported by any of the DEIR's supporting evidence. Accordingly, this claim appears to lack foundation.

The DEIR corroborates our long-standing concern that permeation of PEX by outside contaminants may be a significant impact. PEX is subject to permeation by benzene, solvents, gasoline constituents, solvent-based pesticides and termiticides, oils and other contaminants.[112] As currently proposed, the approval of PEX would allow the installation of PEX for external use from the water meter to the building structure and for use under the slab.[113] As a result, permeation is a particular concern where PEX is installed in soil or groundwater that contains or could potentially contain such contaminants.

As explained in Mr. Reid's attached comments, pollutants that contain low molecular weight substances, such as benzenes and MTBE, can readily migrate through the seemingly solid polymer barrier of PEX, contaminating the water inside the pipes.[114] Mr. Reid calculates that a PEX tube exposed to a 0.2% benzene concentration in a termiticide or in gasoline, would produce benzene in drinking water at around 10 ppb after standing overnight and upwards of 100 ppb after standing for a week.[115] Such contamination easily exceeds the California MCL for benzene of 1 ppb.

To mitigate this impact, the DEIR proposes Mitigation Measure 4.4-3. Mitigation Measure 4.4-3 states that PEX shall only be permitted under slab if:

25-16 (Cont.)

> a Phase 1 Environmental Site Assessment is conducted following the ASTM E1527-05 standard . . . which concludes that contamination of the soils or groundwater in areas where PEX tubing would be placed or could be reasonably permeated by nearby contamination with solvents or gasoline is unlikely; or, [t]he PEX is sleeved by a metal or other material that is impermeable to solvents and petroleum products.

While Mitigation Measure 4.4-3 is a good start and certainly will reduce permeation impacts, it is insufficient to reduce the risk of permeation impacts to a level of insignificance. If a Phase I Environmental Assessment is conducted, this measure would permit the installation of unprotected PEX under slab or underground between the water meter and the building. Such PEX would still be at risk for contamination from future spills or leaks or from unrecorded past spills or unknown leaking underground storage tanks that would not be identified by a Phase 1 Environmental Site Assessment.

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[112] Exhibits A, B & C; Appendix 16, Lee, *Investigation of Plastic Pipe Permeation by Organic Chemicals*, American Water Works Service Company (Nov. 5, 1985); Appendix 17, Plastic Pipe Institute, *Thermoplastics Piping for the Transport of Chemicals* (Jan. 2000).
[113] DEIR at p. 3-4; 24 Cal. Code Regs., Part 5, §§ 204, 604.1 & Table 6-4.
[114] Exhibits A & B.
[115] *Id.*

A 2002 report on permeation published by the United States Environmental Protection Agency ("U.S. EPA") found that permeation incidents were equally split between high-risk locations such as industrial areas, former sites of fuel stations and near underground storage tanks, and low risk locations such as residential areas.[116] The sources of contamination for the low-risk areas included disposal and accidental leaking of gasoline, oil, and paint thinner products.[117] This report further stated that the risk of permeation impacts was greatest in smaller diameter service line pipes with lower flow or stagnant conditions such as those permitted under the Project between the water meter and the building.[118] The report also concluded that there was a greater likelihood of accidental releases of organic contaminants such as petroleum products near occupancies and closer to the point of withdrawal or consumption.[119]

A 1991 study published in the Journal of the American Water Works Association found that soil contamination occurred mainly after pipe installation, suggesting that soil analysis prior to pipe installation will not significantly decrease the number of incidents.[120] The occurrence of about half of all reported incidents in areas without known contamination risks indicated that limiting plastic pipe use to these areas will not be effective in preventing permeation.[121] 25-16 (Cont.)

These studies present substantial, unrebutted evidence that Mitigation Measure 4.4-3 will not reduce permeation impacts below a level of significance.

Mitigation Measure 4.4-3 must be revised to prohibit any installation of PEX below slab or between the water meter and the building structure. Such a prohibition is feasible and has been recommended by even strong supporters of the proposed approval of PEX. In a letter submitted during the Notice of Preparation ("NOP") comment period for this DEIR, the California Professional Association of Specialty Contractors ("CALPASC") wrote that they strongly supported the proposed approval of PEX, but stated, "the *consensus of the industry* is that PEX tubing should not be installed under slab."[122] CALPASC did state that it would potentially consider a limited exception to this prohibition for PEX tubing under island sinks.[123] However, in such circumstances CALSPAC stated that the PEX tubing must be encased in a protective sleeve "to protect the PEX tubing from

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[116] Appendix 18, Office of Ground Water and Drinking Water, U.S. EPA, *Permeation and Leaching* (August 15, 2002) at p. 3.
[117] *Id.*
[118] *Id.*
[119] *Id.*
[120] Holsen, et al., *The Effect of Soils on the Permeation of Plastic Pipes by Organic Chemicals*, Journal of the American Water Works Association (1991).
[121] *Id.*
[122] Appendix 20, CALPASC Letter to Valerie Namba (November 27, 2007) at p. 1.
[123] *Id.*

contact with pesticides or petroleum byproducts."[124] In no circumstances did CALPASC recommend installation of unprotected PEX under slab. This letter was signed by CALPASC's Director of Risk Management. Numerous other contractors also submitted letters supporting these CALPASC comments. 25-16 (Cont.)

Moreover, other states such as Arkansas have adopted exactly this prohibition. The Arkansas regulations for PEX expressly prohibit any installation of PEX below the slab.[125]

The DEIR's evaluation of permeation impacts is further inadequate because it incorrectly assumes that pesticides will not permeate PEX pipe and thus fails to evaluate and mitigate this potential impact. The DEIR concludes that "[t]heoretical calculations on permeation of termiticides indicated that these types of organic compounds are less likely to permeate PEX piping and do not represent a concern."[126] However, the 2005 Hoffman report upon which the DEIR bases this conclusion does not appear to evaluate termiticides and pesticides that contain solvents.

It is well settled that solvent-based termiticides and pesticides may permeate PEX and contaminate drinking water. In 2007, the Plastic Pipe Institute released a report on PEX and termiticides that concluded "permeation is probable" in an installation in which organic-based solvent pesticide is in constant contact with PEX.[127] The report warns users not to spray on or allow termiticides or pesticides to come in contact with PEX pipes, "otherwise permeation of harmful chemicals may occur through the pipe wall and contaminate drinking water."[128] A 2002 New Zealand report provides several case studies where termiticide applications permeated through PEX and contaminated drinking water.[129] 25-17

In addition, PEX manufacturers have themselves admitted that termiticide can permeate PEX and contaminate drinking water. In response to litigation in Arizona, the PEX manufacturer, Wirsbo, stated that the contamination of the plaintiff's drinking water with benzene was due to the termiticide in the soil surrounding the buried pipe.[130] Wirsbo claimed that is was not at fault for such

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[124] *Id.* at p. 4.
[125] See Appendix 21, Halsey Email (March 21, 2008); see also Appendix 22, Arkansas PEX Regulations.
[126] DEIR at p. 4.4-18.
[127] Appendix 23, Plastic Pipe Institute, *Recommended Practices Regarding Application of Pesticides and Termiticides near PEX Pipes*, TN-39 (August 2007) at p. 3.
[128] *Id.* at p. 6.
[129] Appendix 24, Marshal, et al., Queensland Health, *Report on the Workshop Termiticide Applications and Potable Water Supplies* (February 6, 2002).
[130] Appendix 25, UPONOR WIRSBO'S Initial Rule 26.1 Disclosure Statement, *Defren v. Trimark Homes*, Case No. CV2001-005145, Superior Court of Arizona, Maricopa County, (July 30, 2002).

permeation because it warns against exposing pipe to potentially permeating compounds.[131]

25-17 (Cont.)

The DEIR must be revised to disclose the potential for solvent-based termiticides and pesticides to permeate PEX pipe. Moreover, feasible measures must be identified to mitigate this potential impact. Such measures should include a requirement to post a warning in any occupancy plumbed with PEX that solvent-based termiticides may not be applied.

## VI. THE DEIR INADEQUATELY EVALUATES AND MITIGATES THE RISK OF PEX FAILURE

The DEIR is deficient because it fails to adequately disclose, evaluate or mitigate the risk of premature PEX pipe failure.

As currently proposed, the Project would approve PEX potable water pipe that meets any of the following three PEX chlorine resistance standards: (1) ASTM F2023; (2) NSF P171CL-T; or (3) NSF P171 CL-R. These standards vary substantially in the amount of protection they require from degradation due to exposure to chlorine and hot water:

25-18

(1) NSF P171 CL-1 assumes exposure to 25% hot water and 75% room temperature water and requires PEX to meet an 80-year service life test (40 years with a 0.5 design factor).[132]

(2) NSF P171 CL-R for recirculated hot water systems assumes exposure to 100% hot water and requires PEX to meet an 80-year service life test (40 years with a 0.5 design factor).[133]

(3) ASTM F2023 assumes exposure to 25% hot water and 75% room temperature water and requires PEX to meet a 50-year service life test (25 years if a 0.5 design factor is applied).[134]

While PEX manufacturers often rate their products for use with water at temperatures of 160 degrees Fahrenheit or more, each of these tests assumes a maximum hot water temperature of 140 degrees Fahrenheit.[135] None of these tests assess resistance to degradation from exposure to ultraviolet rays or commonly

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[131] *Id.*
[132] DEIR at p. 4.2-4.
[133] *Id.*
[134] *Id.*
[135] DEIR, Appendix C, Chaudhuri, ENSR, Memorandum re Comparison of Chlorine Resistance standards for PEX piping (April 7, 2008) at p. 2.

encountered building materials such as intumescent firestop material or asphalt. Nor do they assess resistance to degradation due to exposure to solvents, petroleum products or other contaminants.

The DEIR corroborates that PEX may prematurely rupture from interactions with oxidizers (i.e., UV light and chlorine) and firestop materials (materials used to safeguard PEX from fires).[136] PEX is susceptible to chemical attack from oxidizers such as chlorine or oxygen, both from water and from the surrounding air. The attack is accelerated by heat. Ultra violet rays in sunlight also damage and degrade PEX. Petroleum products, asphalt, certain firestop materials and numerous other commonly encountered chemicals and materials may also accelerate degradation. These attacks eventually cause polymer chain breakage, resulting in loss of strength, brittleness, and ultimately premature mechanical failure.[137] The DEIR concludes that such ruptures could cause serious water damage to homes, including growth of dangerous molds.[138]

25-18 (Cont.)

The DEIR, however, fails to fully evaluate this risk and ignores substantial evidence in the record. The DEIR also concludes without foundation that the ASTM F2023 and NSF P171CL-T chlorine resistance standards, along with compliance with PEX manufacturer installation guidelines, are sufficient to reduce the risks of such impacts to a level of insignificance, except for where PEX is installed in recirculating hot water systems in jurisdictions that use chlorine for disinfection. For PEX installed in recirculating hot water systems in jurisdictions that use chlorine for disinfection, the DEIR recommends imposition of Mitigation Measure 4.2-1, which requires such PEX to be certified to the NSF P171 CL-R standard for recirculating systems or a yet-to-be adopted equally rigorous standard.

As demonstrated by the attached expert comments and supporting evidence, the DEIR lacks foundation for its conclusion that PEX certified to meet ASTM F2023 and NSF P171CL-T non-recirculating-system chlorine-resistance standards are not at risk for premature failure if installed in recirculating hot water systems in jurisdictions that use alternatives to chlorine for disinfection.[139]

In addition, the DEIR lacks foundation for its finding that PEX installed in traditional, non-recirculating hot and cold water systems is not at risk for premature failure. The record contains undisputed evidence that ASTM F2023 and

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[136] DEIR at p. 4.2-9.
[137] See Exhibits B, D & E; Appendix 26, Flowguard Gold, *Not All Plastic Plumbing Systems Perform the Same*, Plumbing Contractor News Technical Bulletin; Appendix 27, Temprite PEX – News Release, *Plumbing Pipe Made with Temprite® PEX Offers Resistance Due to Chlorine Degradation* (April 2003).
[138] DEIR at p. 4.2-10.
[139] See Exhibit D.

NSF P171CL-T are insufficient to reduce such risks to a level of insignificance.[140] ASTM F2023 fails, on its face, to require a reasonable lifetime of PEX. Moreover, both standards fail to mitigate for direct and cumulative degradation from sunlight, firestop material and other commonly encountered environments and materials.[141] 25-18 (Cont.)

The DEIR also lacks foundation for its finding that Mitigation Measure 4.2-1 will reduce the risk of failure for recirculating hot water systems in jurisdictions that use chlorine for disinfection to a level of insignificance. The NSF P171 CL-R required by this measure also fails to mitigate for direct and cumulative degradation from sunlight, firestop material and other commonly encountered environments and materials.[142]

### A. The DEIR's Mitigation for Recirculating Systems Is Inadequate Due to Its Unsubstantiated Exception for Water Systems that Disinfect with Chloramines

The DEIR admits that "...a potential exists for chlorinated potable water in continuously recirculating systems to cause PEX tubing to prematurely fail if it has not been tested for use in such a system."[143] In a memorandum on the chlorine resistance standards for PEX piping commissioned by the lead agency, Dr. Chaudhuri concludes that, for example, "ASTM 2023 was not meant to test for 100% continuously recirculating hot water, so simply meeting this standard would not be sufficient for systems with 100% hot water."[144] The DEIR further finds that neither ASTM F2023 nor NSF P171CL-T test for 100% continuously recirculating hot water. Both these standards instead test assuming 25% hot water and 75% room temperature water. 25-19

Based upon this evidence, the DEIR concludes that PEX certified to meet ASTM F2023 or NSF P171CL-T and exposed to continuously recirculated chlorinated hot water may prematurely degrade resulting in significant impacts.

Mitigation Measure 4.2-1 addresses this impact by requiring that PEX installed for recirculating systems in jurisdictions that use chlorine for disinfection "must be certified using the NSF P171 CL-R standard or a yet-to-be adopted equally rigorous standard that assumes 100% continuously recirculating chlorinated hot water, would ensure a conservative product lifetime of 40 years and is approved by

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[140] Exhibit D; Appendix 31, Boyher Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007); Appendix 30, Emerman, *Heating System Can Cause Heavy Damage*, kirotv.com (February 3, 2003).
[141] Exhibits D.
[142] Exhibit D.
[143] DEIR at p. 4.1-10.
[144] DEIR, Appendix C, Chaudhuri, ENSR, Memorandum re Comparison of Chlorine Resistance standards for PEX piping (April 7, 2008) at p. 2.

the Building Standards Commission for testing PEX for continuously recirculating hot chlorinated water."[145]

This mitigation is legally inadequate, however, because it improperly limits its scope to jurisdictions that use chlorine to disinfect water. The DEIR states that an increasing number of jurisdictions in California are switching to chloramines to disinfect their water supply. The DEIR then assumes without foundation that chloramines will not degrade PEX and that Mitigation Measure 4.2-1 should be limited to jurisdictions that use chlorine for disinfection. The DEIR states that "[t]he possibility of PEX failure from chlorine degradation would be limited to jurisdictions that have not yet switched to chloramine disinfection and projects in those jurisdictions that use continuously recirculating, hot, chlorinated water systems."[146]

The assumption that chloramines will not degrade PEX is not based on any evidence and is wholly incorrect. No evidence is cited in the DEIR to support this conclusion. Moreover, a Public Record Act request for all documents relied upon to support the conclusions in the DEIR revealed absolutely no reports, studies, articles, expert opinions, or any other materials that evaluate or otherwise address the effect of chloramines on PEX pipe.[147] 25-19 (Cont.)

CEQA requires conclusions in an EIR to be supported by substantial evidence.[148] Conclusory statements "unsupported by empirical or experimental data, scientific authorities, or explanatory information of any kind" are insufficient to support a finding of insignificance.[149] Furthermore, an EIR must provide the reader with the analytic bridge between its ultimate findings and the facts in the record.[150]

Here, the DEIR fails to describe the "analytic route" it traveled in determining that the chloramines would not degrade PEX pipe.[151]

In addition, this assumption is factually incorrect. A recent study by Jana Laboratories, Inc. prepared for the Plastic Pipe Institute found that significant depletion of PEX stabilizer was observed when chloramines were used as a

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[145] DEIR at pp. 1-6, 1-7.
[146] DEIR at p. 4.2-12.; see also DEIR at p. 1-7.
[147] Exhibit 32, Declaration of Thomas A. Enslow (June 20, 2008).
[148] Pub. Resources Code § 21081.5; CEQA Guidelines § 15091, subd. (b).
[149] *People v. County of Kern* (1974) 39 Cal.App.3d 830, 841-842.
[150] *Topanga Association for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506; see CEQA Guidelines, § 15091.
[151] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 733.

disinfectant.[152] Chloramines are oxidants and thus, like chlorine, consume PEX stabilizers and eventually cause polymer chain breakage resulting in failure of the pipe.[153] Chloramines have been known to attack and degrade some plastics much more quickly than chlorine.[154] Moreover, chloramines have a much longer lifetime in water than chlorine and thus may remain at higher levels when it enters building water systems and may continue to attack plastic pipes for longer periods of time even when stagnant.[155]

The DEIR also fails to evaluate the use of other alternatives to chlorine as a disinfectant in California water systems. One such alternative is chlorine dioxide. Chlorine dioxide has been found to deplete PEX stabilizer at a much quicker rate than chlorine.[156]

25-19 (Cont.)

Neither ASTM F2023, NSF P171 CL-T nor NSF P171 CL-R test PEX for chloramines or chlorine dioxide resistance in traditional hot and cold water systems or recirculating hot water systems. The Jana Laboratories, Inc. study looked at this issue and concluded that additional research is necessary to confirm the applicability of the standard ASTM and NSF test methodologies in assessing resistance to chloramines and chlorine dioxide.[157]

Moreover, a study conducted by Mr. Clark concluded that some PEX pipe certified for chlorine resistance in traditional hot and cold water systems would not last the 25-year warranty period in hydronic heating systems *even where the water was not chlorinated*.[158]

Because ASTM F2023 and NSF P171 CL-T do not assess PEX performance in *any* hot water recirculating systems (whether chlorinated or not), the DEIR's reliance upon these two standards to ensure performance in recirculating system installations with water disinfected by chloramines lacks any foundation and is arbitrary and capricious.

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[152] Appendix 33, Chung, et al., Jana Laboratories Inc., *An Examination of the Relative Impact of Common Potable Water Disinfectants (Chlorine, Chloramines and Chlorine Dioxide) on Plastic Piping System Components*, at p. 4.
[153] *Id.*; see also Appendix 34, Kevin Gaw, Schaefer Engineering, Forensic Features Newsletter, (2005) ("Chloramines can swell and crack plastics that are not resistant. The degradation of the plastic will continue until failure.")
[154] Appendix 34, Kevin Gaw, Schaefer Engineering, Forensic Features Newsletter, (2005).
[155] *Id.*
[156] Appendix 33, Chung, et al., Jana Laboratories Inc., *An Examination of the Relative Impact of Common Potable Water Disinfectants (Chlorine, Chloramines and Chlorine Dioxide) on Plastic Piping System Components*, at p. 4.
[157] *Id.*
[158] Exhibit D at p. 2.

Even if, *assuming arguendo*, ASTM F2023 and NSF P171CL-T were sufficiently protective standards for recirculating hot water systems that were treated with disinfectants other than chlorine, Mitigation Measure 4.2-1 would still be deficient due to its lack of feasibility. CEQA requires that public agencies adopt "feasible" mitigation measures that must "actually be implemented as a condition of development, and not merely adopted and then neglected or disregarded."[159] "When the success of mitigation is uncertain, an agency cannot reasonably determine that significant effects will not occur."[160]

Mitigation Measure 4.2-1 suffers from the same enforcement and compliance difficulties as Mitigation Measure 5-1, discussed *supra*. Mitigation Measure 4.2-1 fails to address how building officials and contractors are supposed to know what type of disinfectant is found in the water supply. Current building code requirements do not include any provisions for informing a contractor or building official whether a building's water supply uses chlorine or chloramines as a disinfectant. Without a requirement to provide building officials with reliable information regarding a building's water supply, this mitigation measure is meaningless. 25-19 (Cont.)

Moreover, Mitigation Measure 4.2-1 fails to take into account the very real potential for jurisdictions that use chloramines to switch back to chlorine. As discussed in the DEIR and its supporting documents, the widespread use of chloramines as a disinfectant has had a number of unforeseen consequences, including reports of increased copper pipe failures, incompatibility with dialysis equipment and toxicity to fish. As a result, jurisdictions that had switched to chloramines have been known to switch back to chlorine.[161]

Because Mitigation Measure 4.2-1 is inadequate and lacks feasibility, it must be amended to require that all PEX pipe installed in recirculating systems, regardless of a jurisdiction's water supply, must meet NSF P171 CL-R. As discussed in more detail below, however, recirculated hot water systems plumbed with PEX would still be subject to premature failure due to other causes, even with such an amendment.

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[159] *Federation of Hillside and Canyon Associations v. City of Los Angeles, supra,* 83 Cal.App.4th at 1261; see Pub. Resources Code § 21002.1, subd. (b).
[160] Remy, Thomas & Moose, Guide to CEQA, *supra*, p.426; see *Sundstrom v. Mendocino County* (1988) 202 Cal.App.3d 296, 306-308.
[161] Exhibit 35, Port LaBelle Utility System; Hhttp://hendryutilities.com/docs/boxes/Annoucement_070726.htmH [as of May 17, 2008].

### B. The DEIR Fails to Evaluate and Mitigate the Undisputed Evidence that ASTM F2023 Fails to Ensure an Adequate Lifetime for PEX Pipe

The DEIR is further deficient because it fails to address the inadequate lifetime assured by ASTM F2023 due to its failure to incorporate the industry-accepted standard of a 0.5 design factor. The record contains undisputed evidence that ASTM F2023 fails, on its face, to require a reasonable lifetime of PEX when installed in both traditional and recirculating hot and cold water systems.

Currently copper potable water systems are generally assumed to last beyond the lifetime of a building.[162] In establishing Mitigation Measure 4.2-1, however, the DEIR states that ensuring a conservative product lifetime of 40 years would reduce the risk of premature or unexpected PEX failure to less than significant.[163] Even assuming that a conservative 40-year lifetime is a reasonable lifetime for a plumbing system installed in a building, ASTM F2023 fails to provide for such a lifetime.

Both NSF P171 CL-1 and NSF P171 CL-R certify a conservative lifetime of 40 years which is calculated by requiring PEX to meet an 80-year service life test and then adding in a 0.5 design factor to account for unexpectedly harsh service conditions.[164] 25-20

ASTM F2023, on the other hand only requires PEX to meet a 50-year service life test, which is calculated without adding in the industry standard 0.5 design factor.[165] If this conservative design factor were applied, then the certified product lifetime for PEX tubing that is tested under the ASTM standard would be 25 years.[166]

ASTM F2023 is the only test for any piping material that doesn't utilize the industry-accepted standard of a 0.5 design factor.[167] "All tests conducted by ASTM on all other piping materials when a design factor is appropriate use a 0.5 design factor."[168] Not surprisingly, the weaker ASTM performance test for PEX was reportedly adopted by the consensus of the PEX manufacturers themselves.[169]

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[162] DEIR at p. 4.2-13.
[163] DEIR at p. 1-7.
[164] DEIR at p. 4.2-4; Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 4.
[165] DEIR at p. 4.2-4.
[166] DEIR at p. 4.2-11.
[167] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 4.
[168] *Id*. at p. 3.
[169] *Id*. at p. 4.

As a result, at least one reputable PEX manufacturer admits that PEX certified to ASTM F2023 "only has an expected service life of 25 years, five years less than the traditional home loan."[170]

A 25-year expected service life means that many homes plumbed with ASTM F2023-certified PEX are likely to suffer failures and water damage well before the conservative 40-year lifetime assumed by Mitigation Measure 4.2-1. Moreover, buildings re-plumbed with the same pipe may experience multiple failures during a building's lifetime, while most copper pipes will last a building's lifetime and more. This is a significant impact that must be evaluated and mitigated in a revised DEIR.

The DEIR's failure to address this impact is puzzling since it expressly acknowledges that the level of certainty provided by ASTM F2023 is not as great as that provided by NSF P171 because of the failure to incorporate a design factor.[171]

Moreover, the lead agency received NOP comments from a major U.S. PEX manufacturer, Lubrizol Advanced Materials, Inc., that expressly warned that the ASTM standards are insufficient and should not be relied upon.[172] Lubrizol Advanced Materials, Inc. underscored the inadequacy of ASTM F2023 by noting that Polybutylene ("PB") pipe passed ASTM F2023 and still failed miserably in U.S. water conditions.[173] 25-20 (Cont.)

ASTM F2023 is not only less protective than the NSF standards, it is also less reliable. In his report commissioned by the lead agency, Dr. Chaudhuri concluded that the NSF chlorine resistance standard is more reliable that the ASTM standard because the NSF procedure has a higher requirement for testing data points.[174]

The DEIR, however, fails to evaluate or analyze the deficiencies of ASTM F2023 in any application other than in recirculating hot water systems in jurisdictions with chlorinated water. The failure to evaluate substantial evidence that the ASTM standard is insufficient to ensure a conservative lifetime for PEX even in traditional hot and cold water systems renders the DEIR legally inadequate.

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[170] *Id.*
[171] DEIR at p. 4.2-13.
[172] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007).
[173] *Id.* at p. 6.
[174] DEIR, Appendix C, Chaudhuri, ENSR, Memorandum re Comparison of Chlorine Resistance standards for PEX piping (April 7, 2008) at p. 1.

The DEIR must be revised to disclose and to mitigate this issue. Lubrizol Advanced Materials, Inc. concludes that the most appropriate, feasible and enforceable mitigation measure would be to require all PEX pipe in California (for traditional and recirculated systems) to be certified to the NSF P171 CL-R standard.[175] "Such a requirement would ensure that every piece of PEX pipe is rated for the worst case chlorinated water scenario."[176] 25-20 (Cont.)

### C. The DEIR Fails to Evaluate Failures in Installations that May Circulate Water at Temperatures Hotter than 140 Degrees Fahrenheit

The DEIR is also deficient because it fails to evaluate the potential failure of PEX in installations that require hot water to be at temperatures well above 140 degrees Fahrenheit. As proposed, the Project does not include any limits on the use of PEX in installations that require water hotter than 140 degrees Fahrenheit. Hot water increases the aggressiveness of chlorine in water, which degrades the chlorine protection added to the PEX pipe that decreases the PEX pipes' longevity.[177] Both the ASTM and the NSF standards test for chlorine resistance at *maximum* temperatures of 140 degrees Fahrenheit.[178] Accordingly, these chlorine resistance standards are not applicable for installations that use water at hotter temperatures.

In particular, many hospital and health care applications require hot water to be at temperatures well above 140 degrees Fahrenheit.[179] Current code requirements for these occupancies include 180 degrees Fahrenheit water for rinse water at automatic dishwashing equipment and 160 degrees Fahrenheit water for laundry, maintained over the entire wash and rinse period.[180] In order to supply this water temperature at the fixture, it will be necessary to provide hotter water at the source.[181] 25-21

While some PEX products claim they are rated for use at temperatures above 140 degrees Fahrenheit, none of these are tested and certified for chlorine resistance at temperatures above 140 degrees Fahrenheit. Accordingly, these standards may not be relied upon to protect such applications from premature

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[175] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 6.
[176] *Id.*
[177] *Id.* at p. 5.
[178] DEIR, Appendix C, Chaudhuri, ENSR, Memorandum re Comparison of Chlorine Resistance standards for PEX piping (April 7, 2008) at p. 2.
[179] Appendix 7, OSHPD, ISOR, 2006 Code Cycle, Part 5 (Sept. 1, 2006) at p. 3; Appendix 8, OSHPD, ISOR, 2004 Code Cycle, Part 5 (May 2004).
[180] *Id.*
[181] *Id.*

failure. PEX should thus be prohibited from use in any applications that may carry water at temperatures above 140 degrees Fahrenheit.

25-21 (Cont.)

### D. The DEIR Improperly Relies on Inconsistent and Unregulated Manufacturer Installation Guides to Mitigate Failures Due to Exposure to Ultraviolet Light

The DEIR is also deficient because it inadequately evaluates the risk of premature PEX failure due to exposure to ultraviolet sunlight ("UV").

PEX is extremely sensitive to sunlight. Exposure to UV rapidly depletes stabilizer from PEX, dramatically reducing its lifespan.[182] The DEIR acknowledges this sensitivity, yet concludes that the risk of premature failure due to UV exposure is less than significant because: (1) it is an anomalous condition, and (2) most PEX manufacturers add UV resistant material into the pipe and include instructions to avoid UV degradation. The DEIR concludes that because of this, and because it is considered reasonable and feasible to comply with manufacturers instructions, the risk of PEX failure due to UV exposure is less than significant.[183]

This conclusion lacks foundation and is contrary to undisputed evidence in the record. An EIR must contain "facts and analysis, not just the bare conclusions of a public agency."[184]

25-22

Here, no evidence or analysis is provided to support the finding that UV exposure is an "anomalous condition." To the contrary, the DEIR's own factual descriptions and referenced documents make clear that UV exposure is a common occurrence on worksites. The DEIR states:

> PEX may be left exposed at construction work sites or laid under slab at the edges of the building where it could be exposed to sunlight during portions of the day, left exposed during pipe installation, slab pour, framing, and sheathing. In tract housing this can add up to a month or more of exposure.[185]

In addition to exposure at the worksite, PEX manufacturers admit that PEX may be exposed to UV throughout the distribution channel that the pipe travels.[186]

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[182] Exhibits B, D & E.
[183] DEIR at p. 4.2-13.
[184] *Santiago Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831.
[185] DEIR at p. 4.2-10.
[186] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 5.

Moreover, the DEIR's reliance on the finding that "most" PEX manufacturers add UV resistant material into the pipe is arbitrary and capricious. While there is widespread acknowledgment of this problem in PEX installation guides, there are no minimum longevity standards or tests imposed for exposure to UV light.[187] By the DEIR's own admission, not all PEX manufacturers add UV resistant material into the pipe. The proposed Project includes no requirement to add UV resistance to PEX pipe or PEX pipe packaging and would likely result in installation of PEX with little or no UV protection. Even with such protections, however, maximum UV exposure is usually no more than 60 days.[188]

The DEIR's reliance upon manufacturer's instructions is also arbitrary and capricious. Manufacturer's instructions are not regulated and thus vary significantly from product to product. The DEIR relies on these instructions, however, without even reviewing their content. Without reviewing the manufacturer's instructions for each of the 271 currently approved versions of PEX, the lead agency has no foundation for relying on their content. Moreover, the DEIR fails to impose any requirements or performance standards on such instructions that would apply to any current or future versions of such instructions.

25-22 (Cont.)

In addition, the DEIR assumes compliance with such instructions without any evidence to support such an assumption. There is no requirement to provide manufacturer instructions when PEX is purchased and no assurance that the end user will ever even see such requirements, much less read them. Dr. Clark testifies that, based on his extensive experience with PEX failures and other construction-related errors, it is not reasonable to assume that manufacturer's instructions are strictly applied or even known.[189] Moreover, Dr. Clark testifies that he has been at numerous field installations where there is more than one PEX product mixed and matched in the building, each with potentially different instructions and requirements.

Manufacturer's instructions are also insufficient to protect PEX pipe from harmful UV exposure because they are inconsistent and often vague as to how long PEX may be exposed to sunlight. The warnings against UV exposure by Upnor PEX vary between 15 or 30 days *depending on which public document you review*.[190] The warning contained in the Zurn PEX pipe installation guide states: "Excessive exposure to UV light will void the Zurn warranty," but fails to define what

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[187] Id.; See Appendix 36, Plastic Pipe and Fittings Association, Installation Handbook: Cross-linked Polyethylene (PEX) Hot and Cold Water-Distribution Systems (2002); Appendix 37, IPEX Installation Guide.
[188] DEIR at p. 4.2-10.
[189] Exhibit D at p. 3.
[190] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 5.

constitutes "excessive exposure.[191]" This statement fails to provide any guidance on how long Zurn PEX pipe may actually be exposed to sunlight before it should not be used. This statement also fails to warn against leaving PEX exposed from the time it is laid up under slab and pulled up for future connections to the time the house is framed and sheathed. The warning is vague, fails to provide needed guidance and is reasonably likely to lead to some accidental overexposures during installation. Even other PEX manufacturers admit that such a warning is vague and meaningless.[192]

Manufacturer's instructions are further inconsistent as to whether PEX may be damaged by even indirect sunlight. US Brass, in Bulletin no: QT-131 (dated October 17, 1996) wrote to their customers: "Field tests have confirmed that QestPEX ™ material should not be stored in direct or *indirect* sunlight." The Bulletin warned that exposure to indirect sunlight will "void the Qest warranty."

Vanguard also has warned that PEX should not be exposed to direct or indirect sunlight. They informed one customer that even indirect sunlight through small vents in a crawlspace would damage PEX.[193] The same customer testified that he had personally observed that six brand new homes had been constructed across the street from him that contained PEX in their crawlspaces with nothing on the piping to protect from indirect sunlight. 25-22 (Cont.)

Reliance on vague, unspecified, voluntary "manufacturer's instructions" violates CEQA's requirement that mitigation measures be specific, enforceable and effective. Mitigation measures that are "tentative and vague" are insufficient to reduce effects to less than a level of significance.[194] The DEIR's reliance on manufacturer's instructions is "tentative and vague" because the term "manufacturer's instructions" lacks any substantive definition.

The proposed Project does not include any provisions providing standards or oversight of PEX installation guide content. Moreover, PEX installation guidelines are not subject to any governmental or industry standards, regulations, guidelines or oversight. As a result, the warnings and instructions contained within various manufacturer guidelines vary widely in content, scope and specificity. The warnings they do contain are often incomplete, vague, inconsistent or lack sufficient guidance to ensure compliance. New smaller, less reputable manufacturers may enter the market with even less sophisticated or complete warnings. Moreover,

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[191] *Id.*
[192] *Id.*
[193] Appendix 38, Christopher Akins, personal communication with Famous Plumbing Supply (March 3, 2007), Hhttp://www.plumbingsupply.com/pex.htmlH.
[194] *League for Protection of Oakland's etc. Historic Resources v. City of Oakland* (1997) 52 Cal.App.4th 896, 909.

there is no requirement for a manufacturer to even have an installation guide. In addition, it is unrealistic and unreasonable to expect new occupants of a home to be aware of a manufacturer's instructions for plumbing pipe that may have been installed years earlier.

Without any specific guidelines or requirements regarding the availability, applicability and content of manufacturer's instructions, such requirements are too vague and tentative to be relied upon for mitigation.

Reliance on manufacturer's UV instructions also lacks foundation because there is no way to ensure compliance with such instructions. The DEIR fails to address the widely acknowledged concern that there is no way to visually inspect PEX pipe to determine if it has been affected by UV exposure and will likely prematurely fail.[195] Accordingly, there is no way to tell how long PEX pipe has previously been exposed to sunlight by prior handlers of the pipe, making compliance with any exposure guidelines virtually impossible. CEQA requires mitigation measures to be feasible and enforceable.[196] Reliance upon manufacturer guidelines to protect from UV exposure is neither feasible nor enforceable.

25-22 (Cont.)

Even PEX manufacturers admit that "no one knows how long a piece of PEX pipe or a coil of PEX pipe has been exposed to UV throughout the distribution channel that the pipe travels."[197]

> No guidelines exist for UV protective packaging for PEX pipe. PEX pipe can be transported by an open air flatbed truck that allows UV exposure of the PEX pipe. A flatbed truck may unload the PEX pipe at the wholesaler who then may store the PEX pipe outside in their yard, again exposed to UV. PEX pipe is purchased by the plumbing contractor and the pipe is placed in the back of an open truck for a day, week, month or longer until all of the PEX pipe is used. The PEX pipe is installed in a house where the UV blocking walls might not be installed for days, weeks, or longer.[198]

This unidentifiable accumulated time makes compliance with manufacturer UV exposure guidelines virtually impossible for even the most conscientious installers to ensure.[199]

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[195] Exhibit B, D & E; Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 5.
[196] Pub. Resources Code, § 2106.1; CEQA Guidelines § 15364.
[197] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 5.
[198] *Id.*
[199] *Id.*

Finally, the DEIR lacks any foundation for its assumption that compliance with manufacturer instructions with UV guidelines will reduce the risk of premature failure to a level of insignificance. Dr. Clark has performed tests on PEX tubing demonstrating that some brands of PEX become virtually devoid of residual effective stabilizer after just two weeks of rooftop exposure.[200] At such a rate, just three days of exposure to sun at a construction site could reduce the lifespan of PEX by more than twenty percent (20%).[201] Other studies have found a one-week exposure to sunlight sufficient to cut the resulting pipe lifetime in half.[202]

The ASTM and NSF chlorine-resistance standards fail to take into account a manufacturer's maximum allowable UV exposure. Accordingly, PEX pipe that is exposed to UV even within the manufacturer's guidelines will have significantly fewer stabilizers than relied upon in setting the ASTM and NSF chlorine-resistance standards. While this may not mean failure in 1 to 2 years, it could mean failure in 15 to 20 years rather than 40 years. 25-22 (Cont.)

The DEIR must be revised to evaluate the impact of UV exposure on PEX lifetime and to identify enforceable mitigation measures based on actual empirical data.

### E. The DEIR Improperly Relies on Inconsistent and Unregulated Manufacturer Installation Guides to Mitigate Failures Due to Exposure to Incompatible Firestop Materials

The DEIR is also deficient because it improperly relies on inconsistent and unregulated manufacturer installation guides to mitigate failures due to incompatible firestop materials. Firestop material is required between walls to prevent pipes from acting like a fuse and spreading fire. One commonly used material that has been found to accelerate the loss of stabilizers in PEX is intumescent firestop material.[203] The DEIR acknowledges that certain firestop materials are incompatible with PEX and may lead to premature pipe rupture.[204] 25-23

The DEIR, however, summarily dismisses this potential impact on the grounds that "many readily available firestop materials are compatible with PEX, and the information about which materials are appropriate to use with PEX is readily available."[205] The DEIR states that "most" PEX manufacturer's installation

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[200] Exhibit D & E.
[201] *Id.*
[202] Exhibit B at p. 5-6.
[203] Exhibits B, D & E; see Appendix 36, Plastic Pipe and Fittings Association, Installation Handbook: Cross-linked Polyethylene (PEX) Hot and Cold Water-Distribution Systems (2002).
[204] DEIR at pp. 4.2-10.
[205] DEIR at p. 4.2-11.

guides warn against this incompatibility and "most" firestop materials are labeled to indicate whether they are compatible with PEX.

The DEIR's reliance upon manufacturer warnings and instructions regarding firestop materials is arbitrary and capricious because the lead agency has not reviewed the warnings and instructions for all 271 types of PEX. While some PEX installation guides warn against the use of intumescent firewall penetration sealing compounds, not all PEX installation guides warn users of this incompatibility.[206] The failure of all PEX guides to warn against this incompatibility makes reliance on PEX manufacturer's instructions an insufficient safeguard to prevent this impact.

Moreover, as observed generally by OSHPD, this type of limitation is difficult to enforce.[207] OSHPD reviewed this issue in 2006 and concluded that, even if drawings call for the use of water soluble, gypsum-based caulking with PEX, materials may be changed from what is approved on the drawings by contractors unaware of the repercussions of using more common intumescent firestop materials.[208] OSHPD further concluded that "[r]equiring field staff to know all the chemical composition of all the materials, and adverse interactions with chemicals found in other materials is not a reasonable expectation."[209]

25-23 (Cont.)

OSHPD is the enforcing agency for all health facility construction projects. OSHPD not only regulates such construction, it is also responsible for permitting, inspection and enforcement.[210] As such, OSHPD's expert opinion as to the feasibility of this mitigation for construction under its jurisdiction must be given deference.

In addition, warnings and instructions on firestop material itself are also insufficient to reduce this impact to a level of insignificance. In his investigation of PEX failures in Washington, Dr. Clark found that at least one firestop material specifically labeled safe for use with PEX pipe dramatically accelerated the loss of stabilizer.[211] As a result, the PEX pipe quickly became yellow, embrittled and cracked. This firestop material was the "Triple S Intumescent Sealant specifically referred to in the DEIR as "designed to be compatible with PEX."[212]

The DEIR must be revised to more meaningfully evaluate and mitigate the potential for PEX failure due to exposure to incompatible firestop material.

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[206] See, e.g., Appendix 52, Zurn PEX Plumbing Design and Application Guide.
[207] Appendix 7, OSHPD, ISOR, 2006 Code Cycle, Part 5 (Sept. 1, 2006) at p. 3; Appendix 8, OSHPD, ISOR, 2004 Code Cycle, Part 5 (May 2004).
[208] *Id.*
[209] *Id.*
[210] *Id.* at p. 1.
[211] Exhibit D & E.
[212] Exhibit D at p. 4; DEIR at p. 4.2-10.

### F. The DEIR Fails to Evaluate the Risk of PEX Failures Due to Exposure to Solvents, Petroleum Products and Asphalt

In addition to inadequately evaluating PEX failures due to UV exposure or exposure to intumescent firestop material, the DEIR fails to disclose or evaluate the potential for PEX to prematurely fail due to exposure solvents, petroleum products and asphalt.

Dr. Clark testifies that a broad range of commonly encountered construction materials and environmental conditions may cause PEX pipes to fail. As discussed in section V *supra*, PEX is very sensitive to permeation in the presence of benzenes, gasoline, pesticides, termiticides and many other contaminants commonly found in soils underneath homes.[213] Many of the same materials that may permeate through PEX pipe, also attack and consume the PEX stabilizers as they pass through the polymer.[214] Dr. Clark characterizes this sensitivity as an "inherent weakness" of PEX. This "inherent weakness" may cause PEX pipe to prematurely fail, for example, where PEX is installed in contact with contaminated soil under slab or between the house and the meter. It may also cause PEX pipe to fail where it is laid out unprotected on asphalt. 25-24

The DEIR must be revised to disclose and evaluate these potential impacts.

### G. The DEIR Fails to Evaluate the Risk of PEX Failure Due to the Cumulative Loss of Stabilizers from Various Commonly Encountered Oxidants

The DEIR fails to evaluate and mitigate for potential premature PEX failures as a result of cumulative exposure to oxidants from a variety of sources. In his attached comments, Dr. Clark testifies that exposure to various commonly encountered oxidants at levels that may not individually result in premature failure may cumulatively cause premature degradation.

For instance, PEX manufacturers admit that exposure to metal ions of copper and iron can promote oxidation resulting in accelerated consumption of the PEX stabilizers.[215] As Dr. Clark points out, potable water for domestic consumption will be oxygenated, will likely be chlorinated, and will be subject to the presence of metal ions both from the water sources and from water transmission systems. Each of these items alone results in consumption of PEX stabilizers. Where such a 25-25

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[213] Exhibits D & E; Appendix 36, Plastic Pipe and Fittings Association, Installation Handbook: Cross-linked Polyethylene (PEX) Hot and Cold Water-Distribution Systems (2002).
[214] *Id.*
[215] Exhibit E at pp. 5 & 8.

common triumvirate of conditions exists, PEX may suffer from accelerated loss of its stabilizers, potentially resulting in premature failure.[216] Exposures to UV rays, organic solvents or firestop materials will further increase the likelihood that stabilizer loss from exposure to chlorinated water will result in premature failure.[217]

Such cumulative impacts are not addressed by ASTM or NSF standards or testing.[218] As a result, Dr. Clark concludes that a manufacturer's claim that its piping is compliant with ASTM and NSF codes and standards is insufficient to ensure long-term serviceability under the environments commonly encountered in the intended use of PEX.[219]

Premature failure may occur from cumulative attacks even when each source of attack is individually insignificant. For example, UV exposure well within the limits of manufacturer instructions may nonetheless result in premature failures when combined with the cumulative impact of other oxidants. "The more UV PEX pipe is exposed to, the greater the amount of chlorine anti-oxidant additive package that is depleted, lessening PEX pipes protection against chlorinated potable water systems."[220]

25-25 (Cont.)

These cumulative impacts are further significant because the ASTM and NSF standards fail to fully take such impacts into account. The DEIR states that most PEX products limit UV exposure to 30 to 60 days. According to Dr. Clark's investigations, even one week of UV exposure significantly reduces the effective lifetime of PEX antioxidants.[221] The ASTM and NSF standards, however, test PEX without any UV exposure. Accordingly, PEX pipe that is exposed to UV, even within the manufacturer's guidelines, will have significantly fewer stabilizers available to resist chlorine degradation than were relied upon to determine compliance with the ASTM and NSF chlorine-resistance standards. As discussed above, this does not necessarily mean failure in 1 to 2 years, but it could likely result in some PEX pipe brands failing in 15 to 20 years rather than 40 years.

To address the cumulative impacts of UV exposure and hot chlorinated water, the lead agency must require PEX products sold in California to be certified to meet NSF chlorine resistance standards even after the maximum allowable UV exposure for that product. In addition, all PEX piping installed in California should

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[216] *Id.*
[217] *Id.*
[218] *Id.*
[219] *Id.*
[220] Appendix 31, Boyher, Lubrizol Advanced Materials, Inc., letter to DGS (November 28, 2007) at p. 5.
[221] Exhibit E at pp. 4 & 7.

be required to meet the stricter NSF P171 CL-R standard for chlorine resistance in order to build an additional buffer against other potential cumulative exposures. 25-25 (Cont.)

### H. The DEIR Fails to Examine the Adequacy of PEX Performance Standards in Light of Reports of Widespread Failures of PEX Pipe and Fittings

The DEIR is further deficient because it fails to evaluate the widespread failures of PEX pipe and PEX fittings that have led to numerous class action lawsuits across the United States. These failures are relevant to the adequacy of PEX performance standards because all of these failures involved PEX and PEX fittings that met the very NSF and ASTM standards that are now being relied upon by the DEIR to conclude that the risk of PEX failures is less than significant. 25-26

#### 1. Washington State Failures

In his attached comments, Dr. Clark presents substantial evidence that catastrophic failures have occurred in PEX piping. These failures were the subject of a class-action lawsuit in Washington State. Similar failures have been reported in Canada in both open-loop hydronic systems and hot potable water lines. The DEIR acknowledges these failures, but dismisses them on the grounds that the Washington State failures all involved a specific lot of PEX (UltraPEX Lot 7 tubing) produced by a single manufacturer that is no longer in business. Based upon the assumption that these failures were all attributed to the same "specific defective lot," the DEIR concludes that "[s]uch failures are not representative of the entire PEX industry."[222]

The DEIR's conclusion that these failures were attributable to a single "defective" lot lacks foundation. There is no evidence the UltraPEX Lot 7 pipes were not correctly fabricated. To the contrary, all tested UltraPEX tubing material, including material subject to early failure, was adequately cross-linked, indicative that the approximately correct levels of ingredients were employed.[223] In addition, the UltraPEX Lot 7 pipes met ASTM and NSF standards, including the NSF standard for chlorine resistance.[224] Moreover, "Lot 7" was not some minor subset of Plasco production; Lot 7 was the designation for *all* Plasco production of piping made from Flexet resin, estimated at hundreds of miles. 25-27

The DEIR's conclusion that these failures are not representative of the entire PEX industry also lacks foundation. The DEIR fails to investigate these failures and to determine exactly why this pipe failed. Moreover, the evidence in the record

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[222] DEIR at p. 4.2-10.
[223] Exhibit D at p. 1.
[224] *Id.*

regarding the Ultra-PEX Lot 7 pipe failures does not support a conclusion that other PEX pipes will not or have not experienced premature failures.

Dr. Clark has concluded that the potential for such failures is not limited to UltraPEX lot 7 piping:

> It is my belief that while the Washington State failures involve a single manufacturer, the issues revealed as a result of these losses are not solely limited to the batch of pipe involved in these failures. These failures demonstrate that PEX pipe may potentially prematurely fail if exposed to a number of commonly encountered materials and environmental conditions, including chlorine, sunlight, metal ions, high temperature and solvents, including those in some firestopping materials.[225]

25-27 (Cont.)

As discussed above, all PEX products suffer from the same inherent vulnerabilities that plagued UltraPEX. Furthermore, the UltraPEX Lot 7 pipe failed despite conforming to all of the required ASTM and NSF performance standards. The consistent, widespread failure of UltraPEX Lot 7 tubing suggests that the problem was not quality control, but rather insufficient standards that allow certification of a poor product.

In other words, just because the DEIR identifies only one brand of PEX pipe that has consistently failed in such a dramatic and rapid fashion, this does not prove that all other PEX pipe has performed or will perform adequately. The lesson that must instead be taken from the widespread failure of UltraPEX pipe is that conformance with ASTM and NSF standards does not, in itself, guarantee that PEX will not prematurely fail in a manufacturer allowed application.[226] The DEIR must be revised to evaluate the Washington State failures and to determine why they failed despite compliance with ASTM and NSF standards.

### 2. Failures in Europe and Canada

25-28

The DEIR is further deficient because it fails to evaluate other reports of widespread PEX failures in Europe and Canada. On August 13, 2003, HCD was forwarded an e-mail that had been sent unsolicited to the Governor's Office of Planning and Research from Scott MacKay, president of EnerMac Consultants, Inc., a consulting firm located in Alberta, Canada.[227] In this e-mail Mr. MacKay stated that he had read that California was considering the approval of PEX piping and that he thought they should be aware that PEX was starting to fail in Washington

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[225] Exhibit E at p. 1.
[226] Exhibits D & E.
[227] Appendix 39, Bill Stack email to Dave Walls (August 13, 2003).

State and in Canada.[228] He also stated that he had studies that also identified PEX failures in Europe.[229] Finally, Mr. MacKay invited California officials to e-mail him back if they needed any further information.

Responses to Public Record Act requests provided by CBSC, HCD and DGS revealed that they neither emailed Mr. MacKay, nor followed up on any of the information that he supplied to HCD.[230] The failure to investigate Mr. MacKay's statements enlarges the scope of fair argument and thus supports a finding that PEX may already be experiencing premature failures in Canada and Europe.[231] By failing to follow up on information that was provided them on PEX failures in Europe, the DEIR lacks foundation for its conclusion that the risk of such impacts is less than significant. 25-28 (Cont.)

### 3. Failure of PEX Fittings

The DEIR is also inadequate because it fails to evaluate reports of widespread failures of PEX fittings by at least two different manufacturers. Numerous class action lawsuits have been filed across the United States as the result of water damage due to these failed PEX fittings.

There have been at least two federal court class actions filed against Zurn for failure of their PEX fittings: *Denise Cox and Terry Cox v. Zurn PEX, Inc.*, filed in Minnesota on August 8, 2007, and *Beverly Barnes and Brian Johnston v. Zurn PEX, Inc.,* filed in North Dakota on October 23, 2007. Lawsuits against Zurn for failure of their PEX fittings have also been filed in Colorado (*Coppersmith Plumbing v. Zurn PEX, Inc.,* filed on May 5, 2008) and Montana (*Nicodemus v. Zurn PEX, Inc.,* filed on May 12, 2008). 25-29

In addition there have been class action suits filed against Kitec for failure of their PEX fittings in Las Vegas (*In re Kitec*, filed on February 15, 2006) and New Mexico (filed March 14, 2007). In Clark County, Nevada alone, there are 31,000 homes in which Kitec pipe fittings failed.

Without any independent evaluation, the DEIR states that, according to the plaintiffs, the failures appear to be related to either a design or manufacturing defect of the fittings. The DEIR then concludes that these failures are "not relevant to the general issue of potential PEX failure.[232]

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[228] *Id.*
[229] *Id.*
[230] Appendix 32, Declaration of Thomas A. Enslow.
[231] *Leonoff v. Monterey County Bd. of Supervisors* (1990) 222 Cal.App.3d 1337, 1348.
[232] DEIR at p. 4.2-10.

This conclusion lacks foundation and ignores the scope of the proposed Project. The Proposed project would approve both PEX pipe and PEX fittings, including the very metal insert fittings that are at the heart of these class action lawsuits.[233] The DEIR dismisses these failures, however, without any investigation of why the failures occurred. These failures are relevant because these fittings were certified to meet all relevant NSF and ASTM performance standards. Moreover, these failures involved fittings from more than one manufacturer. The failure of the DEIR to evaluate these failures whatsoever renders this document legally inadequate. 25-29 (Cont.)

The DEIR must be revised to evaluate why these fittings failed despite meeting relevant NSF and ASTM performance standards and must identify mitigation measures to ensure that such failures do not continue to occur in the future.

**4. The Failures of PEX Pipe and Fittings Underscore the Inadequacy of Reliance on the ASTM and NSF Standards to Ensure the Mechanical Reliability of PEX Pipe**

Dr. Clark testifies in his comments that these failures demonstrate that the quality of PEX tubing and fittings may vary widely despite compliance with required industry performance standards. "While NSF and ASTM standards provide some assurance of quality, these standards do not eliminate the possibility of premature failures. These industry standards are limited in scope and do not fully reflect real life applications."[234] As a result, some PEX tubing and fittings may last 60 years, a few (such as UltraPEX Lot 7 pipe and Zurn brass fittings) may last only a couple of years, and others may start failing at more intermediate periods of time – 10, 15, 20 years.

Moreover, entire batches of PEX do not need to fail for PEX to experience significant failures. Most brands of PEX will likely last for a reasonable lifetime under ideal conditions. However, PEX pipe installations and life experiences are not uniform. PEX pipe is likely to be exposed to a wide variety of environments and building materials, resulting in cumulative attacks on the integrity of PEX pipe that will vary in intensity from installation to installation. As a result, versions of PEX pipe that perform effectively in the vast majority of installations, may still fail spectacularly and prematurely when exposed to numerous commonly encountered environments and building materials. 25-30

Dr. Clark testifies that the foremost problem facing the user and the regulator is the lack of access to data that provides a basis for decisions on

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[233] DEIR at p. 3-5; 24 Cal. Code Regs., Part 5, §§ 604.1, 604.11.1 & Table 6-4.
[234] Exhibits D & E.

individual product adequacy.[235] Indeed, many PEX piping manufacturers have not investigated and are unable to provide data on the behavior of their product under conditions of exposure that regulators should consider for safety, such as sensitivity to sunlight or sensitivity of cumulative exposures.[236]

Because the industry standards relied upon to support the proposed Project fail to ensure adequate protection from individual and cumulative exposures to commonly encountered environments and building materials, reliance on these industry standards is insufficient to reduce the risk of premature failure to a level of insignificance. The insufficiency of these standards is underscored by the reported failures of PEX and PEX fittings that were certified to meet these standards. Recent reports of widespread failures of Kitec PEX-AL-PEX tubing further underscore the inherent susceptibility of this compound to premature failure.[237] 25-30 (Cont.)

The DEIR must be revised to evaluate why these failures occurred despite conformance with NSF and ASTM performance standards. Only by such an evaluation can appropriate mitigation be identified and imposed to ensure that such massive failures do not also occur in California.

## VII. THE DEIR FAILS TO ADEQUATELY EVALUATE POTENTIAL IMPACTS DUE TO THE TENDENCY OF PEX TO PROMOTE THE GROWTH OF SIGNIFICANT BIOMASS WITH ABUNDANT VIRUS-LIKE PARTICLES

The DEIR must also be revised to more meaningfully evaluate the potential health risk posed by the tendency of PEX to promote the growth of significant biomass with abundant virus-like particles.

Numerous studies and articles comparing potable water pipe materials, including variants of PEX, PB, PP, CPVC, copper and steel, have found that PEX displayed the strongest biofilm formation and the strongest promotion of the growth of Legionella bacteria.[238] However, a 2005 study by Dick van der Kooij, et al., suggested that this was only a short-term effect. The 2005 van der Kooij study found that, under experimental conditions, Legionella concentrations in water and biofilms were at the same levels for all materials after 2 years. 25-31

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[235] Exhibit E.
[236] *Id.*
[237] Exhibit D at p. 2; Appendix 28, HeatingHelp.com, Email Thread re IPEX takes care of our customers, (January 5, 2005).
[238] Exhibits F & G.

Based on this study, the DEIR concludes that PEX does not increase the risk of Legionella. As discussed more fully in the attached comments of Michael Krause, Senior Industrial Hygienist for Veritox, Inc., this conclusion fails to fully address the concerns over pathogens and biofilm formation in PEX.

First, the DEIR fails to address the higher short-term rates of Legionella growth in PEX compared to other potable water pipe materials. The 2005 van der Kooij study suggested that the conditions promoting rapid biomass development in PEX caused a large increase (about 100-fold) of the Legionella to attached and suspended biomass ratio, thus resulting in strongly elevated concentrations of Legionella in the water.[239] The study further warned that incidentally elevated Legionella concentrations might remain undetected at a low monitoring frequency. The DEIR must be revised to evaluate the short-term impacts from strongly elevated concentrations of Legionella in water sitting PEX pipe during the first 200 days of installation.

Second, the DEIR fails to address the concerns over the significantly higher biomass found in PEX even after two years and the potential for this biomass to promote virus-like particles. The 2005 van der Kooij study found that, even after two years, the concentrations of attached and suspended biomass in the PEX pipes were up to five times higher than those in copper pipes (750 pg ATP/cm2 for Copper pipe versus 3,700 pg ATP/cm2 for PEX pipe). The 2005 van der Kooij study finds that the long-term effect of PEX on biomass production remains unclear and requires further study.[240] 25-31 (Cont.)

The DEIR erroneously dismisses this finding because it considers only Legionella in the discussion of pathogens. Biofilms, however, can harbor a variety of pathogenic bacteria and viruses in addition to Legionella. These pathogens include E. Coli, Pseudomonas, Mycobacter, Campylobacter, Klebsiella, Aeromonas, Heliobacter pylori, and Salmonella typhimurium.[241] The significantly denser biomass found in PEX pipe may increase the likelihood of such pathogens contaminating drinking water. The 2004 Lehtola study found virus-like particles to be twice as abundant in PEX pipe than in copper.[242] The DEIR itself finds that "higher amounts of biofilm could lead to increased risk of human contact with pathogenic bacteria."[243] Nonetheless, the DEIR fails to evaluate the potential risks associated with the van der Kooij biofilm growth results.

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[239] Appendix 41, Van der Kooij, et al., *Biofilm formation and multiplications of Legionella in a model warm water system with pipes of copper, stainless steel and cross-linked polyethylene* (2005) 39 Water Research at p. 2797.
[240] *Id.*
[241] Exhibit G at p. 2.
[242] *Id.*
[243] DEIR at p. 4.2-6.

Third, the DEIR fails to address the risks of sanitizing PEX pipe when Legionella or other pathogenic outbreaks occur. When problems do develop, the commonly used methods of sanitizing infected piping such as exposing them to heat or high levels of biocide chemicals can damage PEX and lead to premature failure.[244] Such methods would have virtually no effect on the service life of metal pipe.[245]

The proposed Project would approve the use of PEX in schools, daycare facilities, hospitals, health care facilities and nursing homes. The DEIR, however, fails to evaluate the potential for PEX pipe to pose a greater risk to the more vulnerable populations of these occupancies.

25-31 (Cont.)

In its 2004 and 2006 reviews of PEX, OSHPD stated:

> OSHPD is charged with the promulgation of regulations to protect the health and safety of the occupants of hospitals, skilled nursing facilities, licensed clinics and correctional treatment facilities. We must be conservative in the adoption of regulations, considering the vulnerable users of these facilities. Additional research and testing must be performed to demonstrate the safety and reliability of this new material before it can be accepted for use in health facilities.[246]

Because of the uncertainty posed by the tendency of PEX to promote the growth of significant biomass with abundant virus-like particles and the problems posed when PEX pipe must be sanitized after a pathogenic outbreak, the DEIR must reconsider the appropriateness of approving PEX for installation in occupancies that may house particularly sensitive and immune-compromised populations.

## VIII. THE DEIR FAILS TO ADEQUATELY EVALUATE THE PROJECT'S POTENTIAL SOLID WASTE IMPACTS

25-32

The DEIR lacks foundation for its conclusion that the Project will have not significant impact on solid waste. Replacing a building material that lasts the lifetime of the building has a 100% recycling rate with a material that has a 25-year life span and is not recycled in any meaningful amount creates an inherent solid waste impact.

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[244] Exhibit F.
[245] *Id.*
[246] Appendix 7, OSHPD, ISOR, 2006 Code Cycle, Part 5 (Sept. 1, 2006) at p. 3; Appendix 8, OSHPD, ISOR, 2004 Code Cycle, Part 5 (May 2004).

A 2005 report by the San Francisco Department of the Environment examined the solid waste problem posed by various types of plastic pipe and found that PEX was "inherently difficult to recycle."[247] The San Francisco report found that PEX was the only type of plastic piping that no plastic recycler would accept.[248] PEX recycling is hampered by the cross-linking of the molecules. Cross-linked plastics are known as "thermoset" plastics. A thermoset plastic is hardened by curing, creating a three dimensional, inter-connected structure that cannot be remelted or remolded. It is infusible and insoluble. This makes thermosets like PEX very difficult to recycle. The only current recycling option for PEX is to grind it down and use it as filler for another material.[249]

Copper pipe, on the other hand, has an almost 100% recycling rate. The proposed statewide approval of PEX and PEX-AL-PEX would potentially replace a recyclable building material with a material that is inherently not recyclable. The approval of PEX and PEX-AL-PEX thus may potentially add to California's increasing solid waste disposal burden.

Moreover, the shorter lifespan of PEX piping will increase the frequency of necessary re-piping. PEX pipe that meets only the minimum ASTM F2023 standard will need to be re-piped once every 25 years. In contrast, copper piping can easily last 100 years or more. As a result, the number of PEX re-pipes could conceivably quadruple the amount of waste generated due to re-pipes. 25-32 (Cont.)

The DEIR is further deficient due to its faulty assumption that PEX pipe may be reused. As discussed in detail *supra*, all PEX pipe eventually fails due to the consumption of its stabilizers by chlorine and other antioxidants. Because there is no way to tell how much stabilizer a pipe has left, it is simply not credible to assume that a significant number of people would take the risk of reusing PEX pipe from a demolished house.

Finally, the DEIR is deficient because it only looks at the direct impact of PEX pipe on landfill capacity and does not evaluate the cumulative impact of replacing a 100% recycled material with a material that is not recycled in any meaningful amount.

The DEIR's dismissal of this impact lacks foundation and credibility. The DEIR must be revised to more meaningfully evaluate this impact.

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[247] Appendix 42, Rossi, et al., *Plastic Pipe Alternatives Assessment*, San Francisco Department of the Environment, (February 11, 2005) at p. 3.
[248] *Id.* at 14.
[249] *Id.* at 16.

## IX. THE DEIR FAILS TO ADEQUATELY EVALUATE THE EMISSION OF TOXIC SUBSTANCES FROM PEX PIPE BURNED IN BUILDING FIRES

The DEIR is further deficient because it fails to adequately address the risk of toxic smoke when PEX is burned in building fires. The DEIR states that testing and field data indicate that gases emitted from plastic piping are not more toxic than other common building and furnishing materials in structures.[250] The DEIR, however, fails to disclose what toxic gases are actually emitted from PEX and what sort of cumulative danger they may pose to building occupants or firefighters. The mere fact that other building materials may also emit toxic gases when burned does not absolve the lead agency from evaluating the toxic gases that may be emitted from PEX pipe and fittings.

An EIR must contain facts and analysis that provide a road map to how an agency has reached its conclusions.[251] Mere conclusory pronouncements are not sufficient. A legally adequate evaluation of a potential impact "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."[252] 25-33

Here, the DEIR fails whatsoever to disclose or investigate what toxic substances may be emitted from PEX pipe and fittings during a building fire. The failure to disclose what toxic substances may emit from PEX when burned violates CEQA's mandate for full public disclosure and consideration of potential impacts.[253] Because of this omission, important ramifications of the proposed Project may remain hidden from view at the time of Project approval.[254]

The DEIR further assumes, without foundation, that PEX pipe poses a less significant fire risk because plastic piping is installed behind walls.[255] This assumption fails to take into consideration common electrical fires that actually start within building walls. Because such fires are initially hidden from view, toxic smoke from smoldering PEX piping may enter the living space even before occupants are aware there is a fire.

Finally, the DEIR fails to evaluate the cumulative impacts of adding additional toxic-smoke producing material into a building. "Cumulative impacts

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[250] DEIR at p. 4.1-7.
[251] See *Citizens of Goleta Valley v. Board of Supervisors*, *supra*, 52 Cal.3d at 568.
[252] *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 733.
[253] *See Santiago Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 830.
[254] *Id.*
[255] DEIR at p. 4.1-7.

can result from individually minor but collectively significant projects taking place over a period of time."[256]

The DEIR's statement that the quantity of PEX materials is relatively insignificant when compared to all the other materials within the building does not mean that the installation of PEX pipe and fittings does not have significant cumulative impacts. This theory was rejected in *Kings County* because it would allow "the approval of projects which, when taken in isolation, appear insignificant, but when viewed together, appear startling."[257] The proper standard for a cumulative impacts analysis is whether the impacts are "collectively significant."[258] 25-33 (Cont.)

Further information on the toxicity of PEX smoke is needed to fully evaluate whether PEX poses a significant direct or cumulative risk to firefighters and households due to its potential creation of toxic smoke when burned. The DEIR must be revised to disclose what toxic substances may be emitted from PEX pipe during building fires and to determine if such smoke may be individually or collectively significant.

## X. CONCLUSION

This letter and the attached expert comments describe in detail numerous failures of the DEIR to disclose, evaluate and mitigate potential impacts of the Project. As a result, the DEIR 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."[259] Because the DEIR fails to comply with the requirements of CEQA, it may not be used as the basis for approving the Project. 25-34

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

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[256] CEQA Guidelines § 15355, subd. (b).
[257] *Kings County Farm Bureau v. City of Hanford, supra,* 221 Cal.App.3d at p. 720-21.
[258] *Id.* at p. 721, citing CEQA Guidelines § 15355.
[259] *Laurel Heights I, supra,* 47 Cal.3d at 391.

**25-1** The commenter identifies Coalition members, provides general information about the environmental process, summarizes the comments subsequently addressed in greater detail, and describes the exhibits attached to the letter. Please see responses to comments 25-3 through 25-34 for detailed responses to comments.

The commenter states that experts' comments contained in the Exhibits attached to the letter supplement the issues addressed in the letter and "must be addressed and responded to separately." With the exception of Exhibits A, D, and G, we note that the experts' comments are dated July 2001, June 2005, and July 2005, prior to release of the Notice of Preparation (NOP) of this EIR; therefore, these comments cannot pertain to the content or analysis in this EIR and are not responded to separately. Moreover, as noted on page B-4 of Appendix B of the DEIR, comments received by the California Building Standards Commission (BSC) from the Coalition for Safe Building Materials in 2005 were considered for scoping purposes by the EIR preparer. These specifically include the majority of the referenced experts' comments; therefore, issues raised by the comments (including leaching, permeation, failure, biofilm, and fire hazards), are all addressed in the EIR.

Regarding Exhibits A, D, and G, these exhibits provide information that is summarized and referenced throughout comment letter 25, comment letter C, the DEIR, and the RDEIR. Because Exhibits A, D, and G are thoroughly referenced in comment letters and the EIR, and responses that considered the specific information in the exhibits have been prepared, Exhibits A, D, and G can be considered separately addressed in responses to comments and the EIR.

Please also see the following responses to comments, comment letter, and mitigation measure for further, specific, consideration of the issues raised in Exhibits A through G: response to comment 25-3, 25-21, 25-22, 25-31, 27-1, comment letter 27, and RDEIR Mitigation Measure 4.4-3 (see RDEIR page 4.4-22).

**25-2** The commenter provides general information concerning the fundamental informational and public disclosure requirements of CEQA. Please see responses to comments 25-3 through 25-34 for detailed responses to the comments provided in the letter.

**25-3** The commenter raises concerns about the project description. In particular, the commenter states that the DEIR does not accurately describe the different variations of PEX and PEX fittings that could be approved by the project. The commenter is also concerned about certain underground uses of PEX (see response to comment 25-4).

An accurate and complete project description is provided in Chapter 3, "Description of the Proposed Project." The project description provides an overview of the project and describes the different methods for cross-linking polyethylene (see DEIR page 3-1). The project is the proposed adoption of plumbing code regulations that would authorize the statewide use of PEX tubing for various hot and cold water (including potable water) plumbing applications. PEX would be adopted by removing the prohibition against the use of PEX tubing for potable water uses in the CPC. Cross-linked polyethylene, or PEX, is a form of plastic tubing. As noted in the DEIR, there are three commercial methods used to cross-link polyethylene, and thus, three classes of PEX. Because these different classes of PEX are formulated in different ways, they may perform

differently. Different chemicals are added to PEX resin (including antioxidants, ultraviolet blockers, fillers, and pigments) to prevent oxidation and ultraviolet light from weakening the tubing.

Though individual formulations may vary, PEX is a well-established product and the constituents used to make PEX pipe are known and understood. As described in response to comment C-5, there are not 271 chemically distinct PEX products, but 27 PEX formulations made by 19 different manufacturers. A detailed description of all the 27 variations in PEX formulations, PEX fittings, and PEX manufacturing methods is not necessary to effectively evaluate the environmental impacts of the proposed project. As described in Section 3.3, "Project Objectives," the BSC's objective in proposing the regulations is to provide an alternative plastic hot and cold water plumbing material for use in California. The proposed regulations do not specify particular classes of PEX, PEX formulations, PEX fittings, or PEX additives. A detailed description and evaluation of the 27 variations of PEX would not meaningfully enhance the evaluation and review of the environmental impacts of the proposed project. An EIR should describe the proposed project in a way that will be meaningful to the public, to the other reviewing agencies, and to the decision makers, and does not need to provide extensive unnecessary detail.

The CEQA Guidelines Section 15124 (Project Description) requires that:

> The description of the project shall contain the following information but <u>should not supply extensive detail beyond that needed</u> for evaluation and review of the environmental impact [underline added for emphasis].

Because variations in PEX formulations are relatively minor, and that constituents in those formulations are revealed to NSF for testing and certification during the NSF/ANSI Standard 61 formulation review process (Bestervelt, pers. comm., 2008:3), detailed information on specific PEX products is not necessary to thoroughly evaluate environmental impacts. Assessment of all PEX formulations, variations, fittings, and manufacturing methods would not inform or alter any of the DEIR's impact conclusions. Such detailed information is not necessary for the evaluation of solid waste or air quality impacts. Environmental impacts associated with water quality, public health, and hazards also do not require detailed information on specific PEX formulations because formula variations are minor. Water quality impacts involve the comparison of chemical concentrations found in PEX leachates to established water quality standards and other considerations, and impacts associated with the premature failure of PEX tubing, flooding, and incidences of mold involves the certification of PEX tubing to established chlorine resistance standards. See response to comment C-5 for further discussion.

As described in response to comment C-5, the identification of chemicals that might be included in possible future formulations of PEX would be considered too speculative for evaluation, and further consideration is not necessary. Furthermore, as described in response to comment 25-15, PEX tubing would continue to be certified in accordance with approved water testing protocols. Protocols are designed to consider potential PEX extractants based on a formula review of each PEX product. Formulation information for all material in contact with water would be provided to identify potential extractants. This includes detailed information from manufacturers and their suppliers on composition, known or suspected impurities, and manufacturing processes for all wetted components in products submitted for evaluation (Bestervelt, pers. comm., 2008). Review of future formulations would identify potential extractants. In addition, PEX tubing is an approved pipe material in the UPC, International Plumbing Code, and the International Residential Plumbing Code. These plumbing codes require PEX piping to be third-party certified to applicable standards for various performance criteria, depending on the type of use. For example, three standards are used for testing the chlorine resistance of PEX used to distribute hot

and cold water (see response to comment 29-2). PEX tubing certified to ASTM F2023 and NSF P171 standards can have service lifetimes of 40 to 80 years.

Finally, the commenter offers no evidence that the various PEX manufacturing methods, additives, and recipes resulting in differing chemical compositions create any health or environmental effects, and offers no facts that identify a potential for a significant impact that requires analysis under CEQA.

**25-4** As discussed in response to comment 25-3, PEX fittings are part of the project description and are fully considered in the EIR (see DEIR pages 3-4 and 3-5). In addition, potential impacts associated with PEX fittings are discussed in response to comments 25-29 and 25-30.

The proposed project would allow installation of PEX tubing "below the slab" (i.e., in the ground) under certain circumstances. As described in Mitigation Measure 4.4-3 (see RDEIR page 4.4-22), PEX must be installed "above the slab" unless the PEX is sleeved using a material impermeable to solvents and petroleum products. Adoption of Mitigation Measure 4.4-3 would reduce potentially significant impacts associated with PEX permeation from contaminated soil or groundwater to a less-than-significant level.

**25-5** The comment summarizes information contained in the DEIR and human health risk information for MTBE and t-butanol (TBA). Also, as described in response to comment C-2, C-3, Section 4.4, "Water Quality" of the RDEIR, and page 5-8 of the RDEIR regarding cumulative water quality impacts, the addition of significant new information to the EIR resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact.

**25-6** The commenter raises questions about the leaching of Proposition 65 chemicals from PEX tubing. This comment is thoroughly addressed in responses to comment letter C (please see response to comment C-8). Based on the information available at the time the DEIR was prepared, there were three Proposition 65 compounds (butyl benzyl phthalate, toluene diamine, and carbon black) believed to be used in some PEX formulations for which no California or federal drinking water criteria exist (see DEIR page 4.4-13). As described in response to comment letter 27-1, Table 4.4-1 of the DEIR lists chemicals potentially present in PEX tubing, including butyl benzyl phthalate and toluene diamine. Since publication of the DEIR, additional information on Proposition 65 compounds and PEX was identified. In a June 23, 2008 DEIR comment letter from NSF (see comment letter 27), butyl benzyl phthalate and toluene diamine were identified as chemicals not found in PEX tubing. As stated in the letter, NSF has 20 years of experience in evaluating PEX piping. Based on NSF's experience in reviewing the formulations of these products and conducting testing on PEX tubing, NSF has not seen and would not expect to see butyl benzyl phthalate or toluene diamine in the formulation for PEX or in chemical extraction test results of PEX tubing. Furthermore, these compounds are associated with polyurethane, and polyurethane is not an ingredient in PEX nor is it used as a liner or coating for PEX in potable water applications (Bestervelt, pers. comm., 2008). Therefore, no leachate results for butyl benzyl phthalate and toluene diamine are available from NSF. Because NSF has not seen and would not expect to see butyl benzyl phthalate and toluene diamine in the formulation for PEX or in chemical extraction results of PEX tubing, and the commenter does not cite any evidence indicating the presence of these compounds in the PEX formulation or in PEX leachate, it can be concluded that butyl benzyl phthalate and toluene diamine do not leach from PEX. To the extent that carbon black may be present in some PEX products, it would not be present in a form that would allow it to be released into water, and thus is not a concern for drinking water, or environmental or human health.

**25-7** As a preface to more detailed comments about specific mitigation measures, the commenter restates mitigation measures from the DEIR related to the leaching of chemicals from PEX tubing. (See responses to comments 25-8 through 25-12). As described in the RDEIR and in responses to comment letter C (especially C-2 and C-3), mitigation measures 4.4-1, 4.4-2, and 5-1 have been removed from the EIR.

**25-8** As described in response to comment C-3, the revised water quality significance threshold addresses the potential for public health impacts and considers the California primary maximum contaminant level (MCL) of 13 µg/L for MTBE (also defined as the California Office of Environmental Health Hazard Assessment [OEHHA] Public Health Goal, in this case), the NSF MTBE standard of 100 µg/L, and other evidence.. As detailed in responses to comments C-3 through C-7, the addition of significant new information to the EIR resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact. Please refer to Sections 4.4 and 5 of the RDEIR, and responses to comments in letter C. Proposition 65 chemicals are addressed in response to comment C-8.

NSF International, founded in 1944 as the National Sanitation Foundation, is a not-for-profit, non-governmental testing organization that has developed product standards and provided third-party conformity assessment services to government, users, and manufactures/providers of products and systems (McLellan, pers. comm., 2008). NSF has been developing standards for testing and certification of plastics since 1965. NSF is also one of only a handful of organizations certified by ANSI (American National Standards Institute) to perform testing and certification to ANSI/NSF Standard 61. Others include International Association of Plumbing & Mechanical Officials, Underwriters Laboratories Inc., and the Water Quality Association.

NSF currently certifies over 280 PEX products produced at 50 manufacturing sites to the health-effects requirements of ANSI/NSF Standard 61, and has 20 years of experience in evaluating PEX piping. A survey of the Association of State Drinking Water Administrators found that 45 states have requirements for water treatment and distribution components to comply with NSF/ANSI Standard 61. Specifically, California Code of Regulations Title 22 Section 64591 requires drinking water system components to be tested and certified to NSF/ANSI Standard 61. In addition, the 2007 California Plumbing Code Section 604.1 requires all pipe, tube, and fittings carrying water used in potable water systems intended to supply drinking water to meet the requirements of NSF/ANSI 61. NSF/ANSI Standard 61 is the only American National Standard that evaluates the health effects of chemical extraction from drinking water system components (Bestervelt, pers. comm., 2008).

Before 1988, the U.S. Environmental Protection Agency (USEPA) issued letters of approval to manufacturers for products intended for contact with drinking water. Early on, USEPA recognized a need for a more thorough and standardized evaluation process for these products, yet realized that their limited resources prevented expansion of this program. As part of their assessment, they examined whether the evaluation of drinking water additives for health effects should be a government or private sector program. As a result, in 1984, the USEPA issued a request for proposals for independent, not-for-profit organizations to develop standards and a certification program for products used to treat or distribute drinking water. In response to a competitive request for proposals from USEPA in 1984, a consortium led by NSF International agreed to develop voluntary third-party consensus standards and a certification program for all direct and indirect drinking water additives. Other members of the consortium include the American Water Works Association Research Foundation, the Association of State Drinking Water Administrators, the Conference of State Health and Environmental Managers, and the American Water Works Association. In October 1988, NSF/ANSI 61 Drinking Water System

Components-Health Effects was first published. NSF/ANSI 61, and subsequent product certification against it, has replaced the USEPA Additives Advisory Program for drinking water system components. USEPA terminated its advisory role in April 1990 (Bestervelt, pers. comm., 2008).

NSF/ANSI Standard 61 is overseen by the NSF Drinking Water Additives Joint Committee comprised of representation from the regulatory community, the manufacturing industry, and user groups. The American National Standards Institute (ANSI) accredits NSF standards development procedures to ensure a balanced committee of stakeholders develops the standards in an open process. Providing technical oversight is the NSF Council of Public Health Consultants. The council is a group of over 30 representatives from academia and local, state, and federal regulatory agencies that provide technical advice and oversight of the NSF Standards. A standing task group is the NSF Health Advisory Board. The group consists of toxicologists from USEPA, Health Canada, state and provincial agencies as well as toxicologists from industry and private consulting firms. This group is responsible for reviewing and approving all allowable contaminant concentrations that are published in NSF/ANSI Standard 61 (Bestervelt, pers. comm., 2008).

NSF develops national standards, provides learning opportunities through its Center for Public Health Education, and provides third-party conformity assessment services while representing the interests of all stakeholders. The primary stakeholder groups include industry, the regulatory community, and the public at large. NSF is widely recognized for its scientific and technical expertise in the health and environmental sciences. Its professional staff includes engineers, chemists, toxicologists, and environmental health professionals with broad experience both in public and private organizations. Serving manufacturers operating in 80 countries, NSF is headquartered in Ann Arbor, Michigan, USA (NSF 2008a).

**25-9** Please see response to comment 25-6 and C-8 regarding the presence of butyl benzyl phthalate, toluene diamine, and carbon black in the PEX formulation. Based on information identified since publication of the DEIR, it can be concluded that butyl benzyl phthalate and toluene diamine are not present in the PEX formulation and therefore do not leach from PEX. To the extent that carbon black may be present in some PEX products, it would not be present in a form that would allow it to be released into water, and thus is not a concern for drinking water, or environmental or human health.

**25-10** As described in response to comment 25-8 and C-3, the revised water quality significance threshold addresses the potential for public health impacts and considers the California primary maximum contaminant level (MCL) of 13 µg/L for MTBE (also defined as the California Office of Environmental Health Hazard Assessment [OEHHA] Public Health Goal), the NSF MTBE standard of 100 µg/L, and other evidence.. As detailed in responses to comments C-3 through C-7, the addition of significant new information to the EIR resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact. Please refer to Sections 4.4 and 5 of the RDEIR, and responses to comments on letter C. Proposition 65 chemicals are addressed under response to comment 25-9 and C-8.

Regarding "Mitigation Measure 4.4-1's blind reliance on NSF standards," please note that the RDEIR deletes the mitigation measure for the reasons described on pages 4.4-16 and 4.4-18. Also see response to comment C-3.

**25-11** The RDEIR deletes mitigation measure 4.4-2 for the reasons described on pages 4.4-19 and 4.4-20 of the RDEIR. See also response to comment C-7 regarding taste and odor impacts. As

described in responses to comments C-2, C-3, and C-4, DEIR comment letters raised issues that resulted in the addition of significant new information to the EIR, resulting in changes to the significance threshold for water quality, and changes to the significance determination for taste and odor.

**25-12** The commenter suggests revisions to Mitigation Measure 5-1. These comments are acknowledged. As described in response to comment 25-11, the DEIR comment letters raised issues that resulted in the addition of significant new information to the EIR, resulting in recirculation based on changes to the significance threshold for water quality, and changes to the significance determination for taste and odor and cumulative leaching impacts. As described on pages 5-7 and 5-8 of the RDEIR, the cumulative impact on drinking water from chemicals leaching from PEX in combination with certain environmental conditions would be less than significant and no mitigation is required. See also pages 1-1 through 1-3 of the RDEIR for a summary of the significant new information that was added to the EIR.

**25-13** Based on information received after publication of the DEIR, the threshold of significance for water quality was revised (see responses to comments C-3 through C-7). Based on this threshold change, significance determinations for two water quality impacts and one cumulative impact were also revised. Please refer to Sections 4.4 and 5 of the RDEIR, and responses to comments in letter C.

The commenter states that the DEIR fails to evaluate or disclose potentially significant impacts from the leaching of ETBE from PEX pipes. In fact, ETBE information identified during preparation of the DEIR is clearly presented in the DEIR. ETBE is not regulated by the federal government or the State of California, and no water quality criteria defined for this chemical.

As described in response to comment 25-24, dozens of studies, documents, articles, and other sources were reviewed and analyzed during preparation of the DEIR. Based on that review, only one study related to ETBE was identified (i.e., Durand and Dietrich 2007). Information from this study is fully disclosed and summarized on page 4.4-14 and Appendix E of the DEIR. Because only one study of ETBE was identified during preparation of the DEIR, it was determined that development of a separate threshold of significance for ETBE was not warranted. In addition, establishment of a significance threshold for leaching of ETBE from PEX based on extremely limited information (i.e., a single journal article) is not grounded in science and not reasonably supportable. Furthermore, because ETBE is structurally similar to MTBE, it is reasonable to use the water quality criteria for MTBE as a surrogate for ETBE (Chaudhuri, pers. comm., 2008), and it can be reasonably assumed that any health or taste and odor impacts associated with ETBE would not be substantial water quality impacts.

Supplemental research conducted since publication of the DEIR identified additional ETBE information that supports the approach of not establishing a separate significance threshold for ETBE. Ethers that are structurally similar to MTBE include ETBE and tertiary-amyl methyl ether (TAME). No studies have been reported to date on the carcinogenicity of ETBE or TAME. Published data on the genotoxic potential of ETBE and TAME are few in number; ETBE and TAME tested negative in the Salmonella reverse mutation assay, and TAME did not induce micronuclei in mouse bone marrow cells following exposure in vivo (OEHHA 1999).

The commenter quotes from the DEIR: “it would require speculation to reach a conclusion regarding the significance of any potential leaching of chemicals lacking drinking water standards into drinking water.” However, the commenter misconstrues the statement. The first part of the statement clearly refers to antioxidant chemicals, and the statement should not be interpreted to apply to ETBE (DEIR page 4.4-14, third paragraph).

In addition, the commenter refers to Sections 21100 and 21064 of the Pub. Res. Code (comment letter 25, page 25). Section 21100 refers to an EIR on proposed state projects, and section 21064 defines the term "negative declaration." These sections are not relevant to the comment.

**25-14** The commenter cites language from Appendix E of the DEIR concerning Bisphenol A (BPA), and takes issue with NSF's BPA standard. Appendix E of the DEIR is a memorandum from Ishrat Chaudhuri, Ph.D., DABT (Diplomate of the American Board of Toxicology). The purpose of the memorandum is to summarize the results of a review of peer-reviewed journal articles and other reports that have studied the issue of leaching of organic compounds from PEX piping and other types of piping materials used for potable water applications. As described on page 5 of the memorandum, the only mention of BPA in any of the journal articles on water quality concerns associated with PEX was the listing of chemicals from Tomboulian et al. (2004). The article lists chemicals associated with polyethylene, HDPE and PEX. Because all of these pipes were grouped together, it is not clear if BPA is specifically associated with PEX, or with one of the other types of pipe. No published articles were identified that identified BPA as one of the components of PEX.

Since publication of the DEIR, additional information on BPA and PEX was received. In a June 23, 2008 DEIR comment letter from NSF (see comment letter 27), BPA is listed as one of the chemicals that is not a component of PEX tubing. As stated in the letter, NSF has 20 years of experience in evaluating PEX piping. Based on NSF's experience in reviewing the formulations of these products and conducting testing on PEX tubing, NSF has not seen and would not expect to see BPA in the formulation for PEX or in chemical extraction test results of PEX tubing (Bestervelt, pers. comm., 2008). Therefore, no leachate testing results for BPA are available from NSF. The commenter cites a letter from Thomas Reid that includes comments on BPA (see comment letter 25, Appendix A, page 7). The letter cites no evidence indicating that BPA is an ingredient in PEX, and states, "a cursory consideration of PEX resin and pipe manufacturing does not show a reason to expect bisphenol A to be present in the pipe." Because NSF has not seen and would not expect to see BPA in the formulation for PEX or in chemical extraction results of PEX tubing, and the commenter does not cite any evidence clearly indicating the presence of BPA in the PEX formulation or in PEX leachate, and cites evidence that BPA is *not* present in PEX, it can be concluded that BPA is not found in PEX and therefore does not leach from PEX, and this issue is not evaluated further in this EIR.

**25-15** The commenter states "the DEIR fails to provide the entire list of compounds for which NSF standards fail to meet California standards." As described in response to comment 27-1 and C-5, the DEIR identifies chemicals for which the California primary or secondary MCL, notification, response, or Proposition 65 Safe Harbor levels are lower than the criteria used by NSF (see Table 4.4-1). Chemicals that are shaded in Table 4.4-1 are those for which the California primary or secondary MCL, notification, response, or Proposition 65 Safe Harbor levels are lower than the criteria used by NSF. These chemicals are benzene, cadmium, carbon disulfide, MTBE, TBA, benzo(a)pyrene, and toluene. NSF was asked to provide a list of the chemicals that have been detected at concentrations exceeding the California criteria. In a letter dated March 12, 2008, Mr. Clif McLellan of NSF stated that the only chemicals found to exceed California MCLs or notification levels in some proportion of pipes tested were MTBE and TBA.

The commenter raises concerns about potential future impacts from other California regulated compounds, and states "as proposed, the project would approve any current or future versions of PEX that meet NSF standards," implying that current or future PEX formulations would only be required to meet the requirements of ANSI/NSF Standard 61. Please refer to response to comment C-3. The RDEIR uses a new significance threshold based on new substantial evidence received by BSC after circulation of the DEIR.

Please also see comment C-5 regarding future PEX formulations and potential future impacts. The commenter provides no peer-reviewed scientific journal articles, third-party reports, or other evidence that identifies any specific impacts, or that demonstrate that such potential future impacts from future variations of PEX are a concern. In the absence of specific facts, this comment does not identify an impact or concern that must be analyzed under CEQA. The potential future impact from future variations of PEX would be considered too speculative for evaluation, and further consideration is not necessary (see CEQA Guidelines sec. 15145).

In summary, NSF tests only for those chemicals that are expected to be present in the PEX formulation. Even though there may be a number of chemicals for which California standards are more stringent than NSF standards, many of these chemicals are not tested by NSF because they are not expected to be present in the PEX formulation. Furthermore, the RDEIR—based on new evidence received since publication of the DEIR—utilizes  utilizes a new threshold of significance for water quality. As detailed in responses to comments C-3 through C-7, the addition of significant new information to the EIR resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact. Please refer to Sections 4.4 and 5 of the RDEIR, and responses to comments on letter C.

**25-16** The commenter states that Mitigation Measure 4.4-3 will reduce permeation impacts, but "it is insufficient to reduce the risk of permeation impacts to a level of insignificance" because the proposed project would allow the installation of "unprotected PEX" in the ground. As described in responses to comments C-2, C-3, and C-4, DEIR comment letters raised issues that resulted in the addition of significant new information to the EIR, resulting in changes to the significance threshold for water quality, and changes to mitigation measure 4.4-3 (see page 4.4-22 of the RDEIR). The commenter criticizes the mitigation measure from the DEIR for its reliance on a Phase I site assessment as mitigation. Since publication of the DEIR, it has come to light that sleeving of plastic pipes that would otherwise be installed in bare soil is common construction practice. Therefore, the mitigation measure deletes reference to a Phase I site assessment, and states that installation of PEX for potable water use below the slab is prohibited unless the PEX is sleeved by a metal or other material that is impermeable to solvents and petroleum products (see RDEIR page 4.4-22).

The commenter also refers to possible future spills as a reason why adoption of the mitigation measure would not reduce the potentially significant impact to a level that is less than significant. Future spills would be considered anomalous and not a typical environmental condition for which to conduct environmental analysis under CEQA. In any case, this argument is rendered moot by the revised mitigation.

The commenter references studies related to permeation: a 2002 report published by the United States Environmental Protection Agency (USEPA) and a 1991 study published in the Journal of the American Water Works Association. These reports are not necessarily relevant to the proposed project as they do not appear to relate to specifically to PEX. As with the discussion above, however, this argument is rendered moot by the revised mitigation.

The commenter states that the CALPASC (California Professional Association of Specialty Contractors) would agree to the installation of PEX under concrete slabs if PEX was inserted into an ABS sleeve for island sink environments. Mitigation Measure 4.4-3 allows PEX to be installed below the slab if the "PEX is sleeved by a metal or other material that is impermeable to solvents and other petroleum products." The proposed project would not allow installation of "unprotected PEX under slab."

**25-17** As described in response to comment 25-16, DEIR comment letters raised issues that resulted in the addition of significant new information to the EIR, resulting in changes to the significance threshold for water quality, and changes to mitigation measure 4.4-3 (see page 4.4-22 of the RDEIR). The commenter criticizes the mitigation measure from the DEIR for its reliance on a Phase I site assessment as mitigation. Since publication of the DEIR, it has come to light that sleeving of plastic pipes that would otherwise be installed in bare soil is common construction practice. Therefore, the mitigation measure deletes reference to a Phase I site assessment, and states that installation of PEX for potable water use below the slab is prohibited unless the PEX is sleeved by a metal or other material that is impermeable to solvents and petroleum products (see RDEIR page 4.4-22). This requirement would provide adequate human health protection, would prevent solvent-based termiticides and pesticides from permeating PEX, and reduce this potentially significant impact to a less-than-significant level.

The commenter states that the DEIR's evaluation of permeation impacts is inadequate because it incorrectly assumes that pesticides will not permeate PEX. Potential impacts associated with permeation of PEX tubing by solvents, gasoline, pesticides, and termiticides are thoroughly addressed in the DEIR. Analysis by Hoffman (2005) and Lee (1985) show that pesticides and termiticides would not permeate PEX tubing, and information available from PEX manufacturers (Vanguard Piping Systems 2000) show that PEX should not be installed where it might come into contact with organic solvents, petroleum distillates, or other chemicals (see DEIR page 4.4-18). This evidence demonstrates that the proposed project would not result in a significant water quality impact related to permeation of PEX tubing by pesticides and termiticides because these substances were not found to cause a substantial impact on human health.

Based on the Hoffman study, the DEIR states "theoretical calculations on permeation of termiticides indicated that these types of organic compounds *would not* permeate PEX piping," and therefore this issue does not represent a concern. The commenter indicates that the Hoffman study does not appear to evaluate termiticides and pesticides that contain solvents, but does not provide any evidence for this statement. Furthermore, the commenter does not provide any evidence that the proposed project would cause a substantial impact on human health. Instead, the commenter notes that "permeation is probable" from a Plastic Pipe Institute study, and cites New Zealand report. The performance of PEX tubing in New Zealand is subject to different environmental conditions and drinking water regulations than those found in the State of California, and therefore does not provide a proxy for the permeation of PEX by termiticides in California.

Furthermore, as discussed in the DEIR, evidence shows that use of PEX tubing should be restricted under certain contaminated soil conditions (such as soil contaminated by termiticides and pesticides) and manufacturer's recommend restrictions in certain instances (Vanguard Piping Systems, Inc. 2000). Manufacturer installation handbooks regularly provide warnings such as "must not be installed underground in areas of known chemical contamination of the soil, such as organic solvents or petroleum distillates, or where there is a high risk of chemical spills."(Id.). Other installation guidelines provide similar warnings and include the following: Vanguard *Installation Guidelines for the Vanguard Vanex and Vanex Plus+ PEX Plumbing System*, Vanguard Piping Systems, Inc., McPherson, KS, 2000; WIRSBO, *Radiant Floor Installation Handbook*, UPONOR Corporation, Apple Valley, MN, 1992; *UltraPex Installation Guide*, Plasco Manufacturing Ltd., Section 2 – Limitations, UV Light, June 1996; and *PlumbBetter IPEX Piping Systems Installation Guide*, Handling and Storage, Denver, Colorado, 2001. The DEIR assumes that use of PEX would comply with all applicable standards, codes, manufacturer's instructions, and regulations, and noncompliance with such standards, codes, and manufacturer's guidelines would represent an anomalous condition that is not part of the baseline condition for purposes of environmental analysis under CEQA.

Please also see response to comment 25-16 for a discussion of potential permeation impacts and Mitigation Measure 4.4-3.

**25-18** This comment is a prefatory summary of topics that are developed more fully in comments 25-19 through 25-30. Please see response to comments 25-19 through 25-30. This comment provides no new material that is not developed more fully in subsequent comments.

**25-19** The commenter argues that the DEIR is insufficient because it fails to mitigate for the potential failure of PEX through exposure to chloramines and chlorine dioxide. Thus, Mitigation Measure 4.2-1 which addresses continuously recirculating systems that use hot chlorinated water should be extended to include all such systems that also use either chlorine dioxide or chloramines for disinfectant.

Potable water is commonly treated with disinfectants to make it suitable for drinking. The primary disinfectants added in post-disinfection treatment in the United States are chlorine, chloramines, and chlorine dioxide. Chlorine is the most popular disinfectant, followed by chloramines. However, use of chlorine has been decreasing because chlorine disinfection byproducts, such as trihalomethanes, are considered a health concern. As noted in the DEIR, a recent trend in California is to move from chlorine to chloramines for water supply disinfection. Because this trend is recent, limited studies and information are available on chloramines.

During preparation of the DEIR, dozens of studies, documents, articles, and other sources were reviewed and analyzed. A number of documents and other references cited in the DEIR are listed in Section 9, "References" of the DEIR, and particularly relevant studies and references are included as appendices. This review yielded no documented instances of premature failure of PEX due to exposure to chloramines or chlorine dioxide, and these issues were not evaluated in the DEIR. As summarized in the DEIR, "…impacts related to the potential degradation of pipes from oxygen and chloramines are not discussed because a review of existing studies did not support claims made regarding potential hazards. No studies were available that tested for degradation of PEX by these materials and there is no reason to believe that these materials would degrade PEX at a rate that is any faster than they would degrade other piping materials" (DEIR, page 4.2-1). The only evidence this comment offers to demonstrate that PEX exposure to oxidants such as chlorine, chloramines, or chlorine dioxide may cause it to prematurely fail is a memo from Dr. Robert Clark (comment letter 25, Appendix D, p. 2). The relevant language reads "after scientific study of numerous cases, including residences in an area where water was not chlorinated, it is my conclusion that this material, in typical use for hydronic heating, will not survive for near the 25 year warranted period." A review of this Appendix reveals no data offered in support of this assertion. Dr. Clark offers no summary of the relevant studies or other quantitative results that would make this assertion persuasive. In the absence of specific data, this assertion is not considered substantial evidence on which to base a conclusion.

The available information suggests that even under conditions where PEX is exposed to chlorine, PEX is markedly durable (Jana Laboratories, *Chlorine Resistance Testing of Cross-Linked Polyethylene Piping Materials* n.d. at p. 2). Further studies by Jana Laboratories suggest that the interaction of PEX with chlorine, chloramines, and chlorine dioxide is markedly similar, despite the fact that more information is available for the interaction of PEX with chlorine (Jana Laboratories, *An Examination of the Relative Impact of Common Potable Water* Disinfectants, [Chlorine, Chloramines, and Chlorine Dioxide] on *Plastic Piping System Components*, n.d.). Despite the relative paucity of studies examining chloramine and chlorine dioxide resistance compared to information available for chlorine, some evidence suggests that PEX systems exposed to chloramines rather than chlorine last up to 40% longer (ASTM F2023-08, note 1). Thus, the conservative protection in Mitigation Measure 4.2-1 only applies to chlorine. It should

be noted that the Jana Laboratories study by Chung, et. al., examines "plastic piping system components" and not PEX tubing in particular.

It is worth grounding the reader and the commenter in the impact language described in the DEIR, which analyzes the health risks that may occur if there are widespread failures which lead to flooding, which may lead to growth of toxic mold. This impact requires pipe failure as one step in a chain of cause. Based on the threshold of significance identified in the DEIR, the project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. Premature pipe failure (though not anticipated for PEX with a certified life span of 40 years) in and of itself would require attention and repair in the affected building resulting in a potential economic impact, but would not constitute a significant environmental impact for purposes of this EIR. The studies from Jana Laboratories cited above define the failure of PEX pipe as the loss of fluid through the wall of the pipe. Images and narrative descriptions in these studies show that when PEX does fail after lengthy service life, it develops longitudinal cracks that pass water. The mode of failure for PEX would thus be immediately noticeable and the residents or occupants of the structure would be able to respond quickly, thus reducing the long-term prevalence of moisture which could potentially lead to mold. The failure mode of PEX itself thus reduces the likelihood of the relevant impact which is the health effects that may result from mold (DEIR at p. 4.2-9). There are no scientific studies, reports, or other substantial evidence available linking failure of PEX to mold infestation. Therefore, Mitigation Measure 4.2-1 applies to chlorine based upon the sufficiency of available information.

The commenter also contends that Mitigation Measure 4.2-1 lacks feasibility and enforceability, and refers the reader to an unrelated discussion of Mitigation Measure 5-1 that addresses leaching of chemicals *from* PEX into the water supply. All construction in California is subject to extensive on-site review by building inspectors from relevant jurisdictions. This review process routinely involves application of very specific technical knowledge and specifications. As a baseline assumption, reliance upon this review process is reasonable. To argue otherwise begs the adequacy of this process generally. The application of relevant standards that pertain to PEX through this process is therefore reasonable.

Furthermore, as evidenced by the *Express Terms for Proposed Building Standards of the BSC, Regarding Proposed Amendment of the 2007 CPC for the CCR, Title 24, Part 5, Table 6-4*, dated July 11, 2008, BSC proposes to include the following language: "PEX tubing shall meet the requirements of NSF P171 CL-R or an equivalent standard when used in continuously recirculating hot water systems where chlorinated water is supplied to the system and the PEX tubing is exposed to the hot water 100% of the time." Because this language would be included as a footnote to Table 6-4 of Title 24, Part 5 of the CPC, it would be enforceable.

Jurisdictions that switched back to chlorine from chloramines would be covered by Mitigation Measure 4.2-1 because the mitigation specifically mentions "…where *chlorinated* water is supplied to the system."

**25-20** This comment argues that the industry consensus standard for PEX tubing, ASTM F2023, is insufficiently protective for traditional water systems, and urges BSC to adopt the more stringent standard offered by NSF P171 CL-R (which is not an industry consensus standard). An industry consensus standard is a voluntary consensus standard developed by representatives of sectors that have an interest in the use of the standard. The commenter provides no objective, third-party evidence that PEX tubing used in traditional systems and certified to the ASTM F2023 standard does not have a product lifetime of least 40 years. The commenter's argument is based on differences in the two testing protocols for each standard. ASTM F2023 does not incorporate a

0.5 “design factor” that the NSF P171 standards contain. A design factor is multiplied by the lifetime requirement of a standard to account for unexpectedly harsh service conditions (see DEIR page 4.2-11). Traditional water systems expose piping to hot water 25% of the time, and continuously recirculating systems expose piping to hot water 100% of the time. Because hot water enhances chlorine degradation of PEX tubing, 100% hot water systems degrade PEX tubing faster than traditional systems. ASTM F2023 only applies to traditional systems.

The product lifetime for PEX tubing certified to the ASTM F2023 standard is 50 years (see DEIR Appendix C, memorandum from Ishrat Chaudhuri, April 7, 2008). The product lifetime for PEX tubing certified to NSF P171 CL-TD (for traditional systems) and NSF P171 CL-R (for 100% hot water continuously recirculating systems) is 40 years. As described in response to comment 25-19, the impact language in the DEIR analyzes the health risks that may occur if there are substantial premature tubing failures which lead to flooding and mold. Based on the threshold of significance identified in the DEIR, the proposed project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. PEX tubing in tradition systems certified to ASTM F2023 and NSF P171 CL-TD would have a product lifetime of at least 40 years, and would not prematurely fail. PEX tubing used in continuously recirculating systems exposed to hot water 100% of the time could prematurely fail if not certified to an appropriate standard, and this would be a potentially significant impact. Therefore, to reduce this impact to a level of less-than-significant, Mitigation Measure 4.2-1 requires that when installing PEX for continuously recirculating systems in jurisdictions that use chlorine for water disinfection, PEX tubing must be certified to NSF P171 CL-R or an equally rigorous standard.

The commenter references the “industry accepted standard of a 0.5 design factor” in association with the ASTM F2023 standard. As described below, this statement is not accurate, and the commenter offers no evidence to support this claim. According to Lubrizol, at page 4 the commenter states that the ASTM F2023 testing “doesn’t use a typical 0.5 design factor and has extrapolated test data of 50 years” (Boyher, pers. comm., 2007). In addition, a summary of chlorine resistance standards in a recent trade magazine article does not associate the 0.5 design factor with ASTM F2023 (*Plumbing Engineer* 2004). Furthermore, the commenter offers no specific data that demonstrates why such a conservative halving of the expected service life for PEX used in traditional systems is useful or warranted. As described in the DEIR, the ASTM F2023 standard does not use the 0.5 design factor.

The commenter also submits as evidence a letter from Christopher P. Boyer, Flexible Products Business Manager, with Lubrizol Advanced Materials, Inc. (Lubrizol), a PEX manufacturer (see comment letter 25, Appendix 31). The Lubrizol data cited in the comment argues that polybutylene (PB) pipe failed after meeting ASTM F2023 when subject to “U.S. water conditions.” This data is vague and not clearly relevant. PEX is not PB pipe. It is true that both PEX and PB are members of the polyolefin family, but that does not mean that PEX will behave similarly to PB (Chaudhuri, pers. comm., 2008). Also, national water conditions are undefined, are highly variable, and may not be applicable to water conditions in California, which are also highly variable.

**25-21** The commenter notes that the DEIR does not evaluate potential impacts of premature failure of PEX in instances where PEX is used for hot water applications above 140 degrees Fahrenheit (i.e., in health care and hospital applications). The DEIR uses the best available information from which to draw conclusions. No evidence is presented that PEX would fail in these applications, and the assertion that ASTM and NSF standards test for chlorine resistance at *maximum* temperatures of 140 degrees is unsubstantiated. (The comment references DEIR Appendix C, but no reference to maximum temperatures is made in the cited memo.) The EIR assumes, and holds

that it is reasonable to assume, that installations of PEX will comply with manufacturer guidelines and specifications. A brief review of two such guidelines reveals that manufacturers routinely specify relevant temperature ranges for PEX products. The *WIRSBRO Radiant Floor Installation Handbook* (WIRSBRO 1992: p5) gives one WIRSBRO PEX tubing product line a temperature rating of up to 180 degrees Fahrenheit. The handbook clearly limits PEX to applications up to but not greater than 180 degrees Fahrenheit. A similar manual, the *REHAU PEX Plumbing Systems Technical Manual* (REHAU 1997: p2-2), limits PEX to continuous use at temperatures up to but not exceeding 180 degrees Fahrenheit. These two sources represent standard instances of manufacturer guidelines that clearly address the limitations of PEX by providing relevant limitations for end use temperatures. These references also demonstrate that there are appropriate PEX products available for end uses that require operating temperatures of 180 degrees Fahrenheit.

In addition, it is important to clarify that failure of a length of PEX tubing in itself is not identified in the EIR as a significant environmental impact. Rather, it is the "substantial premature tubing failure and flooding that would lead to widespread incidences of mold infestation associated with significant health risks" that would be considered significant (DEIR, page 4.2-5). As described in the DEIR, the requirement to adhere to the NSF P171 CL-R standard or equally rigorous standard would be sufficient to preclude such an impact.

**25-22** The commenter argues that the EIR fails to provide a specific analysis of pipe failure due to exposure to ultraviolet (UV) light emitted by the Sun. The issue of potential UV damage to PEX is thoroughly analyzed in the DEIR (see page 4.2-10). To ground this discussion in facts, the DEIR notes at 4.2-10 that PEX manufacturers generally provide relevant limitations on UV exposures to 60 days or less. These industry standards suggest that PEX can withstand at least a 60 day interval of UV exposure. As described and supported by references in the DEIR (see November 30, 2007 letter from Richard Church, Executive Director, Plastic Pipe and Fittings Association; and the November 2006 National Association of Home Builders Research Center's *Design Guide, Residential PEX Water Supply Plumbing Systems*), PEX is specially packaged and specific instructions are provided by the manufacturers as to acceptable exposures based on the type, color, and/or composition of the pipe. In addition, each PEX manufacturer publishes a maximum recommended UV exposure limit that generally does not exceed a total accumulated time of 60 days, based on the UV resistance of the pipe. However, regardless of the material characteristics of PEX, the commenter offers no specific information that links PEX UV exposure to significant environmental impacts defined in the EIR.

The threshold of significance for potential UV light-related impacts concerns substantial premature tubing failure and flooding that would lead to widespread incidences of mold infestation associated with significant health risks (DEIR at page 4.2-5). The commenter provides no evidence that UV degradation of PEX pipe would lead to substantial instances of pipe failure that would contribute to growth of toxic mold with significant health effects. The commenter refers to *The Plastic Pipe and Fittings Association Installation Handbook* (comment letter 25, Appendix 36) and states that it does not include any longevity standards for exposure to UV light. However, the handbook does state that tubing should be stored under a cover to avoid exposure to sunlight, and page 6 of this installation guide advises installers to consult the manufacturer for recommended limits for storage outside. It is reasonable to assume that plumbers will follow PEX installation and usage instructions. The comment further argues that reliance upon manufacturer guidelines is contrary to CEQA guidance for acceptable mitigation measures (comment letter 25, page 46). This comment is not accurate. In the absence of a demonstrated significant or potentially significant impact, mitigation is not required. The DEIR finds the risk of pipe failure from UV light exposure less-than-significant (page 4.2-10). In the absence of specific facts, this comment fails to identify an impact or concern that must be mitigated under CEQA.

Regarding manufacturer's instructions, the commenter asserts that the "DEIR relies on these instructions, however, without ever reviewing their content." This statement is not correct. A number of manufacturer's instructions were reviewed during preparation of the DEIR, and confirmed that manufacturer's instructions do include information on UV light exposure. These include the following: Vanguard, *Installation Guidelines for the Vanguard Vanex and Vanex Plus+ PEX Plumbing System*, Vanguard Piping Systems, Inc., McPherson, KS, 2000; WIRSBO, *Radiant Floor Installation Handbook*, UPONOR Corporation, Apple Valley, MN, 1992; UltraPex, Plasco Manufacturing Ltd., Section 2 – Limitations, UV Light, June 1996; and PlumbBetter IPEX Piping Systems, *Installation Guide*, Handling and Storage, Denver, Colorado, 2001. The DEIR assumes that use of PEX would comply with all applicable standards, codes, manufacturer's instructions, and regulations. In this case, there is no ASTM or other standard for UV degradation and UV light exposure. However, individual PEX manufacturers provide instructions on the proper use of PEX with respect to UV light exposure. The commenter doubts that manufacturer's recommendations would be followed in real world situations. As with any construction activity, installation, or materials handling that is subject to CPC or other building code, regulation, or manufacturer's recommendations, there is no guarantee that all requirements would be adhered to 100% of the time. However, instances of noncompliance with a manufacturer's recommendation would not be considered a significant impact under CEQA. As described in the DEIR, the project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. Because the DEIR assumes that PEX would be handled in accordance with all applicable standards, codes, manufacturer's instructions, and regulations, UV light-related impacts are considered less than significant.

**25-23** This comment questions the adequacy and enforceability of manufacturer's guidelines and specifications as an appropriate means for addressing the use of PEX with incompatible firestop materials. Additional analysis conducted after publication of the DEIR addresses this concern. Because Standard ASME A112.20.2 in the California Plumbing Code (CPC) requires a broad range of qualifications for installers of firestop systems (as discussed below), PEX would not be used with incompatible firestop materials, and the potential impact of substantial incidences of mold caused by premature failure of PEX as a result of using inappropriate firestopping materials is considered less than significant.

A firestop is a mechanism or structure that slows the spread of fire within a building. Where pipes penetrate walls, studs, or other structural components, there are specific firestop protocols that apply to each kind of pipe that are required to restore the penetration to the original firestopping capability. Many of these protocols call for sealing the aperture with caulk or other materials to fill the void between the pipe and the structure. The commenter argues that some of these firestop materials are incompatible with PEX and may lead to premature PEX failure. The comment further argues that reliance upon plumbing professionals to know which materials are compatible based upon manufacturer specifications is unenforceable. The DEIR addresses this issue at 4.2-10 to 4.2-11, including the availability of PEX manufacturer's specifications for firestopping. Furthermore, as discussed in the DEIR, in order to comply with CPC requirements, manufacturers must adhere to standard ASTM E814 and provide lists of compatible firestopping materials for use with their products.

Existing regulations require that PEX is only used with compatible firestopping materials. Chapter 14 of the CPC contains a standard that requires a broad range of qualifications for installers of firestop systems and devices (ASME A112.20.2-2004), at p. 249. This standard requires certification of firestop installers through accredited third-party certifiers, requiring a minimum 32-hour training course (ASME 2004: 3). The standard further specifies that the installer "shall be able to identify and demonstrate knowledge of the applicable laws, codes, rules,

listing agencies, and regulations from the federal, state, and local levels related to the scope of this standard" (ASME 2004: 2). Additionally, the standard requires that the installer be able to identify the relevant manufacturer installation instructions (ASME 2004: 2). Together, these combined requirements demonstrate that the installers of firestops must know both applicable laws and relevant materials limitations such as compatibility of piping with firestopping. These standards are further enforced through training and certification. Because these standards are incorporated into the existing CPC, they are enforceable.

In a letter dated June 17, 2008 (see comment letter 25, Exhibit D), Dr. Robert Clark of GT Engineering mentions instances of PEX installations with firestop incompatibilities. It is possible that, as with any construction activity, installation, or materials handling that is subject to CPC or other building code or regulation, there is no guarantee that all requirements would be adhered to 100% of the time. However, instances of noncompliance with a code requirement would not be considered a significant impact under CEQA. As described in the DEIR, the project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. Because the DEIR assumes PEX and firestop installations would comply with all applicable standards, codes, manufacturer's recommendations, and regulations, firestop-related impacts are considered less than significant.

**25-24** The potential for PEX to prematurely fail due to exposure to UV light, firestop materials, and chlorine is evaluated in Impact 4.2-4 of the DEIR (see page 4.2-9). During preparation of the DEIR, numerous studies, documents, articles, and other sources were analyzed. A number of documents and other references cited in the DEIR are listed in Section 9, "References" of the DEIR, and particularly relevant studies and references are included as appendices. Based on a review of available studies, documents, articles, and other references, no information related to premature failure due to exposure to solvents, petroleum products, and asphalt were identified, and these issues were not evaluated in the DEIR. The permeation of PEX tubing by solvents and petroleum products was evaluated and is summarized in Impact 4.4-3 (see page 4.4-17).

As described in the DEIR, the proposed project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. The commenter does not cite any evidence that PEX exposure to solvents, petroleum products, and asphalt would result in substantial premature tubing failure leading to mold and significant health risks.

The commenter states that an "inherent weakness" of PEX may cause PEX pipe to fail where it comes into contact with solvents and petroleum products, or is laid out unprotected on asphalt. No compelling evidence is provided to support this claim. Based on a review of comment letter 25 Exhibits D and E, Dr. Clark does not cite any evidence on how PEX may respond to contact with asphalt and solvent-based paints, and how PEX pipe may potentially fail if exposed to "a number of commonly encountered materials" (see Appendix D, page 4; Appendix E, page 8). In the absence of specific facts, this comment fails to identify an impact or concern that must be analyzed under CEQA.

The commenter also refers to the *Plastic Pipe and Fittings Association Installation Handbook.* Under the "Limitations on PEX Use" section of the handbook, PEX should not be allowed to "come in extended contact with…benzene gasoline, solvents, and asphaltic road materials." The handbook does not address whether this contact would result in tubing failure, flooding, or mold. As described in response to comment 25-23 related to manufacturer's guidelines, the DEIR assumes PEX installations would comply with all applicable standards, codes, and manufacturer's recommendations. Therefore, it can reasonably be assumed that PEX would not come into contact

with these materials, and would not potentially result in premature tubing failure, flooding, and health impacts associated with mold.

**25-25** This comment raises the issue that the cumulative impact of oxidizing agents and UV light may result in a cumulative loss of stabilizers in PEX pipe. This comment relies primarily on Appendix E to the comments wherein Dr. Robert A. Clark of GT Engineering argues that NSF and ASTM standards do not account for cumulative loss of stabilizers in PEX (comment letter 25, Appendix E, p. 7). Dr. Clark goes on state that his own studies demonstrate that UV exposure reduces available stabilizers in PEX, presumably shortening the relative life of PEX upon exposure to other oxidizing agents. It is not clear if these studies have been published in peer-reviewed scientific journals, and this evidence supports the entire comment. Notably, Appendix E offers mere narrative rather than tabular data or specific test methods that allow a transparent record of results that can be duplicated. In the absence of specific facts, this comment fails to establish a cumulative impact or concern that must be analyzed under CEQA. Furthermore, the comment does not persuasively demonstrate with facts that these speculative cumulative impacts would result in significant environmental impacts relative to the significance thresholds established in the EIR.

This comment raises many of the same concerns raised in and responded to in previous comments, and those responses apply here. Please see the complete text of responses to comments 25-22 regarding UV light exposure, 25-23 regarding firestop exposure, and 25-24 regarding exposure to solvents, petroleum products, and asphalt.

**25-26** The commenter argues that the DEIR fails to examine PEX performance standards in light of reports of product lawsuits. This comment is largely prefatory to more specific discussion in the following comments. This comment also offers no summary of the relevant legal theories, facts, or holdings from these cases to actually raise a reasonable question as to the efficacy or longevity of PEX. The commenter notes that the DEIR relies on NSF and ASTM standards to conclude that PEX failure risk is less than significant. More accurately, the DEIR relies on existing standards as well as Mitigation Measure 4.2-1 (see page 4.2-13) to reduce the risk of premature or unexpected PEX failure to a less-than-significant level.

**25-27 and 25-28** This response addresses the combined concerns raised in Coalition comments 25-27 and 25-28. In these comments, the Coalition raises two concerns. First, the comment argues that the DEIR fails to adequately address reported instances of PEX pipe failures and litigation from Washington State. Second, the comment suggests that the DEIR fails to address failures in Europe and Canada. This response reviews available facts from the Coalition's own exhibits and reported case law to determine if a substantial concern is raised that requires further analysis under CEQA.

The first issue raised by the Coalition concerns litigation over PEX in Washington State. There is no published decision for this matter available on Westlaw from Washington State or federal matters heard in Washington State. In addition, the website for the Washington State Courts has no published decision. The only evidence presented is the Coalition's own Exhibits D and E, prepared by Dr. Robert Clark. Dr. Clark prepared the information in the Exhibits "at the behest of the California Pipe Trades Council" (the Coalition's primary member). In Exhibit E, Dr. Clark verifies that the PEX at issue in the Washington State matter came from one manufacturer. While Dr. Clark concludes that this material was manufactured correctly, he incorrectly concludes that these failures are applicable to PEX generally. He concedes on page 2 of Exhibit D that the Washington State failures "may be a matter of circumstance." At no point does Dr. Clark summarize the relevant outcome of the litigation or the applicable legal theories that prevailed. Nor does Dr. Clark offer a summary of his own research or data to support his findings.

The CEQA Guidelines Section 15204(c) (Focus of Review) requires that:

> Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence [underline added for emphasis].

Dr. Clark offers no facts creating a logical analytical link between the failures at issue in the Washington State cases and the nature and capabilities of PEX as a material generally. His narrative description of his beliefs fails to provide a logical bridge between assertions and facts that identify a potential for a significant impact that requires analysis under CEQA. The commenter's assertions regarding reports of PEX failures in Europe and Canada suffer from the same logical defect. While these concerns are duly noted, the Exhibits provided in support of the comment contradict the suggestion that there is a credible impact that has not been reviewed. At page 5 of Appendix D, Dr. Clark submits that PEX performance in Europe is not predictive of performance in California.

The DEIR fully addresses the reported Washington State failures at p. 4.2-10. These findings reveal that the Washington State failures were due to a specific resin source associated with one lot of PEX. This is consistent with Dr. Clark's own findings in Exhibit D (Exhibit D. pages 1 and 2). The commenter should also be aware that the installation and performance of PEX in Washington does not provide a proxy for the performance of PEX in California. This comment is noted but it does not identify a new impact on the environment that requires consideration through CEQA.

The EIR addresses potential premature failure of PEX associated with commonly encountered materials and environmental conditions in the State of California, such as chlorine, sunlight, high temperature, and firestopping materials. Where necessary to reduce a potentially significant impact to a less-than-significant level, mitigation is recommended. For example, the DEIR recommends Mitigation Measure 4.2-1 (see page 4.2-13) to reduce the risk of premature or unexpected PEX failure associated with hot chlorinated water to a less-than-significant level. Furthermore, as described in the DEIR, the project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. Because the DEIR assumes that PEX use and PEX and firestop installations would comply with all applicable standards, codes, manufacturer's recommendations, and regulations, and Mitigation Measure 4.2-1 is recommended to reduce the risk of premature or unexpected PEX failure associated with hot chlorinated water, potential premature or unexpected failure impacts are considered less than significant.

**25-29** The comment raises concerns about the failure of PEX fittings and potential impacts associated with water leaks. As evidence, the commenter references lawsuits against Zurn PEX Inc. and Kitec. Available information associated with PEX and PEX fittings failures was reviewed during preparation of the DEIR, and is summarized on page 4.2-10. The Zurn cases involve failures related to the use of Zurn manufactured PEX tubing and the brass fittings manufactured by Zurn for use with Zurn PEX. Because these brass fittings failures are associated with one manufacturer, and were caused by either a design or manufacturing defect of the fittings, the failures are considered an anomalous condition that is not part of the baseline under CEQA. Therefore, the failure of these fittings would not represent substantial premature tubing failure that would lead to widespread mold, and would not represent a significant impact. The Kitec case involves brass fittings used to connect composite pipe manufactured by IPEX, Inc. This pipe, known as Kitec, is

a different kind of pipe than PEX known as PEX-AL-PEX, and consists of a flexible aluminum pipe sandwiched between an inner and outer layer of plastic pipe.

Based on a review of these undecided cases, the failures appear to be related to either to a design or manufacturing defect of the fittings associated with one specific type of Zurn fitting and another fitting for use with PEX-AL-PEX. Such defects can occur in any manufacturing process and are an anomalous condition, and are not considered representative of all or even a significant proportion of fittings in the entire PEX industry. As noted in response to comment 29-5, there are currently at least 271 types of PEX on the market and a wide variety of PEX manufacturing formulas and methods exist. In addition, NSF certifies over 280 PEX products produced at 50 manufacturing sites (Bestervelt, pers. comm., 2008). In addition, detailed legal research on the five court cases cited in the comment found that none of these cases has been decided, and that they all appear to be in the early stages of trial. Therefore, there is no determination as to the merits of the claims on which to build an inference about the quality or problems associated with the fittings.

The performance of PEX and PEX fittings in the states mentioned in the lawsuits does not provide a proxy for the performance of PEX and PEX fittings in California. Also, Kitec pipe is not PEX tubing at all, but PEX-AL-PEX. The proposed project is limited to plumbing regulations that allow PEX. Issues associated with PEX-AL-PEX are beyond the scope of the proposed project and thus beyond the scope of the EIR (see DEIR, page 3-8).

The commenter states that the fittings failures are relevant because the fittings were certified to meet all relevant NSF and ASTM standards, but does not provide any evidence to support this statement. The commenter also states that the DEIR does not "evaluate these failures whatsoever." This comment is not accurate. As mentioned earlier in the comment, lawsuits associated with PEX fittings are summarized on page 4.2-10 of the DEIR.

In summary, as described in the DEIR, the project would result in a significant impact if it would result in substantial premature tubing failure and flooding that would lead to widespread instances of mold infestation associated with significant health risks. Because the use of PEX and PEX fittings would comply with all applicable standards, codes, manufacturer's recommendations, and regulations, potential premature or unexpected PEX failures leading to widespread mold infestation is considered less than significant. Furthermore, design and manufacturing defects would be considered anomalous and not part of the baseline under CEQA.

**25-30** Please see response to comments 25-27 and 25-28 regarding the Washington State and other reports of PEX failures, and 25-29 concerning PEX fittings failures. In the comment, Dr. Clark offers no facts creating a logical analytical link between the failures at issue in the cases and the nature and capabilities of PEX and the PEX fittings as materials generally. His narrative description of his beliefs fails to provide a logical bridge between assertions and facts that identify a potential for a significant impact that requires analysis under CEQA.

The CEQA Guidelines Section 15204(c) (Focus of Review) requires that:

> Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion <u>supported by facts</u> in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence [underline added for emphasis].

The performance of PEX and PEX fittings in the states mentioned in the lawsuits does not provide a proxy for the performance of PEX and PEX fittings in California. Also, Kitec pipe is

not PEX tubing but PEX-AL-PEX, a type of pipe not included in the proposed regulations. The proposed project is limited to plumbing regulations that allow PEX. Issues associated with PEX-AL-PEX are beyond the scope of the proposed project and thus beyond the scope of the EIR (see DEIR, page 3-8).

The commenter states that the fittings failures are relevant because the fittings were certified to meet all relevant NSF and ASTM standards, but does not provide any evidence to support this statement. Please see response to comment 25-25 with respect to cumulative impacts on the integrity of PEX tubing.

**25-31** The commenter raises concerns related to the tendency of PEX to promote the growth of "biomass with abundant virus-like particles." This concern is addressed in the DEIR under Impact 4.2-1, "Potential Risk of Contact with Pathogens from Biofilm Growth" (see DEIR page 4.2-6). As described in the DEIR, a review of applicable studies found that after 200 days, there is no substantial difference in biofilm formation between copper and PEX, and no direct quantitative correlation exists between measurements of biofilm and growth of *Legionella*. Therefore, increased biofilm growth does not correspond to higher amounts of *Legionella* bacteria, and the use of PEX would not lead to increased risk of human contact with pathogenic bacteria, and the impact is less than significant.

Based on a detailed review of comment 25-31 and the cited references, the commenter does not mention any new studies on biofilm that were not evaluated during preparation of the DEIR. The comment claims that PEX has higher growth of biofilm and higher levels of toxic pathogens than other types of pipe material over a period of time. However, the studies in the literature do not support this claim. Studies indicate that if the pipe testing continues over several months or years, then the amount of biofilm growth is not substantially different in different types of pipe (Chaudhuri, pers. comm., 2008a). In general, the comment does not provide any evidence that would alter the conclusions presented in Impact 4.2-1.

The commenter mentions a 2005 study by Dick van der Kooij, et. al., and states "based on this study, the DEIR concludes that PEX does not increase the risk of Legionella." This comment is not accurate. The DEIR references several studies that are used to support the significance conclusion for Impact 4.2-1. The conclusion is also informed by a memorandum provided by Ishrat Chaudhuri, Ph.D., DABT, with ENSR Corporation. Dr. Chaudhuri's memorandum reports the results of a review of 14 peer-reviewed journal articles that address biofilm, including eight articles that have studied the issue of biofilm formation in PEX and other types of piping materials used for potable water applications (Chaudhuri, pers. comm., 2008a).

In addition, the commenter states that the DEIR fails to address the higher short-term rates of *Legionella* growth in PEX, and should be revised to reflect this impact. Based on the available evidence, a revision to the DEIR is not necessary. As defined in the DEIR, the project would result in a significant impact if it would result in a substantial increase in the public health risks associated with biofilm. For this issue, the DEIR considers biofilm growth over the entire lifespan of PEX. Assuming PEX tubing has a lifetime of approximately 40 years, higher levels of Legionella growth over the short-term (less than 200 days) would not constitute a substantial increase in public health risk and would not be a significant impact. Neither the commenter nor the literature review conducted for the DEIR identifies any studies demonstrating that higher levels of *Legionella* growth in PEX over the short-term (less than 200 days) constitutes a substantial increase in public health risk.

The commenter also states that the DEIR fails to address higher biomass (also referred to as biofilm) levels in PEX after two years. Based on a review of all the available studies, Dr.

Chaudhuri concluded that all piping materials exhibit some amount of biofilm formation, and after a length of time (over 200 days), there is no substantial difference in biofilm formation between copper and PEX. In addition, because the studies indicate that increased biofilm growth does not correspond to higher amounts of *Legionella* bacteria (Chaudhuri, pers. comm., 2008a), increased biofilm formation alone would not cause a substantial increase in public health risk. The commenter does not reference any studies indicating a link between increased levels of biomass/biofilm and a substantial increase in public health risks.

The commenter states that biofilms can harbor a variety of pathogenic bacteria in addition to *Legionella*. The findings of the Lehtola study as described by the commenter do not alter the conclusions of the DEIR. No evidence is provided by the commenter to indicate that increased biofilm growth corresponds to higher amounts of other pathogenic bacteria and viruses (Chaudhuri, pers. comm., 2008b). In addition to *Legionella*, biofilms can also harbor other pathogens, including *E. Coli*, *Pseudomonas*, *Aeromonas*, and *Salmonella typhimurium* that could pose a health risk (see comment letter 25, Appendix G, page 2). Appendix G presents no evidence that the presence of these other pathogens correspond in any way to higher amounts of biofilm growth. Also, neither the commenter nor Appendix G cite any instances of Legionnaire's disease or any other diseases associated with the pathogens discussed herein known to be caused by pathogenic bacteria grown in biofilm in PEX tubing. Furthermore, the commenter erroneously quotes and misconstrues the DEIR, stating "the DEIR itself finds that higher amounts of biofilm could lead to increased risk...". The statement appears in a summary of concerns raised by the Coalition for Safe Building Materials about biofilm in the beginning of the discussion (not in an impact conclusion). Furthermore, the DEIR states "higher amounts of biofilm could *potentially* lead to increased risk…". As stated in Impact 4.2-1, no direct correlation exists between measurements of biofilm and growth of *Legionella*.

The commenter is also concerned that sanitizing PEX pipe could expose the pipe to heat or high levels of chemicals that could potentially lead to premature failure of PEX. Premature failure of PEX is thoroughly considered in the DEIR and in other responses to comments. In support of this comment, the commenter references a conclusion paragraph in a 2005 letter from Dr. Robert Clark to the California Building Standards Commission (see comment letter 25, Appendix F, page 4). The letter states "a further consideration should be that the commonly used methods of sanitizing systems, exposing them to high heat or levels of biocide chemicals can damage PEX…." Dr. Clark offers no comments on conditions under which PEX would require sanitizing (evidence does not point to this need), and the narrative description of his beliefs is unsupported by facts that identify a potential for a significant environmental or health-related impact.

Finally, the commenter references comments by OSHPD from 2004 and 2006 reviews of PEX requesting that "additional testing must be performed." First, the OSHPD statement quoted in the comment could not be found in Appendix 7 or 8 of the comment letter. Second, the statement offers no evidence to support the request, and does not identify a potential for a significant environmental impact.

**25-32** This comment argues that the DEIR fails to adequately analyze solid waste impacts based on the relative ability of PEX to be reused and recycled and for the cumulative impacts of such.

The EIR establishes, through quantitative analysis of the probable increase in PEX market share, and the proportion of total waste flow, that PEX may eventually constitute up to 0.03% of the waste stream delivered to landfills annually (see DEIR at page 4.3-5). The relevant significance threshold requires analysis of the potential for a project to generate solid waste beyond the permitted capacity of existing landfills (DEIR at page 4.3-3). The commenter does not suggest an alternative or additional significance threshold for the DEIR.

As described in Impact 4.3-1, although the proposed project would slightly increase the amount of scrap PEX generated for disposal (i.e., up to 0.03% of the total solid waste annually sent to landfills statewide), the maximum amount of solid waste annually generated by the proposed project is not substantial in relation to the total amount of landfilled solid waste. In addition, PEX tubing could be diverted and sold for other uses, and there is no substantial evidence that the addition of PEX waste, in and of itself, would be sufficient to substantially consume landfill capacity or otherwise shorten the planned disposal life of any landfill. Under these conditions there are no facts to suggest that PEX will create a significant impact relative to this threshold, and the impact is considered less than significant.

The comment also suggests that the shift from copper to PEX may create a cumulative impact because copper is recycled and PEX is difficult to recycle. Cumulative solid waste impacts are evaluated in Section 5.3, "Analysis of Cumulative Impacts" on page 5-2 of the DEIR. As described, because PEX tubing would represent such a small amount of the waste stream and that some re-use or recycling would occur, approval of the project would not generate solid waste that would substantially consume landfill capacity. The cumulative impact would be less-than-significant.

The comment asserts that PEX pipe meeting the ASTM F2023 standard "will need to be re-piped once every 25 years" but offers no evidence to support this claim. As described in Appendix C of the DEIR (see second page), PEX tubing certified to the ASTM F2023 Standard has a lifetime of 50 years.

The comment also misinterprets the information contained in the DEIR. The DEIR does not assume that used pipe may be reused for additional plumbing use. As discussed on page 4.3-3 of the DEIR, PEX can be ground down and "reused" as filler in another material, used in composite lumber and filler in cement and asphalt.

**25-33** The commenter asserts that the DEIR is deficient because it fails to adequately address the risk of toxic smoke when PEX is burned in building fires, and that the EIR must provide a "road map" explaining how the less-than-significant determination was reached. The DEIR uses the best available information, including consultation with fire experts, to substantiate the significance conclusion, and the commenter offers no evidence to refute the information presented in Impact 4.1-3 (DEIR page 4.1-11).

The commenter states that the DEIR fails to disclose or investigate what toxic substances may be emitted from PEX pipe and fittings during a building fire. This issue is addressed in the DEIR because it was raised by the Coalition in 2005 comments to the BSC. (See DEIR at p. 4.1-11) Structure fire would be considered anomalous and not a typical environmental condition for which to conduct environmental analysis under CEQA.

PEX may emit toxic chemicals when burned, and these chemicals may combine with other toxic substances in building fires. However, common household items and building materials contain a wide array of chemical compounds and substances many of which emit toxic smoke when burned. The contribution of PEX to toxic building fire smoke is thus impossible to calculate. Available evidence suggests that if burned, PEX would emit smoke that is no more toxic than smoke created by other common building materials (DEIR at p. 4.1-11). Moroever, the proportion of any toxic smoke contributed by the burning of PEX within a structure is likely to be small relative to all other materials that could burn. If one were to consider the hypothetical scenario of a large office building that is subjected to fire, many commonly encountered materials such as computers, upholstery, carpets, and office equipment are manufactured from myriad forms of plastic and other synthetic material that may be toxic when burned. The exact combustion

byproducts and the resulting toxic profiles of real world fires would be impossible to assess without speculation. However, it is reasonable to assume, based on the nature of PEX (no greater potential for toxic smoke emission than other materials likely to be found in structure) and the amount of PEX as a relative proportion of all combustible material (small relative to total), that any contribution of toxic smoke by PEX would not be considerable.

**25-34** Please refer to responses to comments 25-3 through 25-33, and C-2 through C-10. The DEIR and RDEIR provide a thorough analysis of the proposed project and its potential impacts on the environment using the best available information. No comments have been raised that would result in further revisions to the conclusions in the DEIR and RDEIR. The severity of the environmental impacts of the project would not substantially increase (they would not increase at all) based on the comments; no feasible alternatives or mitigation measures have been raised that would substantially reduce impacts of the project; and the conclusions of the EIR were based on substantial evidence in the record. Impacts associated with water quality, public health, hazards, solid waste, and air quality, and all other issues raised by the commenter were thoroughly evaluated in the DEIR and are sufficiently addressed herein.

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JUN 23 2008
REAL ESTATE SERVICES DIVISION

June 19, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
**Attn: Valerie Namba, Senior Environmental Planner**
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

RE: **DEIR (Draft Environmental Impact Report) for PEX Tubing**

Dear Valerie,

My company has been in business for 23 years. Depending on the season and schedules we employ between 100-750 employees in Southern California.

26-1

We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. PEX tubing will help home builders bring down the cost of homeownership. Although we are a framing and lumber subcontractor, our trades are very closely tied to the success of the plumbing subcontractors.

Thank you for considering this comment.

Sincerely,

Rick E. Mercier
Vice President

29712 Avenida de las Banderas
Rancho Santa Margarita, CA 92688-2606
949/589-4480 • FAX 949/589-8682

Lucas & Mercier Construction
Rick Mercier, Vice President
June 23, 2008

**26-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

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NSF International

Ann Arbor, MI • Brussels, Belgium

June 23, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052
valerie.namba@dgs.ca.gov

RE: Comments on DEIR Adoption of Statewide Regulations Allowing the Use of PEX Tubing

Dear Ms. Namba:

Thank you for the opportunity to comment on the DEIR *Adoption of Statewide Regulations Allowing the Use the PEX Tubing*.

The mitigation measures outlined in 4.4-1 and 4.4-2 of Table 1-1 are not necessary as compliance with NSF/ANSI 61 is mandated by the California Plumbing Code. The additional requirements for MTBE, TBA and other Proposition 65 chemicals do not provide additional health benefits. In addition, we are requesting deletion of several chemicals from Table 4.4-1.

We are perplexed at a number of compounds that are on Table 1 that are purported to be related to HDPE and PEX. The chemicals which are being requested for deletion are benzene (71-43-2), benzothiazole (95-16-9), bisphenol A (80-05-7), carbon disulfide (75-15-0), cyclo-hexanone (108-94-1), cyclopentanone (120-92-3), diazadiketo-cyclotetradecane, nonylcyclopropane, propenyl-oxymethyl oxirane, tetrahydrofuran (109-99-9) and trichloroethylene (79-01-6). 27-1

NSF currently certifies over 280 cross-linked polyethylene products produced at 50 manufacturing sites to the health-effects requirements of ANSI/NSF Standard 61 and has 20 years of experience in evaluating PEX piping. Based on NSF's experience in reviewing the formulations of these products and conducting testing on PEX piping, NSF has not seen and would not expect to see the above chemicals present in the formulation or in NSF/ANSI 61 chemical extraction test results of PEX piping. In addition, all chemicals in the Polyurethane section should be deleted as they are not relevant for PEX. Polyurethane is not an ingredient in PEX nor is it used as a liner or coating for PEX in potable water applications.

NSF/ANSI Standard 61 is a comprehensive standard utilizing the best available technology for evaluation of drinking water system components following a risk assessment approach that considers the inter-relationships between reviewing the material formulation, product exposure and testing, product end use, normalization of laboratory testing, detection level issues, effects of short-term and long-term exposures, and an EPA-style methodology for development of drinking water acceptance criteria. The following sections outline how NSF/ANSI 61 is protective of public health. 27-2



P.O. Box 130140 Ann Arbor, MI 48113-0140 USA
734-769-8010 1-800-NSF-MARK Fax 734-769-0109
E-Mail: info@nsf.org Web:http://www.nsf.org

**Regulatory Status of NSF/ANSI 61**

A survey of the Association of State Drinking Water Administrators found that 45 states have requirements for water treatment and distribution components to comply with NSF/ANSI Standard 61. California Code of Regulations Title 22 Section 64591 requires drinking water system components to be tested and certified to NSF/ANSI Standard 61. The 2007 California Plumbing Code Section 604.1 requires all pipe, tube, and fittings carrying water used in potable water systems intended to supply drinking water to meet the requirements of NSF/ANSI 61. NSF/ANSI Standard 61 is the only American National Standard that evaluates the health effects of chemical extraction from drinking water system components.

**History of NSF 61**

Before 1988, the U.S. Environmental Protection Agency issued letters of approval to manufacturers for products intended to contact drinking water. Early on, EPA recognized a need for a more thorough and standardized evaluation process for these products, yet realized that their limited resources prevented expansion of this program. As part of their assessment, they examined whether the evaluation of drinking water additives for health effects should be a government or private sector program. As a result, in 1984, the EPA issued a request for proposals for independent, not-for-profit organizations to develop standards and a certification program for products used to treat or distribute drinking water.

In response to a competitive request for proposals from the EPA in 1984, a Consortium led by NSF International agreed to develop voluntary third-party consensus standards and a certification program for all direct and indirect drinking water additives. Other members of the Consortium include the American Water Works Association Research Foundation, the Association of State Drinking Water Administrators, the Conference of State Health and Environmental Managers, and the American Water Works Association. (COSHEM has since become inactive as an organization.) 27-2 (Cont.)

In October 1988, NSF/ANSI 61 Drinking Water System Components-Health Effects was first published. NSF/ANSI 61, and subsequent product certification against it, has replaced the USEPA Additives Advisory Program for drinking water system components. USEPA terminated its advisory role in April 1990.

**Organization of NSF/ANSI 61 Joint Committee**

NSF/ANSI Standard 61 is overseen by the NSF Drinking Water Additives Joint Committee comprised of representation from the regulatory community, the manufacturing industry and user groups. The American National Standards Institute accredits NSF standards development procedures to ensure a balanced committee of stakeholders develops the standards in an open process. Providing technical oversight is the NSF Council of Public Health Consultants. The council is a group of over 30 representatives from academia and local, state and federal regulatory agencies that provide technical advice and oversight of the NSF Standards.

A standing task group is NSF Health Advisory Board. This group consists of toxicologists from USEPA, Health Canada, state and provincial agencies as well as toxicologists from industry and private consulting firms. This group is responsible or reviewing and approving all allowable contaminant concentrations that are published in NSF/ANSI Standard 61.



P.O. Box 130140 Ann Arbor, MI 48113-0140 USA
734-769-8010 1-800-NSF-MARK Fax 734-769-0109
E-Mail: info@nsf.org Web:http://www.nsf.org

**Testing Protocol**

Formulation review: As NSF/ANSI 61 is concerned about any potential contaminant that may leach from products the standard requires that formulation information on all water contact material be provided in order to identify potential extractants. This includes detailed information from manufacturers and their suppliers on composition, known or suspected impurities, and manufacturing processes for all wetted components in products submitted for evaluation.

Identification of potential extractants: Two items establish test requirements. First, Table 3.1 of the standard identifies the minimum battery of testing required and is driven by the generic type of materials used in the water contact parts. Secondly, any manufacturer specific or formulation specific analytes of concern determined during the review of the information collected are added to the test battery.

Laboratory testing: Laboratory testing provides a mechanism to establish if any of the potential extractants of concern extract under standardized testing conditions. The laboratory testing has three components: sample preparation, conditioning, and exposure. Sample preparation consists of rinsing the products with tap water to remove any debris that may occur during product shipment and handling.

Tubing is conditioned by exposure to the formulated waters for 16 days with water being changed on 12 of those days. PEX tubing is tested by exposing the tubing to formulated exposure waters, and then analyzing the exposure waters for contaminants. Three separate formulated waters are used during the product exposure. A pH 5.0 and a pH 10.0 exposure water are separately used during the exposure for extraction of metallic contaminants. A pH 8.0 water is used during the exposure for organic based contaminants. The tubing samples containing water are heated to 140°F (60°C), for domestic hot water systems or 180°F (82°C) for commercial hot systems. 27-2 (Cont.)

ANSI/NSF Standard 61 allows for some chemicals to be present at higher initial concentrations, if they exhibit sufficient decay over the first 90 days of product use. When multiple time point data are used, the concentration for the contaminant of concern shall meet the Short Term Exposure Level on the first day of laboratory analysis and the concentration shall meet the Total Allowable Concentration/Single Product Allowable Concentration by the 90$^{th}$ day.

Normalization: The water collected from the final 16-hour exposure period is then analyzed for contaminants. Laboratory results must be "normalized" to adjust contaminant concentrations based on the surface area, volumes, exposure times under laboratory conditions to be reflective of the surface area, volumes and exposure times encountered by products in the field. NSF/ANSI 61 provides assumptions for the use of plumbing system components based on product size, end use, and flow rates.

Acceptance Criteria: The drinking water acceptance criteria are established through Annex A of the standard. The criteria for over 600 chemicals have been established and are listed in Annexes D and E. The requirements are based on regulated levels and health advisories where they exist and based on available toxicology data where they don't. USEPA and Health Canada representatives have established harmonized acceptance criterion for the standard where differences exist between a USEPA MCL (maximum contaminant level) and a Health Canada MAC (maximum allowable concentration).



P.O. Box 130140 Ann Arbor, MI 48113-0140 USA
734-769-8010 1-800-NSF-MARK Fax 734-769-0109
E-Mail: info@nsf.org Web:http://www.nsf.org

**t-Butanol**

A risk assessment has been performed by NSF International (attached) for t-butanol which resulted in a pass/fail criteria of 9,000 ug/L. The results of the risk assessment performed at NSF significantly differs from the drinking water level that has been set by California. Since the time when California notification level was developed the EPA has published criteria for discounting the alpha-2u-globulin mode of action when performing a human health risk assessment. The NSF risk assessment uses current EPA criteria to address this issue and is adequately protective of public health. In addition, we would like to highlight the fact that the NSF risk assessment is based on health effects only and not based on taste and odor.

In a document dated June 2, 1999 (http://www.oehha.ca.gov/water/pals/tba.html) the process for derivation of the 12 ug/L California drinking water level for tertiary butanol was described, and was clearly noted as an interim assessment. The critical effect selected was male rat kidney adenoma and carcinoma observed in an NTP (1994) cancer bioassay, and a carcinogenic response to t-butanol was also considered to be supported by an increased incidence of thyroid gland follicular cell adenoma in female mice. NSF considered that the weight of evidence supported an alpha-2u-globulin mode of action for the male rat kidney tumors. This mode of action is male rat specific and not relevant to human health, and the EPA has published criteria for discounting this effect that NSF considered to be met. Likewise, the EPA (1998) has published guidance on the assessment of thyroid follicular cell tumors, concluding that thyroid tumors meeting specific criteria could be assessed using nonlinear considerations, due to apparent quantitative differences in sensitivity between rodents and humans to thyroid cancer development from thyroid-pituitary disruption. Taken together with the fact that tertiary butyl alcohol is not genotoxic, it was concluded by NSF and the external review panel that using a linear approach in deriving oral risk values for this chemical was not appropriate based on the current best science. 27-3

**Detection limit of t-butanol**

Since the development of the DEIR, NSF has lowered the detection limit for t-butanol. As there is no EPA approved method for the analysis of t-butanol in water, NSF has developed a method utilizing a gas chromatograph instrument operated in the splitless-injection mode with a Phenomenex ZB-1 column and a flame-ionization detector (GC-FID). This method allows NSF to detect t-butanol in the raw exposure water down to 20 ug/L or 20 ppb and has a linear calibration range up to 2,000 ug/L.

**MTBE**

A risk assessment has been performed by NSF International (attached) for MTBE which resulted in a pass/fail criteria of 100 ug/L. Please note this should be corrected in the DEIR which reports the NSF value as 50 ug/L. The difference between NSF's acceptance criteria (100ug/L) and California's maximum contaminant level (13 ug/L) is a difference in risk management approach of using a $10^{-5}$ safety factor vs a $10^{-6}$ safety factor. Both factors are acceptable given current EPA risk management criteria and are protective of public health. NSF has chosen the $10^{-5}$ safety factor and this is appropriate given that the NSF/ANSI 61 testing is based on new materials at the beginning of their life which represents a worst case scenario. The assumption behind the California maximum contaminant level is a continuous exposure of the chemical at the regulated level. Concentrations of contaminants leaching from plumbing products decay over a period of time, and should not be assumed to be consistent and continuous over the lifetime of the product. This difference makes a direct comparison between the NSF acceptance criteria and the MCL difficult to conduct.



P.O. Box 130140 Ann Arbor, MI 48113-0140 USA
734-769-8010 1-800-NSF-MARK Fax 734-769-0109
E-Mail: info@nsf.org Web:http://www.nsf.org

Thank you for the opportunity to provide comments. Please contact me if you need additional comments or clarification on the information provided.

Sincerely,

Lori Bestervelt, Ph.D/

Lori Bestervelt, Ph.D.

Senior Vice President and Chief Technical Officer



P.O. Box 130140 Ann Arbor, MI 48113-0140 USA
734-769-8010 1-800-NSF-MARK Fax 734-769-0109
E-Mail: info@nsf.org Web:http://www.nsf.org

NSF International
Lori Bestervelt, Senior Vice President and Chief Technical Officer
June 23, 2008

**27-1** The commenter states that Mitigation Measures 4.4-1 and 4.4-2 are not necessary because compliance with NSF/ANSI Standard 61 is required by the California Plumbing Code and the mitigation measures do not provide any additional health benefits. As described in Section 4.4, "Water Quality," of the RDEIR, these mitigation measures are deleted, and associated impacts—based on new information received after publication of the DEIR—would not be significant. See also response to comment C-2, C-3, and C-7.

Regarding the chemicals listed on Table 4.4-1, "Chemicals Potentially Present in PEX Tubing," this list of chemicals was compiled from scientific journal articles that discussed leaching from PEX and other types of plastic pipes. The table is simply a listing of chemicals potentially present in PEX tubing. The first set of compounds in Table 4.4-1 (chemicals in polyethylene [PE], high-density polyethylene [HDPE], and PEX) are from Tomboulian et al. (2004) who compiled a list of compounds found by NSF to leach from various water distribution system components. Some of these compounds may be present in PE or HDPE piping, and not in PEX tubing. However, the article does not differentiate between these materials. Tomboulian et al. (2004) also list compounds that have leached from polyurethane coatings and liners. Based on research conducted for the DEIR, these compounds are considered relevant for the purposes of the DEIR because polyurethane coatings and liners are have been associated with PEX tubing (Chaudhuri, pers. comm., 2008a). Therefore, the chemicals from these various plastic materials were included in the table because no leaching data specific only to PEX was identified. In addition to the compounds listed in Tomboulian et al. (2004), other potentially leachable compounds were compiled from other sources, including Skjevrak et al. (2003).

A list of all chemicals that have been found to leach from PEX during testing was requested from NSF in February 2008. NSF was not able to provide actual testing results for specific products because such results are considered proprietary information by PEX manufacturers and are not available for public review. NSF's response to the letter included a summary of test data for PEX tubing tested between January 1, 2005 and December 31, 2007 (McLellan, pers. comm., 2008a). Therefore, table 4.4-1 is simply a listing of chemicals potentially present in PEX, and does not identify the specific chemicals associated with each type of plastic. The list was believed to be the best information available at the time, and it is now known to contain many chemicals not found in PEX. See also response to comment C-5 for additional information.

Chemicals that are shaded in Table 4.4-1 are those for which the California primary or secondary MCL, notification, response, or Proposition 65 Safe Harbor levels are lower than the criteria used by NSF. These chemicals are benzene, cadmium, carbon disulfide, MTBE, TBA, benzo(a)pyrene, and toluene. NSF was asked to provide a list of the chemicals that have been detected at concentrations exceeding the California criteria. In a letter dated March 12, 2008, Mr. Clif McLellan of NSF stated that the only chemicals found to exceed California MCLs or notification levels in some proportion of pipes tested were MTBE and TBA. The NSF testing results of PEX developed by specific manufacturers were not available for incorporation into the DEIR because individual pipe formulas and their test results are considered proprietary information. However, extraction levels for chemicals that may leach from PEX, for which the California primary or secondary MCL or the notification levels are more stringent than the NSF standards, without reference to specific types or manufacturers of PEX, were provided by NSF (McLellan, pers. comm., 2008). Therefore, the only testing data provided by NSF were data on extraction levels of

MTBE and TBA. Because a list of all chemicals that have been found to leach from PEX is not available, and the chemicals listed in Table 4.4-1 are simply a listing of chemicals potentially present in PEX tubing compiled from scientific journal articles that discussed leaching of chemicals from PEX and other types of plastic pipes, it is not necessary to delete any chemicals from the table. However, the information provided is acknowledged, and has been considered in the EIR.

**27-2** The commenter provides information about NSF/ANSI Standard 61 including a brief history of the standard and the organizational structure of the NSF/ANSI 61 Joint Committee. This comment is acknowledged.

**27-3** The commenter summarizes risk assessment information for t-butanol and MTBE, and raises questions about the validity of the 12 µg/L notification level for t-butanol and the 13 µg/L MCL for MTBE. Please see response to comment C-3, C-4, and C-7 with respect to the RDEIR's criteria for determining the significance of impacts.

Regarding the detection limit for t-butanol, this notification level was based solely on health effects, and not the technical feasibility of achieving a low detection limit. The commenter states that NSF has developed a new testing method with a detection limit of 20 µg/L. However, it is possible to achieve a detection limit at or lower than 12 µg/L for TBA (Chaudhuri, pers. comm., 2008b). Please see RDEIR pages 4.4-11 through 4.4-18 for additional information on TBA.

While it is true that concentrations of contaminants leaching from plumbing products are reduced over time, the relevant consideration for the DEIR is the criteria for determining the significance of impacts. Please refer to response to comment C-3, C-4, and C-7 for additional information.

NSF/ANSI Standard 61 does not include a value for MTBE, and no written reference could be found to confirm the 50 µg/L value. Therefore, based on this correspondence from NSF, the value for MTBE in Table 4.4.1 is hereby revised to reflect 100 µg/L:

## Table 4.4-1
## Chemicals Potentially Present in PEX Tubing and Comparison between NSF Criteria and California Drinking Water Standards (in Mg/L)

| Chemical | NSF Values (Standard 61)[1] | | | | | | | | | | | California Standards | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | D1 | | D2 | | | D3 | | D4 | E1 | | E2 | | | | | | |
| | USEPA/ Health Canada MCL/MAC | USEPA/ Health Canada SPAC | NSF Peer-Reviewed Aqua TAC | NSF Peer-Reviewed SPAC | NSF Peer-Reviewed STEL | NSF based on USEPA guidance Aqua TAC | NSF based on USEPA guidance SPAC | TOE[7] | NSF International Aqua TAC | NSF International SPAC | TOE[7] | Listed in Prop. 65?[2] | Prop 65 Safe Harbor | PHG[3] | MCL[4] | Secondary MCL [4] | Notification/ Response Levels[5] |
| | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | | mg/L | mg/L | mg/L | mg/L | mg/L |
| **Chemicals in Polyethylene, HDPE or PEX[8]** | | | | | | | | | | | | | | | | | |
| acetophenone | | | 0.2 | 0.02 | 1 | | | | | | | | | | | | |
| 2,4-bis(dimethylethyl)phenol | | | | | | | | | | | | | | | | | |
| Benzene | 0.005 | 0.0005 | | | | | | | | | | x | .0064 | 0.00015 | 0.001 | | |
| benzothiazole | | | | | | | | x | | | | | | | | | |
| bis-(dimethylethyl)benzene | | | | | | | | | | | | | | | | | |
| bisphenol A | | | | | | | | | 0.1 | 0.01 | | | | | | | |
| BHT (methyl di(t-butyl)phenol) | | | | | | | | | | | | | | | | | |
| carbon disulfide | 0.7 | 0.07 | | | | | | | | | | x | | | | | .16 / 1.6 |
| cyclohexadienedione | | | | | | | | | | | | | | | | | |
| cyclo-hexanone | | | 30 | 3 | 40 | | | | | | | | | | | | |
| cyclopentanone | | | | | | | | x | | | | | | | | | |
| diazadiketo-cyclotetradecane | | | | | | | | | | | | | | | | | |
| dicyclopentylone | | | | | | | | | | | | | | | | | |
| dimethylhexanediol | | | | | | | | x | | | | | | | | | |
| di-t-butyl oxaspirodecadienedione | | | | | | | | | | | | | | | | | |
| hydroxymethylethylphenyl ethanone | | | | | | | | | | | | | | | | | |
| isobutylene | | | | | | | | x | | | | | | | | | |
| methanol | | | 20 | 2 | 20 | | | | | | | | | | | | |
| methyl butenal | | | | | | | | x | | | | | | | | | |
| methyl di-t-butyl hydroxyphenyl proprionate | | | 0.02 | 0.002 | 0.1 | | | | | | | | | | | | |
| methyl (di-t-butylhydroxy-phenyl) propionate | | | | | | | | | | | | | | | | | |
| methylbutenol | | | | | | | | | | | | | | | | | |
| nonylcyclopropane | | | | | | | | | | | | | | | | | |
| phenolics | | | | | | | | | | | | | | | | | |
| phenylenebis-ethanone | | | | | | | | | | | | | | | | | |
| propenyl-oxymethyl oxirane | | | | | | | | | | | | | | | | | |
| tertiary butyl alcohol | | | 9 | 0.9 | 40 | | | | | | | | | | | | 0.012/ 1.2 |
| tetrahydrofuran | | | | | | | | | 1 | 0.37 | | | | | | | |
| trichloroethylene | 0.005 | 0.0005 | | | | | | | | | | x | | 0.0008 | 0.005 | | |
| **Polyurethane coatings and liners (h):** | | | | | | | | | | | | | | | | | |
| 1,4-butanediol | | | | | | | | | | | | | | | | | |
| 4,4-methylenedianiline | | | | | | | | | 0.001 | 0.0001 | | x | .0004 | | | | |
| bis(2-ethylhexyl)phthalate | | 0.0006 | 0.0006 | | | | | | | | | x | | 0.012 | 0.004 | | |
| bisphenol A diglycidyl ether | | | 1 | 0.1 | 5 | | | | | | | | | | | | |
| butyl benzyl phthalate | | | | | | 1 | 0.1 | | | | | x | | | | | |
| diphenyl(ethyl)phosphine oxide | | | | | | | | | | | | | | | | | |
| di-t-butyl methoxyphenol | | | | | | | | | | | | | | | | | |
| ethylhexanol | | | | | | | | | 0.05 | 0.05 | | | | | | | |
| tetramethyl peperidinone | | | | | | | | | | | x | | | | | | |
| toluene diamine | | | | | | | | | | | | x | | | | | |
| **Additional Chemicals[9]:** | | | | | | | | | | | | | | | | | |
| methyl tert butyl ether (MTBE) | | | | | | ~~0.05~~,1[6] | | | | | | | | 0.013 | 0.013 | 0.005 | |
| phthalates | | | | | | | | | | | | | | | | | |
| carbon black | | | | | | | | | | | | x | | | | | |
| benzo(a)pyrene | 0.0002 | 0.00002 | | | | | | | | | | x | .00006 | 0.000004 | 0.002 | | |
| mercury | 0.002 | 0.0002 | | | | | | | | | | x | | 0.0012 | 0.002 | | |
| cadmium | 0.005 | 0.0005 | | | | | | | | | | x | .0041 | 0.00004 | 0.005 | | |
| PAHs | | | | | | | | | | | | | | | | | |
| **Additional Chemicals[10]:** | | | | | | | | | | | | | | | | | |
| 4-butoxyphenol | | | | | | | | | | | | | | | | | |
| 5-methyl-2-hexanone (MIAK) | | | 0.06 | 0.006 | 0.8 | | | | | | | | | | | | |
| **Additional Chemicals [11]:** | | | | | | | | | | | | | | | | | |
| chloroform | 0.08 | 0.008 | | | | | | | | | | x | .02 | | | | |
| toluene | 1 | 0.1 | | | | | | | | | | x | 7 | 0.15 | 0.15 | | |

Notes: Shaded chemicals represent those for which NSF values are higher than California drinking water values.
ANS = American National Standard; aqua TAC = total allowable concentration; MAC = maximum acceptable concentration; MCL = maximum contaminant level; mg/L = milligrams per liter; NSF = NSF International, Inc.; PEX = cross-linked polyethylene; PHG = public health goal; SPAC = single product allowable concentration; STEL = short-term exposure level; TOE = threshold of evaluation.
[1] NSF and ANSI, 2007: Drinking water systems components Health effects. NSF/ANSI 61 - 2007.
[2] OEHHA, 2007: Chemicals Known to the State to Cause Cancer or Reproductive Toxicity. Safe Drinking Water and Toxic Enforcement Act of 1986. [http://oehha.ca.gov/prop65/prop65_list/Newlist.html]
[3] OEHHA, 2008: Public Health Goals for Water. [http://oehha.ca.gov/water/phg/allphgs.html]
[4] CDPH, 2008: Table 64444-A, Table 64431-A and Table 64449-A. Title 22 California Code of Regulations California Safe Drinking Water Act & Related Laws and Regulations. [http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Lawbook.aspx].
[5] OEHHA, 1999: Water Notification Levels. [http://www.oehha.ca.gov/water/pals/index.html].
[6] NSF Comment Letter to DGS (Bestervelt, pers. comm., 2008). ~~This NSF value was not found in NSF (2007a), but has been referenced by other sources.~~
[7] Chemicals that did not meet the minimum data requirements to develop chemical specific concentrations were evaluated under the threshold of evaluation (TOE). As defined by Section A.7.1 of NSF Standard 61 (NSF International 2007), a risk assessment is not required for a substance if the normalized concentration is less than or equal to the following concentrations: 3 µg/L (micrograms per liter) (chronic exposure, static normalization conditions), 0.3 µg/L (chronic exposure, flowing normalized conditions), and 10 µg/L (short-term exposure, initial laboratory concentration).
[8] List of chemicals found by NSF to leach from system components (Tomboulian et al., 2004). Many of these chemicals may not be found in PEX.
[9] Various sources.
[10] Testing on PEX pipes conducted by Skjevrak et al. (2003).
[11] Detected chemicals during NSF testing of Wirsbo Aqua PEX testing, April 2000. Only those with at least one available NSF value or California standard are listed.
Source: Provided by ENSR in 2008.

28

PINNACLE PLUMBING, INC.
1064 Barstow Ave. Clovis CA 93616-1901
Office (559) 299-2529 Fax 299-3650

CA License #761428

JUN 23 2008
REAL ESTATE
SERVICES DIVISION

Date: 6/19/2008

California Department of General Services
Real Estate services Division
Professional Branch, Environmental Services Section

Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third floor, MS509
West Sacramento, CA 95605-9052

RE: DEIR (Draft Environmental Impact Report for PEX Tubing

Dear Valerie,

My Company has been in business for 14 years. We employ approximately 24 employees in California. We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 28-1

Thank you,

Keith Strong
Pinnacle Plumbing, Inc.

Pinnacle Plumbing Inc.
Keith Strong
June 23, 2008

**28-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

29

SOMACH SIMMONS & DUNN
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

813 SIXTH STREET, THIRD FLOOR, SACRAMENTO, CA 95814
T: 916-446-7979 F: 916-446-8199
SOMACHLAW.COM

June 23, 2008

*Via Hand Delivery and Electronic Mail*

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Re: Draft Environmental Impact Report: Adoption of Statewide Regulations Allowing the Use of PEX Tubing

Dear Ms. Namba:

On behalf of the Plastic Pipe and Fittings Association (PPFA), this firm submits the following comments on the Draft Environmental Impact Report (EIR) for the proposed PEX regulations. PPFA appreciates the opportunity to comment and recognizes the challenges in evaluating potential effects of a product that already is in widespread use throughout California, the United States and Europe.

29-1

The Draft EIR is very thorough and takes a highly conservative approach to analyzing potential impacts. This conservative approach results in identification of potential impacts where, in fact, there are likely to be none at all. As a result, the Building Standards Commission (BSC) and consumers can be confident that the State has taken a rigorous approach to the full state-wide adoption of PEX and fulfilled its obligations under CEQA. Further, and more importantly, use of PEX will result in lesser potential public health and environmental impacts – even *without* mitigation – than the most widely used pipe material allowed under the existing regulations, copper.

1. Air Quality (Chapter 4.1) / Public Health and Hazards (Chapter 4.2)

29-2

The Draft EIR's conservative approach is particularly evident in the impact determinations that are based on potential pipe failure from exposure to continuously recirculating hot chlorinated water. These include potential impacts to air quality from mold formation (Impact 4.1-2, p. 4.1-10) and to public health (Impact 4.2-3, p. 4.2-9).

~~The threshold of significance identified in the Draft EIR for impacts related to~~ public health and hazards is whether the increased use of PEX pipe would result in:

> *Substantial premature* pipe failure and flooding that would lead to *widespread* incidences of mold infestation associated with *significant* health risks. (Draft EIR, p. 4.2-5, emphasis added.)

One potential effect evaluated pursuant to this threshold is the "Risk of Premature or Unexpected PEX Failure and Flooding Potentially Increasing the Incidence of Mold." (Impact 4.2.3, p. 4.2-13.) This evaluation states that PEX pipe used in continuously recirculating hot water systems within jurisdictions that use chlorine for disinfection *may* have a shorter product life than copper, CPVC or PEX in traditional domestic applications. (Draft EIR, p. 4.2-9.) The Draft EIR thus concludes that the full adoption of PEX into the Plumbing Code would result in a "potentially significant impact" to human health. This conclusion does not appear to be supported by analysis and does not meet the threshold of significance set forth in the Draft EIR. It therefore overstates any realistic risk to human health or the environment. The Draft EIR acknowledges that the potential impact is "speculative." CEQA requires that a lead agency determine whether a project may have a significant effect based on substantial evidence "in light of the whole record." (Pub. Resources Code, § 21082.2(a); CEQA Guidelines, § 15064(a)(1).) Speculation does not constitute substantial evidence under CEQA. (See CEQA Guidelines, §§ 15064(f)(5), 15384(a); see also § 15145 for a discussion of how speculation is to be treated under CEQA.)

29-2 (Cont.)

Based on the facts in the record, the Final EIR should reevaluate the determination that use of PEX that meets current code provisions in continuously recirculating hot chlorinated water systems would be reasonably likely to result in "substantial" "premature" failure that would lead to "widespread" incidences of mold infestation that would lead to "significant health risk." For example, the Draft EIR does not define what would constitute a "premature" pipe failure. Relying on statements by one PEX manufacturer whose product is certified to the NSF P171-Cl-R test method for chlorine resistance, the Draft EIR presumes that the more conservative design factor in that method would be preferable to the standard that is applied pursuant to California law, ASTM F876, when tested in accordance with ASTM F2023. As noted in the EIR, the estimated product lifespans under these two different approaches are purely theoretical. While applying a more conservative factor may be seen as desirable (especially by the manufacturer of products tested to that method), there is no evidence that PEX tested to the current national consensus standard will fail "prematurely" or that applying such a conservative assumption is necessary to avoid a significant impact to human health or the environment.

The Draft EIR impact analysis thus appears to be based on a comparison of purely theoretical performance conclusions among types of PEX, and not against the baseline, which includes numerous other materials, including copper. A more reasonable conclusion would be that increased use of PEX would likely result in a *reduced* incidence of pipe failure. PEX has been in use for more than 20 years with no evidence of failures

due to contact with continuously circulating hot chlorinated water. Moreover, there is evidence that chloramines are less aggressive than chlorine to PEX pipes.[1] By contrast there is substantial evidence that other code-approved materials, such as copper, fail with increasing frequency in a matter of months after being put into service, either due to corrosion or due to the effects of chloramine, the use of which is increasing.[2] Copper failures commonly take the form of pinhole leaks, which are the type of failures that lead to slow, persistent, undetected leaking and mold formation that could put human health at risk. (See Exhibit B.)

As a practical matter, continuously recirculating hot water systems are not likely to be found in widespread use in California. Stringent Energy Code requirements make such systems difficult to permit because continuously recirculating hot water systems can double the energy used in a hot water system due to constant heat losses in the piping.[3] Moreover, the Draft EIR acknowledges that any theoretical PEX failures would be confined to jurisdictions that have not yet switched to chloramine disinfection, which will be fewer and fewer due to the need to comply with Disinfection Byproduct Rule requirements for THMs.

Even if it is assumed that PEX might fail, however, the evaluation of this impact does not account for a key fact: such failure would be immediately noticeable. The 29-2 (Cont.)

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[1] Note 1 to ASTM F2023-08, Standard Test Method for Evaluating the Oxidative Resistance of Cross Linked Polyethylene (PEX) Tubing and Systems to Hot Chlorinated Water states in part, "A PPI [Plastic Pipe Institute] research project examined the relative aggressiveness of free chlorine and chloramines on PEX pipes, both at the same 4.0 ppm concentration and the same test temperatures. The results of the testing showed pipe failure times approximately 40% longer when tested with chloramines compared to testing with free chlorine, at the tested conditions. Based on these test results, the data suggests that chloramines are less aggressive than free chlorine on PEX pipes." PPI Statement A, which summarizes the research project referenced in ASTM F2023-08 Note 1, is attached as Exhibit A.

[2] More information about the relationship between chloramine and pinhole leaks in copper can be found in *The Task Force Study, Final Report, Pinhole Leaks in Copper Plumbing,* Maryland Department of Housing and Community Development, December, 2004, which was prepared as a result of copper pinhole leaks in the Washington DC suburban areas (Exhibit B). This study found that chloramines are a cause of copper pipe pitting. (*Id.* at p. 23.) The corrosive effects of chloramines on copper are also recognized by U.S. EPA. (See *Information about Chloramine in Drinking Water*, at http://epa.gov/safewater/disinfection/chloramine/index/html/. (Exhibit C.)

[3] The *Residential Compliance Manual for California's 2005 Energy Efficiency Standards* (California Energy Commission Publication Number CEC – 400-2005-005-CMF, available at www.energy.ca.gov/title24/2005standards/residential_manual.html) identifies five separate recirculating systems (no control, temperature control, time, time and temperature, and demand). (See Section 5.1.4.) The continuously recirculating system would be the "no control," which is substantially penalized for energy credits. Demand recirculation systems are replacing continuous systems, and run only when activated by the user of hot water. These demand recirculation systems save water and energy and their use in California should be encouraged. As to multiple dwelling unit structures, Section 5.3.3 states, "Recirculating systems may be used as long as they have controls to turn off the pump when hot water is not needed (e.g., timer controls)." Thus, it appears that continuously recirculating systems would not be allowed at all in multiple dwelling units (over 6 units).

result of a PEX failure would be the immediate and readily apparent release of water from the pipe, which would be expected to result in other noticeable effects.[4] The reasonably foreseeable result of any such failure would be for the water service to be shut off and the system repaired. The discussion of air quality impacts from mold formation, Impact 4.1-2, acknowledges that the potential for mold formation exists where a pipe failure goes unnoticed for an "extended period of time." Because any PEX failure would be immediately noticeable, the circumstances necessary for the impact to occur would not exist. Based on these facts, it is not reasonable to assume that mold of any kind, let alone toxic mold, would form and persist undetected subjecting anyone to a "significant health risk." Because the impact is speculative at best, mitigation should not be necessary.

Under the Draft EIR's own significance criterion, for the impact to be significant, there must be substantial evidence that: (1) PEX will fail "prematurely"; (2) failures will be "substantial" in number; (3) any such failure would lead to toxic mold infestations that wealth risks. Applying the threshold of significance to the facts, it would be reasonable to conclude that assuming some theoretical risk of failure of PEX in continuously recirculating hot chlorinated water systems (unsupported by evidence in the record), the full adoption of PEX into the Code under current Code requirements that require testing to the national consensus standard of ASTM F2023 would not result in a significant impact to human health or air quality compared to the existing condition because: (1) there is no evidence that PEX has failed or will fail prematurely due to exposure to hot chlorinated water; (2) the use of chlorine in disinfection is diminishing; (3) significant use of continuously recirculating hot water systems is extremely unlikely due to Energy Code limitations; and (4) any failure of PEX would be immediately noticeable and its effects promptly mitigated, thus preventing the formation of undetected toxic mold. 29-2 (Cont.)

In fact, the net effect of the Project could be a beneficial impact because: (1) the use of chlorine is decreasing and will continue to do so to meet regulatory requirements for THMs; (2) chloramine use is increasing, and the use of chloramines appears to be less aggressive to PEX than copper; (3) chloramines are known to adversely affect copper pipe, and (4) there is already substantial evidence of copper pipe failure. Thus there is greater potential for mold growth today than there would be if the California Plumbing Code permitted more extensive use of PEX.

The Draft EIR's conclusion that PEX is likely to result in substantial premature failure that would result in a significant widespread public health impact is highly conservative and substantially overstates any actual risk to human health or the environment. Because significant impacts are not reasonably likely to occur, mitigation should not be required. Finding that the proposed mitigation is not necessary would

[4] ASTM F2023 specifies destructive testing to test products to failure, to establish the failure mode of the product. Testing pursuant to ASTM F2023 shows that PEX failures, were they to occur, would be complete, as opposed to the more insidious pinhole leaks associated with copper pipe.

avoid potential unintended consequences for California's code process. As the Draft EIR acknowledges, P171-Cl-R is not national consensus standard. The current California Plumbing Code, and all model codes, require compliance with consensus standards.[5] The precedential effect of requiring compliance with a non-consensus standard – for an impact that is highly unlikely to occur – should be of concern both to the State and industry, as model codes are developed based on compliance with consensus standards. If the impact determination is not revised in the Final EIR, however, at a minimum Mitigation Measure 4.2-1 (p. 4.2-13) should be revised to clarify that it applies only to "continuously recirculating hot water systems." 29-2 (Cont.)

Impact 4.2-4: Increased Safety Hazards for Plumbers (p. 4.2-14): PEX does not result in any safety hazards for plumbers, and approval of the proposed regulations is expected to result in a significant decrease in the installation of copper pipe, which presents safety hazards from cutting, airborne substances, fluxes, potential electrical shocks, fire, soldering and welding and transport of heavy pipe. This reduction in hazards from the increased use of PEX relative to the existing condition makes the more appropriate determination for this impact "beneficial impact." 29-3

2. Water Quality (Section 4.4)

The Draft EIR's highly conservative approach is also evident in the water quality effects discussion. Additional information about the regulatory context and performance of PEX over time suggests that this approach again likely overstates the risk of significant impacts, particularly on the issue of release of PEX constituents into drinking water. 29-4

As an initial matter, a fair understanding of potential water quality effects depends on a realistic identification of potential constituents of concern. Many of the chemicals listed in Table 4.4-1 (p. 4.4-11) are not found in any form of PEX piping used to convey potable water. Because the water quality effects analysis addresses potential human health effects of chemical release into drinking water, this list should be revised to include only those chemicals demonstrated to be present in PEX that is intended for use in potable water applications.

Moving on to the impact analysis, one of the Draft EIR's standards of significance states that water quality effects will be considered significant if allowing broader use of PEX pipe will: 29-5

[5] Requiring compliance with P-171-Cl-R also is premature and likely unnecessary, because ASTM is currently in the process of updating ASTM F876 in a manner that will address the issue identified in the Draft EIR. On June 19 a ballot closed at ASTM to include the continuous recirculation requirements in ASTM F876, which will require that pipe being installed for continuous recirculating systems be certified for this application and marked on the pipe. Because the ASTM action was a subcommittee and main committee ballot, it is possible the process will be completed in as little as a few months.

> violate any water quality standards such that implementation of the proposed project would result in a level of a contaminant in drinking water that exceeds a federal or state MCL, notification or response level, or a Proposition 65 Safe Harbor or other relevant Proposition 65 level. (p. 4.4-8.)

The Draft EIR proceeds to evaluate the potential for PEX to release chemicals exceeding regulatory levels. To put the discussion of effects in proper context, it is important to recognize the purpose and effect of drinking water MCLs and action levels (ALs). Both the Office of Environmental Health and Hazard Assessment (OEHHA) and the California courts recognize that MCLs are drinking water standards designed to guard against adverse health effects due to *long-term* exposure to constituents of concern, and thus it is not appropriate to treat short-term exceedances of MCLs as violations of a water quality standard nor as posing a significant risk to human health. Neither the Safe Drinking Water Act nor State water quality regulations prohibit short-term exceedances of MCLs or ALs, and the First District Court of Appeal has specifically rejected the idea that a short-term exceedance of an MCL or AL constitutes a violation of a water quality standard. (See *In Re. Groundwater Cases* (2007) 154 Cal. App. 4th 659.)

29-5 (Cont.)

By treating *any* potential exceedance of an established water quality standard, including regulatory guidelines that do not meet the definition of a water quality standard and have no regulatory effect (e.g., secondary MCLs, notification levels, etc.) as a significant impact, the Draft EIR employs a highly conservative approach to analysis of water quality effects from release of chemicals. Where there is evidence that the level of any constituent released from PEX would rapidly decay to below MCLs or ALs, it is unlikely that any significant health hazard would occur and thus mitigation should not be required.

In this context it is important to emphasize that MCLs are developed for the purpose of protecting the public from possible health effects associated with *long-term* exposure to contaminants. (See *In Re. Groundwater Cases*, *supra*, 134 Cal.App. 4th at p. 686.) MCLs and ALs are not intended to deal with acute risk as a result of exposure of a period of days. (*Id.*; see also 22 Cal. Code Regs., § 64400.) MCLs for carcinogenic chemicals are set at levels that are expected to pose an insignificant risk of cancer per million people exposed by drinking two liters of water per day for 70 years. (*Substantive Water Quality Opinion*, 2000 Cal. P.U.C. Lexis 722 at pp. *25-26.)

> Because the MCL for carcinogenic chemicals is set based on the assumption that an individual drinks two liters of water per day from a contaminated source over a 70 year lifetime, the theoretical cancer risk will very often overstate the *actual* risk, since it is unlikely that most people will drink two liters of water per day from the same contaminated source for 70 years. (*In Re. Groundwater Cases*, *supra*, 134 Cal.App. 4th at p. 686, citing

*Office of Environmental Health Hazard Assessment, A Guide to Health Risk Assessment* (2001), p. 10.)

As the First District Court of Appeal has stated:

> DHS sets these numerical limits to guard against the possible health risks of prolonged exposure to contaminants. To call any exceedance of an MCL or AL a "violation" would convert these numerical limits from measures designed to protect the public from long-term risks of exposure to contaminants into acute risk standards. This is simply not their intended function. (*In Re. Groundwater Cases*, *supra*, 154 Cal.App. 4th at p, 687.)

29-5 (Cont.)

Thus, "[w]here levels of contamination are below an MCL or an AL or temporarily exceed these levels, no health hazard is reasonably expected to occur." (*Id.*, citing Substantive Water Quality Opinion, *supra*, 2000 Cal. P.U.C. Lexis 722 at p. *104.) BSC and consumers thus can be assured that short-term exceedances of MCLs and ALs would not constitute a significant impact under CEQA.

Impact 4.4-1: Water Quality – Noncompliance with Drinking Water Standards Resulting from Leaching) (p. 4.4-8):

The Draft EIR acknowledges the potential for some forms of PEX to release two constituents at levels that exceed California regulatory levels. However, preliminary extraction results from NSF indicate that the two PEX constituents that initially exceed California regulatory levels (MTBE and TBA) will decay to below these levels within a relatively short time.[6] For example, the majority of samples is below the secondary MCL for MTBE on day one and predicted to be below the primary MCL within 90 days. (See Draft EIR Appendix F.) For TBA, levels are predicted to fall below the applicable level anywhere from 48 to 136 days. (*Id.*) Because any exposure to constituents that exceeds regulatory levels likely will be temporary, and not long-term, it would be appropriate to find that such short-term exceedances do not constitute violations of water quality standards. Thus, no mitigation should be required. Additionally, as discussed below, the TBA notification level is not a valid threshold for assessing a significant impact to human health because it is not based on a sufficient health risk assessment.

29-6

[6] The Draft EIR states: "PEX manufacturers have *suggested* that levels of MTBE and TBA that leach from PEX decline over time." (P. 4.4-10.) In fact, *NSF*, the independent entity charged by the State with certification of the safety of California plumbing products, has provided test results and analysis (contained in Appendix F to the Draft EIR) that demonstrate that MTBE and TBA levels released from PEX decline relatively rapidly to below regulatory levels. PPFA endorses the findings of NSF, which are the product of independent testing to the standards of NSF 61 (the health effects standard required by the California Plumbing Code).

The Draft EIR treats the potential exceedance of the Department of Public Health notification level for TBA as a significant impact. As noted in the Draft EIR (pp. 4.4-3-4.4-4):

> Notification levels are nonregulatory, health-based advisory levels established by the Department of Public Health for contaminants in drinking water for which MCLs have not been established. . . . Chemicals for which notification levels are established may eventually be regulated by MCLs (after a formal regulatory process), depending on the extent of contamination, the levels observed, and the risk to human health. Notification levels *may be revised* to reflect new risk assessment information. . . . *Notification levels are not drinking water standards* but are generally supported by a health risk assessment prepared by OEHHA."

A review of the health risk information used to set the TBA notification level (Exhibit D) indicates that information is inappropriate and insufficient to be relied on for regulatory purposes. Rather than base the notification level on a full risk assessment based on accepted methods, DPH relied on an "interim assessment" of TBA by OEHHA staff that itself was based on "limited data availability."[7] The result of this back-of-the-envelope extrapolation was "an *interim* assessment with *preliminary* calculations" that "by no means represents a full risk assessment." (*Id.*, emphasis added.) In fact, OEHHA staff could not definitively endorse the evaluation for standards setting purposes but expressed only its qualified opinion that the limited evaluation "may" be suitable for setting a notification level. (*Id.*) 29-6 (Cont.)

Not only is the notification level not an adopted regulatory standard, and lacking in peer review, but it is based on limited and highly questionable evidence. As such, the DPH notification level is not an appropriate threshold of significance for evaluation of PEX. There is no need to measure PEX against this dubious threshold, however, because the current regulatory requirements of the State adequately protect human health from the potential effects of TBA in drinking water.

The State of California requires that drinking water system components be tested and certified to NSF 61. (22 Cal. Code Regs., § 64591.) The California Plumbing Code (Section 604.1) requires all pipe, tube and fittings carrying water used in potable water systems intended to supply drinking water to meet the requirements of NSF 61. NSF 61 evaluates the health effects of chemical extraction from drinking water system components. As reflected in Table 4.4-1 of the Draft EIR, there are no federal drinking water standards for TBA; however, NSF has established various peer-reviewed, health

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[7] It further appears the State arrived at the TBA notification level by applying EPA's 1996 "Proposed" Guidelines for Carcinogen Risk Assessment (Federal Register 60:17960-18011, April 23, 1996). We understand these guidelines, if they ever were adopted, may not reflect currently accepted methods for risk assessment and thus merit scrutiny as to the appropriateness of their use for setting any regulatory levels.

effects-based action levels in NSF 61. Because the NSF 61 levels are peer-reviewed and based on accepted EPA non-cancer and cancer risk assessment procedures, and an *actual* risk assessment, not just a risk "evaluation" as was done for the State's TBA notification level, and because NSF 61 is the relevant health effects standard in the California Plumbing Code, the NSF levels should be applied for purposes of determining risk of a significant impact from the potential release of TBA. Because existing law requires that PEX comply with NSF 61, and NSF test results demonstrate that TBA levels released from PEX are below relevant NSF 61 levels (Draft EIR Appendix F), the Final EIR should find that no significant impact to human health will occur and no mitigation is needed. 29-6 (Cont.)

If the Final EIR retains the determination that this impact is potentially significant and mitigation is required, the mitigation approach should be revisited.[8] Rather than requiring single-product certification that is unique to specified California drinking water criteria, the BSC should consider adopting regulatory language in the California Plumbing Code that requires that all plumbing products conveying water intended primarily for human consumption must comply with all applicable State laws and regulations. The regulatory language should further specify that compliance must be clearly demonstrated, and for all products must be based on a uniform test methodology and criteria. This approach would protect water quality and promote consistency and fairness in the regulatory scheme.

Regulatory amendments that require compliance with State law and regulations would further the Safe Drinking Water Act mandate to reduce to the lowest level feasible all concentrations of toxic chemicals that may be present in drinking water. The adoption of comprehensive, rather than product-specific, regulatory compliance language that will ensure the broadest protection of water quality is consistent with the State's duty to protect water resources under the Public Trust doctrine. This approach also would help BSC provide building standards that are consistent and minimize the need for future product-specific code amendments. 29-7

Finally, and not insignificantly, adoption of comprehensive regulatory language that applies consistent standards to all plumbing products will serve the State, consumers and manufacturers of plumbing products by ensuring consistency and predictability in the regulatory scheme. There is no rational basis for holding different products to different standards when it comes to protection of human health and the environment. Uniform standards likely will remove potential obstacles to the development of future plumbing products, and avoid the need for product-specific CEQA review on issues such as water

[8] Mitigation Measure 4.1-1 (p. 4.4-16) requires that "[b]efore using PEX for human consumption uses, PEX must receive NSF certification that any leached concentrations of MTBE, TBA or Proposition 65 chemicals is below the relevant MCL, notification, or Safe Harbor level or other applicable Proposition 65 level for those chemicals."

quality effects, as manufacturers, consumers and the State will know that the Code provides a mechanism for ensuring protection of water quality.

This action thus would further the State's objective of providing an alternative plastic hot and cold water plumbing material for use in California without unfairly burdening manufacturers of a single product that is sold worldwide with a separate California certification. It also would help implement BSC's vision, as set forth on its web site, to "ensure that the statewide building code development and adoption process is efficient and effective." In sum, uniform regulation will ensure that public health and aesthetic preferences are fully protected regardless of consumer choice in plumbing product. 29-7 (Cont.)

Impact 4.4-2: Water Quality – Adverse Taste and Odor Impacts (p. 4.4-16):

The Draft EIR concludes that increased use of PEX would result in a "substantial" number of people being affected by adverse tastes and odor in drinking water on a "frequent" basis. (p. 4.4-16.) This conclusion is based on evidence that 25 percent of PEX pipe (in one test) released MTBE above California's secondary MCL. The impact discussion should clarify whether these test results were obtained after manufacture or after use. The discussion also should reflect the fact that MTBE levels released from PEX decline dramatically over time, as evidenced by preliminary extraction test study results submitted by NSF and included in Draft EIR Appendix F. As demonstrated by those results, any impacts would likely be short-term and limited, based on extraction testing results that show that only 24% of the pipe exceeds the five parts per billion initially, and that for the great majority of PEX, levels fall below the secondary MCL within 90 days.

29-8

Significantly, notwithstanding the enormous amount of PEX that has been and currently is being installed in California, there is no evidence in the record that any person, let alone a substantial number of persons, has experienced frequent taste and odor impacts that are attributable to PEX. At the June 6 hearing on the Draft EIR in Los Angeles, Kim Nielson from Griffin Homes testified that they have had zero call backs complaining about taste and odor from PEX. By contrast, according to the testimony, Griffin Homes used to get calls complaining about taste and odor in copper systems, but those calls no longer exist since they switched to PEX. Additionally, Bob Payne and Rick Banner from Keyline Sales testified that there are more than 100 million feet of Uponor Corporation PEX installed in Southern California for potable water applications and there have been no callbacks or complaints of taste and odor or failures. Significant impacts must be based on evidence in the record. Here, there is no evidence to support a finding that a *substantial* adverse effect would occur. If PEX had the potential to result in substantial and frequent taste and odor impacts, surely complaints would have been made.

The Draft EIR defines the current market share of PEX in California as 37%, and assumes that share will increase to 45% if the Project is approved. (Draft EIR, pp. 3-7, 4.3-2.) The Draft EIR further states that 24% of PEX exceeds taste and odor standards (albeit without any evidence of actual complaints or adverse effects on aesthetic preference). Assuming that statement may be accurate, the projected total increase in market share of PEX that might arguably exceed taste and odor standards is approximately 2%. In light of the minor increase in market share of pipe that might exceed taste and odor thresholds, and lack of evidence of taste and odor problems or complaints by consumers notwithstanding the millions of feet of PEX already installed in California, the Draft EIR's conclusion that impacts on aesthetic properties of drinking water could be significant seems unjustified. 29-8 (Cont.)

If notwithstanding this evidence the Final EIR retains the draft significance conclusion, the mitigation approach should be revisited consistent with the approach discussed above for Mitigation Measure 4.4-1. A single regulatory amendment would adequately address both potential impacts with the added advantage of ensuring the broadest protection of water quality.

Impact 4.4-3: Water Quality – Noncompliance with Drinking Water Standards Resulting From Permeation:

It should be noted that polyethylene (PE) water service pipe is approved in California without need for sleeving, and PEX piping will be at least as impervious to permeation as PE. 29-9

Mitigation Measure 4.4-3 (p. 4.4-19): This measure does not specify requirements to determine permeability. To be consistent with other Code provisions, the second bullet point provision of this measure should be revised to read: "The PEX is sleeved with a material that is code-approved for underground installation." 29-10

3. Cumulative Impacts to Water Quality (Section 5.3.4, pp. 5-5 – 5-6.):

The Draft EIR treats any detectable contribution of MTBE or TBA in areas where there is any detectable amount of MTBE or TBA in a drinking water source as a cumulatively considerable contribution to a significant cumulative impact. This approach appears to be more conservative than necessary to prevent significant adverse impacts and raises a number of questions about the underlying cumulative impact, the project's potential contribution to that impact, and the Draft EIR's suggested mitigation. 29-11

Just because it is possible to detect MTBE or TBA in a source, especially in small amounts, does not mean it is reasonable to assume that any detected amount (including trace amounts) is evidence of a significant cumulative impact. Analytical detection limits are technology based and are likely to become increasingly sensitive. For example, NSF has recently lowered its detection limit for TBA in water. And the California DPH

detection level for purposes of reporting, 3 micrograms per liter, is significantly lower than applicable drinking water standards. Thus the mere detection of MTBE or TBA in a drinking water source should not be deemed substantial evidence of a significance cumulative impact.

Moreover, available data contradict the suggestion that MTBE contamination is a significant impact in California, and the Draft EIR presents no evidence to demonstrate that TBA contamination of drinking water has resulted in a significant cumulative impact. Data available on the California Department of Public Health web site show that the vast majority of California water sources are non-detect for MTBE, and virtually all sources are below applicable drinking water standards. (See Exhibit E, available at http://ww2.cdph.ca.gov/certlic/drinkingwater/PGAGES/MTBE.aspx.) In fact, as of November 1, 2006, analytical results for 14,351 sources showed only 89 sources with MTBE detections greater than the detection level for purposes of reporting, or 0.06 percent. (*Id.*) Even more significantly, only 0.02 percent of all results (32 sources out of 14,351) exceeded the primary MCL, and only 28 sources had a peak level higher than the secondary MCL but lower than the primary MCL. (*Id.*) The Final EIR should explain how a total detection rate of just 0.06 percent, where only 0.04 percent of all results exceed any MCL, constitutes a significant cumulative impact.

29-11 (Cont.)

For the impact to be cumulatively significant, one of two conditions must occur: (1) there must already be a cumulative impact (exceedance of an MTBE or TBA standard in delivered drinking water) and PEX would have to contribute considerably to that impact; or (2) the contribution of MTBE or TBA from PEX would be reasonably likely to cause, when added to the existing MTBE or TBA levels, an exceedance of the applicable standards. In each case, there must be substantial evidence to support the determination. Where drinking water levels of MTBE or TBA are below applicable water quality standards, not only does it seem unreasonable to presume the existence of a cumulative impact, but also it seems purely speculative to assume that any detectable contribution from PEX would constitute a cumulatively considerable contribution to such impact. As noted, the vast majority of MTBE detections are far below standards. The Draft EIR contains evidence that MTBE concentrations released from the majority of PEX products decay to very low levels (well below drinking water standards) in a short time. These facts are important to the determination of whether the contribution of MTBE or TBA from increased use of PEX is likely to result in a "cumulatively considerable" contribution to a significant cumulative impact.

The mitigation proposed for this minimal impact also raises concerns. Mitigation measure 5-1 states: "For water service areas that have detectable levels of MTBE or TBA in drinking water or where there is known MTBE or TBA contamination of a source of drinking water, PEX piping installed for human consumption uses must be certified not to leach detectable levels of MTBE and TBA." This mitigation measure raises a number of questions and problems as to its scope, interpretation and feasibility.

First, more specificity is needed to define the requirement that this measure applies "where there is known MTBE or TBA contamination of a source of drinking water." "Sources" of drinking water may include both raw and treated drinking water wells, groundwater aquifers and surface water sources, distribution systems, blending reservoirs, and other sampled entities. This measure should be clarified to provide that it applies only where a drinking water supplier has detected MTBE or TBA at concentrations that exceed or are near (e.g., within some accepted margin, such as 10%, as is done for calculating allowable contributions to Total Daily Maximum Loads) California drinking water quality standards in water that is actually supplied to consumers for drinking water purposes. For example, drinking water agencies often blend more than one source of water to produce treated drinking water that is supplied to consumers, so blending reservoirs should not be included in the definition of sources, nor should unused or inactive potential sources.

Second, for the reasons noted above, the mitigation should apply only where active sources show MTBE or TBA levels that meet or exceed the applicable drinking water standard. Applying mitigation where a source has merely a detectable level of MTBE or TBA is more conservative than necessary to avoid significant effects. 29-11 (Cont.)

Third, the requirement that PEX be certified not to release detectable levels of MTBE or TBA begs the question of how this will be ascertained. Detection methods are technology driven and thus likely to become increasingly sensitive. As such, setting a code requirement based on an indefinable and likely ever-changing level would be unworkable. Also, it is unclear how this measure would be implemented. How will the presence of detectable levels of MTBE or TBA be ascertained, by whom and when? Who would be responsible for demonstrating whether there is MTBE or TBA in source water, and how frequently would this information have to be provided to building officials, and by whom?

As previously discussed, requiring compliance with all applicable water quality laws and regulations would provide a feasible means of protecting human health and the environment that would avoid significant environmental impacts. This approach would adequately address the potential for significant cumulative impacts by avoiding a cumulatively considerable contribution to any significant cumulative impact. Requiring that PEX products be certified to release non-detectable amounts of water quality constituents is unnecessary to protect human health and the environment (especially because any releases are likely to be short-term) and is likely infeasible.

4. Alternatives (Section 7)

The Draft EIR's discussion of the environmentally superior alternative (Sections 1.5.3 and 7.5) states that the No Project Alternative would be environmentally superior to the project with respect to public health and hazards, leaching of chemical compounds 29-12

into drinking water, and indoor air quality. This conclusion is both mystifying and unjustified in light of the record. Rather than provide a reasoned analysis and comparison of the realistic and tangible risks and benefits of increased use of PEX, it appears the Draft EIR simply "counted" potential impacts. In fact, substantial evidence and reasoned analysis supports a finding that increased use of PEX is environmentally superior to the existing condition in each of these areas and more.

With regard to public health hazards and indoor air quality, these are in effect the same theoretical impact, not two distinct impacts, as both relate to the health risks from potential for toxic mold formation. As discussed above, they are a phantom risk. Comments made during the NOP process by plumbing professionals and building officials, along with data in the Draft EIR, provide substantial evidence that copper pipe is failing at high rates throughout California, and that such failures can be expected to occur with increased frequency as drinking water providers switch to chloramine disinfection. Moreover, the record contains evidence that copper pipe is subject to accidental perforation during construction, and that the resulting unnoticeable pinholes lead to persistent, undetected leaking, which is the type of failure that leads to the formation of mold. The Draft EIR contains only a hypothetical discussion of the potential for PEX to fail, unsupported by evidence of actual PEX failures when used in continuously recirculating hot chlorinated water systems, despite its widespread use over the past two decades in California and elsewhere. Because copper is subject to a higher likelihood of failure, and pinhole leaks of copper present a much more tangible risk of toxic mold formation, indoor air quality issues and associated health risk, mold and premature failure issues should be of greater concern for the No Project Alternative. 29-12 (Cont.)

With regard to release of chemical compounds, the Draft EIR fails to acknowledge well-documented evidence of significant health risks associated with copper leaching from copper pipes. In its November 27, 2007 comments in response to the Notice of Preparation for the PEX EIR, the California Professional Association of Specialty Contractors (CAPASC) provided evidence of the adverse health effects of copper pipe leaching, including a 2005 California Housing and Community Development Department document titled "Summary of Literature Search on Copper Leaching into Drinking Water From Copper Pipe" and other studies regarding the effects of copper leaching on health. (Exhibit F.) This evidence demonstrates a significant risk to human health from copper pipe leaching that is greater than any potential risk of PEX. For example, the HCD document cites test results showing copper concentrations from 22 homes in Murrieta, California ranging from a low of 146 ppb to a high of 2,400 ppb. According to HCD, "The Public Health Goal for copper in drinking water as established by CalEPA's Office of Environmental Health Hazard Assessments is 170 ppb." (HCD literature search, Exhibit C to CALPASC NOP comments, at pp. 5-6.) Moreover, 21 of the 22 homes tested exceeded the public health goal. (*Id.*) The HCD report further notes that "Copper leaching continues from installation until about 10 year of service." (*Id.* at p. 5.)

By contrast, NSF test results show that any release of constituents into drinking water from PEX would be very limited, with levels of constituents decaying below drinking water standards in a matter of days or month and with no significant increase in the risk of adverse health effects, based on cancer risk assumptions regarding exposure. Based on the evidence in the record, the Final EIR should recognize that approval of the proposed PEX regulations is likely to *reduce* the risk to public health from the release of chemical constituents compared to the No Project Alternative.

Significantly, the Draft EIR comparison of alternatives fails to acknowledge that the project would be superior to the No Project Alternative with respect to water and energy use, as well as greenhouse gas (GHG) emissions. The Draft EIR itself finds that the project would result in a *reduction* in GHG emissions compared to the existing condition, which was estimated to result in substantially higher GHG emissions over the life cycle of piping. (Draft EIR p. 5-4.) Compared to copper, PEX also results in substantial savings in water use as well as the energy associated with pumping and treating that water (both before and after use) and with heating the water, by reducing heat loss as well as hot water wait times. (See *Evaluation of Residential Hot Water Distribution Systems by Numeric Simulation, Final Report* – March 2004, Robert Wendt, et al. (Exhibit G) and *Performance Comparison of Residential Hot Water Systems*, National Association of Home Builders Research Center, Inc. (Exhibit H).) 29-12 (Cont.)

It is well recognized that water shortages and the need for increased conservation of this precious resource are an ongoing concern for California. PEX is especially popular in Southern California (over 100,000,000 feet of Uponor Corporation product alone has been installed there), where the need to conserve water is especially acute. Moreover, there is no question that energy use contributes significantly to the formation of GHG emissions, as the vast majority of energy is produced through the burning of fossil fuels, which is the source of GHG emissions. Reports from California state agencies and others describe current and projected environmental, economic and health impacts on the State from global warming.[9] It is thus highly significant that increased use of PEX will result in *a reduction in GHG emissions.*

Another adverse effect associated with the No Project Alternative is the ongoing problem of copper theft in California. This problem has been acknowledged in newspaper articles as well as in comments on the NOP for the PEX EIR. (See, e.g., November 14, 2007 letter from Richard Shields, CBO, Building Official, City of Grand Terrace, to Valerie Namba.) As further evidence of the increasing problem of copper theft, the California Assembly recently unanimously approved AB 2724, which substantially increases penalties for metal theft. (Exhibit I.) It has been reported that in

[9] Many of these reports, from the California Department of Water Resources, Environmental Protection Agency, Energy Commission, and Union of Concerned Scientists, among others, are available at http://www.climatchange.ca.gov/documents/index/html.

Riverside County in 2007 there were over 1,000 crimes involving metal theft. (*Id.*) The same source reported that in San Bernardino County, metal theft has increased five-fold in the past seven years, now accounting for one third of property crimes. (*Id.*) Theft of copper pipe results not only in increased cost and inconvenience but also could be expected to result in additional vehicle miles traveled (and associated GHG emissions) due to the need to replenish supplies at job sites.

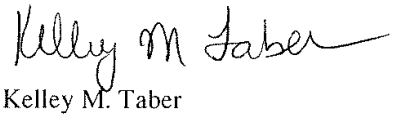
There is substantial evidence that full PEX adoption can save Californians money, energy and water.[9] When any theoretical risks from the increased use of PEX are compared against the very tangible benefits in energy and water savings, and GHG emission reductions, all major issues of concern to California, PEX is clearly the superior choice for the environment. Because increased use of PEX, *without mitigation*, will result in improved environmental conditions, the Final EIR should present a revised comparison of impacts of the project and No Project alternative that recognizes that approval of the proposed PEX regulations would be environmentally superior to business as usual. 29-12 (Cont.)

5. Conclusion

Thank you for the opportunity to comment on the Draft EIR. PPFA's comments identify several areas where we feel BSC and consumers would benefit from additional information or clarification about the potential effects of allowing expanded use of PEX. Increasingly PEX is the plumbing product of choice in California because it has been proven to be more reliable, cost effective (with little risk of theft) and environmentally superior to other plumbing options. The facts and analysis in the Draft EIR, along with the entire record, confirm the wisdom of that choice, and support the Commission's adoption of the proposed regulations authorizing full use of PEX. 29-13

Sincerely,

SOMACH SIMMONS & DUNN



Kelley M. Taber

cc: David Walls, Building Standards Commission

Exhibits

bcc: Richard W. Church
Jeff Church
Mike Cudahy
William Seiler
Richard Houle
William Ives
Sandra K. Dunn

**29-1** This comment includes introductory remarks and expresses that the DEIR is very thorough and takes a highly conservative approach with regard to impact assessment and mitigation recommendations. This comment is acknowledged. No further response is necessary because no environmental issues were raised.

**29-2** The commenter disagrees with the significance conclusion presented for Impact 4.2-3 (page 4.2-9), suggesting that the EIR does not contain substantial evidence to demonstrate that the impact would meet the threshold of significance set forth in the DEIR.

As described in the DEIR, chlorine in potable water has been reported to reduce the lifetime of PEX tubing (page 4.2-11). Therefore, testing standards have been developed to address the oxidative or chlorine resistance of PEX tubing materials intended for potable water use in the United States. Three standards are used for testing the chlorine resistance of PEX used to distribute hot and cold water: ASTM F2023, NSF P171-CL-TD (for traditional domestic use), and NSF P171-CL-R (for continuously recirculating uses). In addition, a new standard, ASTM F876-08, *Standard Specifications for Cross-linked Polyethylene (PEX) Tubing*, will also be available to test for chlorine resistance. NSF recently indicated that NSF will no longer certify PEX pipe and material to the P171 protocol, effective July 2009 (NSF 2008). As described in Impact 4.2-3 of the DEIR (see page 4.2-12), without attack from chlorine or aggressive water, copper pipes are known to outlast the buildings in which they are installed. In addition, plumbing materials certified to ASTM F2023 and NSF P171 standards can have service lifetimes of 40 to 80 years. However, no data are available to show the actual life expectancy of CPVC and PEX, and their duration of use in the United States is too short (approximately 20 years for PEX) to provide data on long-term performance over time.

ASTM Standard F2023 was not designed to consider a 100% continuously recirculating hot water system. The recently adopted ASTM F876-08 standard and the NSF P171-CL-R standard both address 100% hot water for recirculating systems. Without certification to the NSF P171-CL-R standard (or another standard that assumes 100% continuously recirculating hot chlorinated water, such as ASTM F876-08), there is less certainty that PEX tubing used in such systems in jurisdictions that use chlorine would last for 40 years. Because plumbing leaks are a known source of mold (Coalition for Safe Building Materials 2005:33), and that certain molds can cause health problems, and there is no certainty that PEX used in continuously recirculating, hot chlorinated water systems within jurisdictions that use chlorine would have at least a 40 year lifetime, the impact conclusion, albeit conservative, is considered potentially significant.

The commenter suggests that, compared to baseline conditions (which include use of copper pipe), increased use of PEX would likely result in a reduced incidence of pipe failure due to corrosive effects of chloramines on copper and pinhole leaks that can result. The commenter suggests that continuously recirculating hot water systems are not likely to be found in widespread use in California because of high energy usage and Energy Code requirements. While this suggestion is logical, the commenter does not offer data about the number of jurisdictions that are abandoning chlorine nor the manner in which the Energy Code limits the use of continuously recirculating hot water systems. As described in the DEIR, implementation of the proposed project would be expected to increase use of PEX in jurisdictions that currently allow PEX as an alternate material as well as in jurisdictions that do not currently allow it. Therefore, implementation of the proposed project would result in an increase in the use of PEX, including

continuously recirculating, hot chlorinated water systems within jurisdictions that use chlorine. Because the purpose of the DEIR is to identify the significant effects on the environment from adoption of regulations allowing widespread use of PEX tubing, the possibility that increased use of PEX would result in a reduced incidence of pipe failure in general is not relevant. CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures. If a lead agency identifies potentially significant impacts, it must then propose and evaluate mitigation measures and alternatives sufficient to minimize those impacts. Therefore, mitigation for Impact 4.2-3 is necessary for compliance with CEQA.

The commenter states that PEX failures would be complete and immediately noticeable, and circumstances necessary for the formation of mold would not exist. The commenter cites the ASTM F2023 testing standard as evidence for this claim. While there is logic to the idea that pinhole leaks would be more likely to go undetected and contribute to conditions that would allow growth of molds that could result in adverse human health effects, plumbing leaks in general are a known source of mold (Coalition for Safe Building Materials 2005:33), and molds will grow and multiply whenever sufficient moisture is available and organic material is present (DHS 2006).

The commenter further advises that if the impact determination is not revised in the Final EIR, then the language for Mitigation Measure 4.2-1 on page 4.2-13 should be changed to clarify that the measure only applies to "continuously recirculating hot water systems."

Mitigation Measure 4.2-1 is hereby revised as follows:

"Mitigation Measure 4.2-1: Risk of Premature or Unexpected PEX Failure and Flooding Potentially Increasing the Incidence of Mold.

The Building Standards Commission will adopt regulatory language requiring that when installing PEX for <u>continuously</u> recirculating hot water systems in jurisdictions that use chlorine for disinfection, the PEX tubing must be certified using the NSF P171 CL-R standard or a yet-to-be adopted equally rigorous standard that assumes 100% continuously recirculating chlorinated hot water, would ensure a conservative product lifetime of 40 years and is approved by the Building Standards Commission for testing PEX for continuously recirculating hot chlorinated water. Because the NSF P171 CL-R standard assumes 100% hot water and includes a safety factor to ensure a conservative product lifetime of 40 years, this would reduce the risk of premature or unexpected PEX failure to less than significant."

**29-3** The commenter suggests that the appropriate determination for this impact is "beneficial impact." Impact 4.2-4 considers the safety hazards of PEX tubing. This impact is considered less-than-significant because it does not require the use of solvents, glues, or open flames during installation, and PEX tubing is lighter than metal plumbing pipe.

**29-4** NSF raises similar concerns about the chemicals listed in Table 4.4-1. Please see response to comment 27-1 and C-5.

**29-5** As described on page 1-1 of the RDEIR, the DEIR was circulated for public review and comment for a period of 45 days that ended June 23, 2008. During and until the end of the review period, comments were received on the DEIR. The BSC reviewed those comments to identify specific environmental concerns and determine whether any additional environmental analysis would be required to respond to issues raised in the comments. The comment letters raised issues that resulted in the addition of significant new information to the EIR. This new information relates to: 1) the leaching of chemicals from PEX tubing, 2) the thresholds of significance for water

quality, and 3) the determination that certain chemicals are no longer considered constituents of concern because they are not used in PEX, or are not present in a form that poses a threat to human health. This new information resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and one cumulative impact. Please see responses to comments C-2 through C-7, and RDEIR pages 1-1 through 1-3 for further discussion.

The commenter notes that MCLs are drinking water standards designed to guard against adverse health effects due to long-term exposure to constituents of concern, and it is not appropriate to treat short-term exceedances of MCLs as violations of a water quality standard. In addition, the commenter states that constituents that rapidly decay to below applicable regulatory standards do not require mitigation.

The commenter also references *In Re. Groundwater Cases* regarding short-term exceedances of an MCL. In that case, the court held that isolated exceedances of MCLs alone were not sufficient to establish liability for water purveyors regulated by the Public Utilities Commission (PUC) or the Department of Public Health (DPH). This finding was based on the fact that, under the statutory scheme, violations of MCLs or Action Levels merely start the PUC and DPH enforcement process. Liability under the PUC and DPH regulations only occurs if the water purveyor fails to comply with subsequent compliance directives. In the case of the proposed project, the BSC is not seeking to impose liability on PEX manufacturers pursuant to PUC and DPH regulations, but rather is attempting to make a significance determination based on the potential for PEX tubing to leach chemicals in amounts that violate California drinking water standards. Therefore, *In Re. Groundwater Cases* is not applicable to the proposed project.

**29-6** Please see response to comment 29-5 regarding decay testing results and applicable mitigation measures. As discussed in Section 4.4, "Water Quality," of the RDEIR, Impacts 4.4-1 and 4.4-2 would be considered less than significant, and no mitigation is proposed for these impacts.

Regarding the TBA notification level, please see RDEIR pages 1-2 and 1-3, and comment letter 27.

**29-7** Please see response to comment 29-5 and 29-6.

**29-8** Please see response to comment 29-5 and 29-6.

**29-9** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

**29-10** The commenter states that Mitigation Measure 4.4-3 (see DEIR page 4.4-19) is not consistent with other provisions of the CPC, and suggests the language be revised to "The PEX is sleeved with a material that is code approved for underground installation." This revised language would remove language specifying "impermeable to solvents and petroleum products," and therefore would not clearly reduce potentially significant permeation impacts associated with solvents and gasoline to a less-than-significant level. As discussed in Impact 4.4-3, in cases where PEX is placed in contaminated soils and permeated by solvents or gasoline, it has the potential to introduce chemicals into drinking water and impact human health. Therefore, the language in Mitigation Measure 4.4-3 regarding solvents and petroleum products is necessary to reduce potentially significant impacts to less-than-significant levels.

**29-11** As described on page 1-1 of the RDEIR, the DEIR was circulated for public review and comment for a period of 45 days that ended June 23, 2008. During and until the end of the review period, comments were received on the DEIR. The BSC reviewed those comments to identify specific

environmental concerns and determine whether any additional environmental analysis would be required to respond to issues raised in the comments. The comment letters raised issues that resulted in the addition of significant new information to the EIR. This new information relates to: 1) the leaching of chemicals from PEX tubing, 2) the thresholds of significance for water quality, and 3) the determination that certain chemicals are no longer considered constituents of concern because they are not used in PEX, or are not present in a form that poses a threat to human health. This new information resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and the cumulative water quality impact. Please see responses to comments C-2 through C-7, and RDEIR pages 1-1 through 1-3 for further discussion. In addition, see RDEIR pages 5-7 and 5-8. As shown on page 5-8 of the RDEIR, the cumulative water quality impact would be less than significant, and no mitigation is necessary.

**29-12** The commenter suggests that the DEIR makes the wrong conclusion regarding the environmentally superior alternative and asserts instead that the adoption of proposed PEX regulations is environmentally superior relative to existing conditions. This argument is based upon four points offered in the comment:

- copper pipe causes a greater risk for mold than PEX;
- copper pipe releases greater quantities of chemicals that are harmful to humans than PEX;
- if the market share of PEX increases as a probable result of adoption of regulations allowing PEX, greenhouse gas (GHG) emissions will reduce relative to those caused by the use of copper pipe; and,
- the putative increase in the use of PEX that would result from the project will reduce theft of copper pipe.

These comments are noted. Section 15126.6(e)(2) of the State CEQA Guidelines indicates that an analysis of alternatives to a proposed project shall identify an environmentally superior alternative, and that if the environmentally superior alternative is the “no project” alternative, the EIR shall identify an environmentally superior alternative from among the other alternatives. Such a discussion invariably considers relative impacts, benefits, and tradeoffs of different alternatives. The EIR considers the impacts of each alternative in each of the environment issue areas in its determination of the environmentally superior alternative (DEIR, page 7-13).

As described in response to comment 29-5, DEIR comment letters raised issues that resulted in the addition of significant new information to the EIR, and resulted in changes to the significance threshold for water quality, and changes to significance determinations for two water quality impacts and the cumulative water quality impact. This new information also resulted in changes to the alternatives section (see RDEIR, Chapter 7, “Alternatives to the Project”). As described on page 7-14, overall, the no project alternative would be similar to the proposed project. Alternative B, mitigated alternative, is the overall environmentally superior alternative of all the alternatives evaluated.

**29-13** This comment is acknowledged.

30

trilogy plumbing, inc.

JUN 23 2008

REAL ESTATE SERVICES DIVISION

June 19, 2008

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

**Attention**: Valerie Namba, Senior Environmental Planner

**Reference**: DEIR (Draft Environmental Impact Report) for PEX Tubing

Dear Ms Namba,

Trilogy Plumbing, Inc. has been in business for over six years. We employ approximately 120 employees in Sacramento and Anaheim, California.
We agree with and support the comments expressed in the letter from CALPASC to you dated June 17th, 2008. 30-1

PEX Tubing has offered the industry a viable option to more costly water systems and has proven to reduce warranty cost after installation. This combination of reliability and affordability has help Trilogy Plumbing bring affordable housing to all Californians.

Sincerely,

David Keefe, President
Trilogy Plumbing, Inc.

184 E. Liberty Avenue • Anaheim, CA 92801 • (714) 888-8575 • Fax (714) 888-8555 • CA Lic. #818858
6925 Roseville Road • Sacramento, CA 95842 • (916) 348-1771 • Fax (916) 348-1101

Trilogy Plumbing Inc.
David Keefe, President
June 23, 2008

**30-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

31

PLUMBING Concepts INC.

June 20, 2008

JUN 2 6 2008

REAL ESTATE SERVICES DIVISION

California Department of General Services
Real Estate Services Division
Professional Services Branch, Environmental Services Section
Attn: Valerie Namba, Senior Environmental Planner
707 Third Street, Third Floor, MS 509
West Sacramento, CA 95605-9052

Subject: PEX DEIR; Comments Regarding Recirculation Systems

Dear Ms. Namba,

We have been installing PEX tubing in potable domestic plumbing systems in California for 5 years. We have installed approximately 4,750 PEX plumbing systems during that time. Of those installations approximately 40% are recirculating systems.

Of the recirculating systems installed, Approximately 15% are *continuous* recirculating systems. There have been no failures of any of these PEX systems since they have been installed. 31-1

The California Energy Code discourages the use of continuous recirculation systems as they consume unnecessary energy resources. The number of these systems is insignificant when compared to the total number of plumbing systems in use in California.

We repair and/or replace approximately 200 copper systems per year which have failed due to pin hole leaks. PEX systems have virtually eliminated the call backs due to failing systems. Pin hole leaks in copper systems can go unnoticed for extended periods of time, which can lead to mold behind walls and other health concerns.

Thank you for your work regarding this issue, and we appreciate the opportunity to comment.

Sincerely,

John M. Raya
President
Plumbing Concepts, Inc.

22951 La Palma Avenue • Yorba Linda, California 92887 • 714/692-3890 Fax 714/692-8591 • Lic. # 469996

| Letter 31 Response | Plumbing Concepts Inc.<br>John Raya, President<br>June 26, 2008 |
|---|---|

**31-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

PH1



1 ADOPTION OF STATEWIDE REGULATIONS ALLOWING THE USE OF
2 PEX TUBING EIR PUBLIC COMMENTS
3
4 DEPARTMENT OF CONSUMER AFFAIRS
5 SACRAMENTO, CA
6 TUESDAY, JUNE 3, 2008 - 2:00 O'CLOCK P.M.
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9 ---OOO---
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20 REPORTED BY: ANGIE M. MATERAZZI, CSR 13116
21
22 JAN BROWN & ASSOCIATES
23 CERTIFIED SHORTHAND REPORTERS
24 701 BATTERY STREET, 3RD FLOOR, SAN FRANCISCO, CA 94111
25 (415) 981-3498

1 A P P E A R A N C E S
2
3
4 SYDNEY B. COATSWORTH
5 EDAW 2022 J STREET
SACRAMENTO, CA 95811
6 (916) 414-5800
7
8 VALERIE J. NAMBA
9 REAL ESTATE SERVICES
707 THIRD STREET, SUITE 3-400
10 WEST SACRAMENTO, CA 95605
(916) 376-1607
11
12 DAVE WALLS
13 BUILDING STANDARDS COMMISSION
2525 NATOMAS PARK DRIVE, SUITE 130
14 SACRAMENTO, CA 95833
(916) 263-0916
15
16 JASON BARRETT
17 EDAW 2022 J STREET
SACRAMENTO, CA 95811
18 (916) 414-5800
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1 P U B L I C  S P E A K E R S
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3 (There were no public speakers)
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1 TUESDAY, JUNE 3, 2008 2:00 O'CLOCK P.M.
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3
4 MS. NAMBA: Good afternoon. This is the
5 public meeting for the Draft Enviromental Impact
6 Report for the adoption of regulation to allow
7 cross-linked polyethylene tubing for statewide use
8 in California. I'm Valerie Namba and I'm a planner
9 with the California Department of General Services.
10 The Department of General Services is overseeing
11 the enviromental review process.
12 With me today I have Mr. Dave Walls of the
13 Building Standards Commission. He is a executive
14 director. And the Building Standards Commission is
15 the lead agency for the adoption of the regulations
16 and the enviromental impact report. I also have
17 with me Ms. Sidney Coatsworth. She represents
18 EDAW, our consultant who is preparing the
19 enviromental impact report. We also have Mr. Jason
20 Barrett who is assisting us also today. He is also
21 with EDAW.
22 This is one of three public meetings we're
23 holding to solicit comments on the Draft
24 Enviromental Impact Report. We are having other
25 meetings in San Francisco tomorrow and in

1 Los Angeles on Friday. And all that information is
2 available in the notice availability. We have
3 extra copies of the notice in the back of the room.
4 I want to make sure everyone has signed in. We'll
5 just put you on our mailing list so that when we
6 have a mailing, you'll be able to get any updates.
7 A brief overview of the process: We began our
8 enviromental review process in late October, and we
9 held scoping meetings in November to obtain input
10 on the content of the EIR. Based on the comments
11 received and research that EDAW conducted, a Draft
12 Enviromental Impact Report was developed and it was
13 received for public comment. The Draft EIR was
14 released May 9th, and comments will be accepted
15 through June 23rd. We hope you all had an
16 opportunity to review the Draft EIR, and we are
17 here today to hear your comments on the Draft
18 Enviromental Impact Report.
19 So format for the meeting today, Mr. Walls
20 will give a brief overview of the proposed
21 regulation and give us a status on the rule making.
22 Ms. Coatsworth will take over the CEQA process and
23 what you could expect in the future on that. After
24 that we'll open up the meeting for public comment.
25 MR. WALLS: Thank you, Val.

1 As Val mentioned, I am Dave Walls with the
2 Building Standards Commission. And just to kind of
3 go through what our regulations process is, we
4 proposed regulations back in November along with
5 the three other responsible agencies. That would
6 be OSHPD and DSA and DCD. I guess I should say
7 that's OSHPD, is Office of Statewide Health
8 Planning and Development; DSA, is Division of State
9 Architect; and DHCD, is Department of Housing and
10 Community Development. Two other agencies are also
11 working on proposals, responsible agencies, and
12 that would be Department of Agriculture and
13 Department of Public Health.
14 These would all be to remove the current
15 restriction on the use of PEX in buildings in
16 California potable water systems. The draft
17 regulations were proposed to the Commission in
18 November. We prepared those for public viewing and
19 went before the co-advisory committees in January,
20 which was a open public meeting. The advisory
21 committees took comment at the time and made a
22 recommendation to move forward with the PEX to
23 remove the restriction.
24 With that we took it forward, put it out in
25 the 45-day comment period, which began in March and

1 ended May 12th. We since reviewed those comments.
2 And for the Building Center Commissions, there was
3 a little bit of confusion as to PEX-AL-PEX. So we
4 put that out to a 15-day comment period right now
5 just to clarify that. There was no intent to
6 include PEX-AL-PEX as part of the removal of
7 restrictions. And though the regulations I think
8 were they were right, but there was some confusion
9 in some of the language that we put in there, so
10 that's out 15-day to clarify that.
11 And all the responses and all the comments we
12 received will be responded to in the final
13 statement of reasons, and that will more than
14 likely go before the Commission for action in
15 September at our September meeting. I think that
16 pretty much takes care of it.
17 MS. COATSWORTH: Okay. Building Standards
18 Commission has determined that adoption of the
19 revised regulations constitutes a project under
20 CEQA, the California Enviromental Quality Act, and
21 therefore requires evaluation of its enviromental
22 effects under CEQA. This slide shows a brief
23 overview of the CEQA process. It begins with a
24 notice of preparation in which a notice is sent out
25 informing agencies and the public that an

1 enviromental impact report will be prepared and
2 solicits opinions, information about the content of
3 the enviromental impact report.
4 That NOP is out for 30 days, and those NOP
5 comments were received and informed preparation of
6 the Draft EIR. Scoping occurred last fall as Val
7 mentioned. Seven scoping meetings were held around
8 the State, and that provides an opportunity for
9 agencies and the public to provide oral comments
10 about their views about the content of the
11 enviromental document.
12 The team then commenced evaluation of the
13 enviromental effects and prepared a Draft EIR. A
14 notice of completion was filed with the State
15 Clearinghouse at the end of that period when the
16 Draft EIR was released and notice of availability
17 was made available to the public informing everyone
18 of where a document could be reviewed.
19 We are now in public review period as it shows
20 there in middle of that slide. We are accepting
21 comments, written comments, oral comments. We will
22 then take those comments and prepare written
23 responses. The written responses and any revisions
24 to the project will constitute the final EIR that
25 will then be taken to the Building Standards

1 Commission for certification and action on the
2 project.
3 As part of that final action, findings,
4 statements of override and consideration if
5 necessary, and mitigation measures are made clear
6 in the final project action. Notice of
7 determination is then filed with the State
8 Clearinghouse once action is taken on the project,
9 and then after that period the regulatory packages
10 will proceed.
11 These are just details of how the EIR process,
12 CEQA process occurred on this project. I think
13 most of these points have been covered with scoping
14 the public comment period responses to comments in
15 preparation of the final. An important point here
16 in bullet number four is that the EIR conclusions
17 will provide a basis on which a decision will be
18 rendered on the project.
19 The State will certify the EIR, which means
20 that it will attest that it reflects its
21 independent views and independent judgment. And
22 finally EIR mitigation measures will be reflected
23 in the regulatory packages.
24 Briefly, the Draft EIR evaluated several
25 enviromental topic areas including water folly,

1 solid waste, air quality, public health and
2 hazards. Impacts were determined to be less than
3 significant in the following areas: Air quality
4 impacts related to the production of PEX pipe and
5 the combustion of PEX pipe; public health and
6 hazards related to the production of biofilm inside
7 this pipe and the potential for ignition and spread
8 of fire and solid waste with regard to the
9 potential for PEX to contribute to the waste
10 stream. For example, as construction waste.
11 Now, the EIR found that several impacts were
12 potently significant requiring litigation and
13 basically included impacts related to air quality
14 and public health effects resulting from mold
15 formation from potential pipe rupture. And it was
16 suggested that PEX be certified using more rigorous
17 standard if that piping is to be used for
18 continuous recirculating hot water systems in areas
19 that use chlorine for disinfection. Potential
20 water quality impacts from leaching and permeation
21 were also evaluated.
22 In the mitigation there requires testing to
23 ensure that drinking water standards will be met.
24 And in the case of underground installation, that
25 either preparation of a Phase 1 to determine that

1 soils are clean or sleeving of the pipe to prevent
2 permeation. And then finally for cumulative impact
3 in the areas where water supply contain MTBE or
4 TBA, the pipe needs to be certified to have no
5 detectable levels of these constituents.
6 And then finally just where are we and where
7 do we go from here. In the italicized text there
8 in the middle of the slide, we are in the Draft EIR
9 public meetings happening this week as Val
10 indicated. The Draft EIR review period closes on
11 June 23rd, and at that time we will commence
12 preparation of responses to comments and the final
13 EIR. We expect certification sometime in
14 September 2008 and project action.
15 This slide shows the Building Standards
16 Commission website where the public may go for
17 additional information. The mailing address to
18 receive written comments and then the telephone
19 number for additional information. It's important
20 to note that this website and telephone number are
21 not for making comments on the Draft EIR. Those
22 need to be received in writing or provided as oral
23 testimony at one of these public hearings.
24 That concludes our brief presentation, and I
25 believe we'll open public hearing at this time.

1 MS. NAMBA: Before we start taking public
2 testimony, I want to point out to you that we have
3 a court reporter here who will be recording your
4 testimony to make sure that we record it
5 accurately. And then when you come up to provide
6 your comment, if you'll come up to the table here
7 and speak into the microphone. Please give your
8 name and any affiliation so that our record is
9 complete. So with that, I would like to open it up
10 to comment.
11 We'll be here until 4:00 o'clock and turn the
12 microphones on at that point. We'll just put it on
13 hold for now.
14 (Whereupon the proceedings were closed
15 at 4:00 p.m.)
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I do hereby certify that the foregoing meeting was taken at the time and place therein stated; that the testimony of said parties was reported by me, a shorthand reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

Date JUNE 3, 2008

ANGIE M. MATERAZZI
CSR 13116

| Public Hearing 1 Response | Public Hearing, Sacramento, CA<br>June 3, 2008 |
|---|---|

**PH1** No comments were provided during the June 3, 2008 public hearing.

PH2



1 PUBLIC HEARING
2 DRAFT ENVIRONMENTAL IMPACT REPORT
3 FOR THE ADOPTION
4 OF STATEWIDE REGULATIONS
5 ALLOWING THE USE OF PEX TUBING
6
7 PUBLIC HEARING
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13 TRANSCRIPT OF PROCEEDINGS
14 WEDNESDAY, JUNE 4, 2008
15
16
17
18 Reported by:
19 Diane L. Freeman, CSR # 5884
20 ----------
21 JAN BROWN & ASSOCIATES
CERTIFIED SHORTHAND REPORTERS
22 701 Battery Street, 3rd Floor
San Francisco, California 94111
23 (415) 981-3498
24
25

1 APPEARANCES:

2 VALERIE NAMBA, Senior Environmental Planner
State of California

3

DAVE WALLS, Executive Director
4 State of California

5 JASON BARRETT, Environmental Planner
EDAW/AECOM

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1 WEDNESDAY, JUNE 4, 2008 2:30 P.M.
2 PROCEEDINGS
3 ---oOo---
4
5 MS. NAMBA: Good afternoon and welcome to the
6 public meeting on the draft environmental impact report
7 for the adoption of regulations to allow the use of
8 cross-linked polyethylene, or PEX, for state use in
9 California.
10 I'm Valerie Namba, and I'm a planner for the
11 California Department of Environmental Services
12 overseeing the environmental review process.
13 With me I have Mr. David Walls, he's director of
14 the Building Standards Commission. The Building
15 Standards Commission is adopting the post regulations or
16 proposing to adopt the regulations, and he's the lead
17 agency for the environmental impact report.
18 Also with me today is Mr. Jason Barrett. He is
19 with EDAW/AECOM Consultants who is preparing the draft
20 environmental document.
21 This is one of three meetings. We are hoping to
22 solicit comments on the draft EIR. We had one yesterday
23 in Sacramento, and we will have another one in
24 Los Angeles on Friday.
25 We began this environmental review process in

1 late October and we held scoping meetings inviting input
2 on the scope and content on the EIR in November. Based
3 on the comments we received and the research conducted,
4 a draft EIR was developed and released for public
5 comment. The draft EIR was released on May 9th, and
6 comments will be accepted through June 23rd.
7 We have a brief presentation for you today.
8 Dave will describe the project and the regulatory
9 process, and Jason will provide an overview of the
10 environmental process pursuance to the Environmental
11 Quality Act. He'll summarize the draft EIR and talk
12 about the next steps and then we'll open the public
13 hearing to receive your comments.
14 Please note that the intent of our meeting is to
15 receive your comments, not to engage in a question-and-
16 answer session.
17 We have a court reporter here to capture your
18 comments verbatim, and after the close of the public
19 comment period, we will carefully consider and respond
20 to all comments in writing.
21 So are there any questions so far about the
22 process?
23 With that, I'll let Dave describe the project.
24 MR. WALLS: The project is a proposal by the
25 Building Standards Commission as well as by responsible

1 agencies to remove the current amendment that restricts
2 the use of PEX in California.
3 To do that the agency has proposed regulations
4 and submitted them to the agency along with our own in
5 mid November, 2007. From there we prepared them, made
6 sure they met the APA, advised the community in the form
7 of public hearings, public electrical energy committee
8 meeting in January.
9 They reviewed them, considered them, and their
10 recommendation was to go forward with the proposed
11 regulations as they were submitted.
12 From that they were taken and put into the
13 45-day comment period, which began in March, late March
14 and then May 12th.
15 From that comments were received and they're
16 being reviewed right now. But, as a result of that
17 also, with the Building Standards Commission's proposed
18 regulations, there was a little bit of confusion
19 relating to PEX, whether it was also considered as part
20 of our proposal.
21 So we're right now in a 15-day process to remove
22 that confusion, if you will. There can be changes made
23 to our proposed regulations that clears that up. That
24 will end, I believe, on June 23rd.
25 From there any written -- or any comments from

1 that would also be responded to and all written comments
2 as well as oral comments will be responded to in our
3 final statement of reasons, and that will be, along with
4 the final express terms and all necessary paperwork and
5 procedures will be submitted to the commission for
6 action in our September commission meeting, at least
7 that is the intent at this point in time.
8 With that, I'll turn it over to, I believe,
9 Jason.
10 MR. BARRETT: Thanks, Dave. I just had a few
11 slides. I wanted to summarize the CEQA process for
12 starters. I have two slides on the CEQA process, then
13 I'll briefly summarize some of the issues we addressed
14 in the draft EIR and we found there were several impacts
15 in the EIR.
16 Finally, I'll just touch on the EIR schedule and
17 some upcoming dates and where we've been and where we're
18 going to go from here.
19 With that, I'll touch on the overview of the
20 CEQA process. This slide here shows the different
21 steps. I'm going to walk through the different steps
22 briefly of the process.
23 If you look in the first box, the first step in
24 the process is what's known as the Notice of
25 Preparation, and that was released on October 31st of

1 last year. The purpose of the notice of preparation is
2 to identify to the public that a draft EIR will be
3 prepared and also to solicit comments on issues that
4 should be considered in the EIR.
5 Then during the month of October we went into
6 the public agency scoping phase. We had several
7 meetings throughout the state to solicit input on the
8 issues that will be addressed in the EIR. That process
9 ended on November 30th of 2007.
10 And then you can see on the slide the third box
11 is the draft EIR phase. That's when we took the
12 comments, considered the issues that we should address,
13 then conducted our analysis and developed the draft EIR.
14 At the end of that process, we filed what's
15 known as a notice of completion and published a notice
16 of availability to the public letting the public know
17 that the draft EIR is available for review. That was
18 released on May 9th of this year, 2008, and that was
19 also filed with the state clearinghouse for agency
20 review and public review.
21 Now we're moving into the public review phase,
22 which is a 45-day review, and you can see on the middle
23 of the slide here, as I mentioned, that started May 9,
24 2008, and that's going to run until June 23rd, 2008.
25 So we're getting towards the end of the public

1 review period right now.
2 After that period concludes, we'll get into
3 what's known as the final EIR phase, and the final EIR
4 includes the draft EIR, the responses to comments on the
5 EIR, and that complete package is compiled into a
6 document what's known as the final EIR.
7 After that, the lead agency, California Building
8 Standards Commission, will certify the EIR that it meets
9 the requirements of CEQA. Then there will be a project
10 action and what they're doing are findings that are
11 under consideration, whether any mitigation measures
12 will be developed at that point.
13 Then getting towards the end of the process, the
14 notice of termination is filed and then you can see in
15 the last box there on the slide the responsible agency
16 is when we're received with the regulatory package.
17 That's the overview, the next slide gets into
18 some key points about the process. I'll just touch on
19 these briefly. This is basically a summary I just went
20 over, but I wanted to highlight a few things.
21 As you can see, the first bullet, as I
22 mentioned, the scoping period ended November 30, 2007,
23 and the notice of preparation were published, as I said,
24 different scoping meetings. I believe there were seven
25 altogether held throughout the state.

1 And then the draft EIR was released on May 9th
2 of this year for the 45-day public review period, and
3 this is where we are now, basically in the middle of
4 that process.
5 Just going down, you can see on the third bullet
6 responses to comments were prepared, including the final
7 EIR. That whole body of evidence, like I said, which is
8 the analysis that we did for the draft EIR, the public
9 and agency comments that we received, and any other
10 written responses, any responses from these public
11 hearings that we're having, that will all be considered
12 together and that's the information on which the
13 decision on the project will be based.
14 So the agency will be considering all this
15 information in their decision.
16 Then prior to taking action, the Building
17 Standards Commission will certify the EIR, and that, in
18 CEQA speak, is to make it final in accordance with CEQA,
19 and that reflects the independent judgment of the
20 commission.
21 Then finally any mitigation measures that are in
22 the EIR that could be in response to the final phase
23 will be reflected in the final regulations.
24 Just moving into the issues that were addressed
25 in the EIR, there were five basics that were addressed,

1 and these include water quality issues, solid waste, air
2 quality, public health, and finally hazards issues.
3 So this next slide just summarizes the impacts
4 that we identified in the draft EIR, and these can be
5 broken into less than significant impacts and less than
6 significant impacts with mitigation.
7 So I'll touch on the less than significant
8 impacts first. We had three areas where we found less
9 than significant impacts. Those include air quality
10 impacts specifically related to production and
11 combustion of PEX tubing.
12 We did find some less than significant impacts
13 related to public health and hazards, in particular with
14 respect to bio film. That's inside of the tubing that
15 can form, and any potential ignition and spread of fire
16 impacts, we also found those to be less than
17 significant.
18 And, finally, solid waste, that's mainly with
19 regard to the potential for PEX that contributed to the
20 waste stream and construction waste. We also found that
21 to be less than significant.
22 We did find several impacts for which mitigation
23 was proposed. With the mitigation, those were mitigated
24 to a less than significant level, and I'll just touch
25 briefly on those areas where we had less than

1 significant impacts with mitigation.
2 The first area is air quality and public health
3 effects. We found that that could result in mold
4 formation from potential pipe rupture. We suggested
5 that PEX could be certified using a more rigorous
6 standard if it was to be used for a continuously
7 circulated hot water systems. Specifically that would
8 be in water areas using chlorine for disinfection.
9 We also found some water quality impacts that
10 were less than significant with mitigation, specifically
11 water quality impacts would be related to leaching and
12 permeation.
13 The permeation impacts would require testing to
14 insure that drinking water standards would be met -- or,
15 excuse me, the leaching in PEX, and in the case of any
16 underground installation, a preparation of Phase I
17 environmental impact would need to show that the soils
18 are clean and that any leaking of a pipe would need to
19 be added to prevent permeation of the pipe.
20 Then finally we did find some cumulative water
21 quality impacts related to leaching of MTBE and TBA.
22 That would be areas where water already contained MTBE
23 and TBA. In those cases we need to certify that the
24 pipe has no significant levels of these constituents.
25 That's a summary of the impacts that we found.

1 I'll just touch on the EIR schedule just briefly, and
2 then I'll turn it back over to Val for the public
3 comment.
4 Just briefly on this slide, the EIR schedule, as
5 I mentioned, the NOP was circulated October 31, 2007.
6 Scoping meetings were held in November 2007. The EIR
7 was circulated in May, May 9th of this year, 2008. And
8 now we're, as you can see in the middle of the slide,
9 now in the draft EIR public meetings. We're having
10 three of those meetings. They are being held this week.
11 The last will be this Friday in Los Angeles.
12 The public review closes on June 23rd. Then in
13 July we will prepare the final EIR and it's anticipated
14 that the EIR will be certified in September of 2008.
15 So with that I'll turn it over to Val for public
16 comment.
17 MR. HOULE: You made the comment that the
18 responses to the comments will be part of the final EIR.
19 Are the comments themselves part of the final EIR?
20 MR. BARRETT: Yes, the final EIR, like I
21 mentioned, contains several parts, including the draft
22 EIR, but what's prepared is the final EIR actual
23 document, which includes any written comments received
24 on the draft EIR, and then there will be comments
25 prepared, and what we'll do is usually indicate comment

1, response 1; comment 2, response 2.

MR. WALLS: Just to add to that quickly, I'm not quite sure what the CEQA process -- we had a similar process, we summarize the comments, we don't plug the entire comment into the final. Do you do that with the final EIR, or are they summarized and responded to?

MR. BARRETT: In the final EIRs what we'll do typically is actually include the whole letter. Let's say there is a five-page letter submitted, we'll include the whole five pages in the final EIR. Then we'll go through electronically and indicate numbering the comments, then respond to the comments. So it's pretty detailed.

MS. NAMBA: With that I think it's appropriate to open up the hearing for comments. I want to remind everyone that the comment period is open until June 23rd. We'll be accepting written comments through close of business June 23rd. Today we're taking oral comments.

If somebody repeats -- makes a comment, and your comment is the same, there is no reason to repeat it, unless you want to.

You can also submit your comments in writing. For project information, the Building Standards Commission has a website, that's www.bsc.ca.gov. So

there is information on both the rulemaking process, recommendation process, and CEQA process on the website.

Written comments will be submitted to me, which you can see up on the screen here. Also, the information is also located in the notice of availability. We have copies of the notice of availability, if you would like to take those with you.

With that, I'd like to open the floor to anybody who would like to make comments.

Do I have any comments?

Well, there being no comments, I am going to close the meeting for now, but we will be here until 4:00 to accept any comments, if people would -- if anybody else comes and would like to make some comments or present comments.

It is 2:45. So we'll be here until 4:00.

Thank you for coming.

(Comments concluded.)

(Proceedings concluded at 4:00 p.m.)

STATE OF CALIFORNIA )
) ss.
COUNTY OF MARIN )

I, DIANE L. FREEMAN, a Certified Shorthand Reporter, Certificate No. 5884, for the State fo California, hereby certify that the foregoing proceedings were taken by me stenographically, at the time and place therein stated, and that the said proceedings were thereafter reduced to typewriting, by computer, by me.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing caption named, nor in any way interested in the outcome of the cause named in said action.

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of June 2008

Diane L. Freeman

DIANE L. FREEMAN, CSR No. 5884

| Public Hearing 2 Response | Public Hearing, San Francisco, CA<br>June 4, 2008 |
|---|---|

**PH2** No comments were provided during the June 4, 2008 public hearing.

PH3



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2
3 ADOPTION OF
4 STATEWIDE REGULATIONS
5 ALLOWING THE USE OF PEX TUBING
6
7
8
9
10 LOS ANGELES, CALIFORNIA
11 PUBLIC MEETING
12 Friday, June 6, 2008
13
14 Ronald Reagan Building
15 300 South Spring Street
16 First Floor Auditorium
17 Los Angeles, California
18
19
20 Reported by: Rachael L. Hall, CSR No. 11104
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21 JAN BROWN & ASSOCIATES
22 CERTIFIED SHORTHAND REPORTERS
23 701 Battery St. 3rd Floor, San Francisco, CA 94111
24 (415) 981-3498 or (800) 522-7096
25

1 P A R T I C I P A N T S
2
3 PRESENTERS:
4 DAVE WALLS, Building Standards Commission
5 JASON BARRETT, EDAW, Inc.
6 VALERIE NAMBA, Department of General Services
7
8 COMMUNITY MEMBERS AND INTERESTED PARTIES:
9 KIM NIELSEN, Griffin Industries
10 BRUCE PAYNE, Keyline Sales, Inc.
11 BRUCE WICK, CALPASC
12 RICK BANNER, Keyline Sales, Inc.
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1 JUNE 6, 2008 10:15 A.M.
2
3 MS. NAMBA: Good morning, and welcome to the
4 public meeting on the Draft Environmental Impact Report
5 for the adoption of cross-linked polyethylene tubing for
6 statewide use, statewide plumbing use. I'm Valerie
7 Namba, and I'm a planner with the California Department
8 of General Services overseeing the environmental review
9 process.
10 With me today is Mr. Dave Walls, the executive
11 director of the Building Standards Commission. The
12 Building Standards Commission is the department that is
13 proposing the adoption of regulation to allow PEX Tubing
14 and is also the lead agency for the draft and for the
15 environmental impact report.
16 Also, with me today I have Mr. Jason Barrett,
17 who's with our consultant, EDAW. EDAW is preparing the
18 environmental impact report.
19 This is one of three meetings we're holding to
20 solicit comments on the Draft Environmental Impact
21 Report, in fact, it's our last meeting. However, the
22 public comment period will extend through June 23rd,
23 close of business June 23rd, we will be accepting
24 written comments.
25 We began this environmental review process in

1 late October with the release of the notice of
2 preparation. And we held seven scoping meetings in
3 November to solicit input on the scoping content of the
4 EIR.
5 Based on the comments we received and research
6 conducted, a Draft Environmental Impact Report was
7 developed and released for public comment. The Draft EIR
8 was released May 9th, and as I said before, we will be
9 accepting written comments through June 23rd.
10 We have a very brief presentation for you
11 today. Dave will describe the project and the regulatory
12 process. Jason will provide an overview of the
13 environmental review process pursuant to the California
14 Environmental Quality Act, and he'll summarize the
15 conclusions that are presented in the Draft EIR.
16 He'll also talk about the next steps or upcoming steps on
17 the environmental review process. Then we'll open up the
18 public hearing to receive your comments.
19 Please note that it is the intent of this -- of
20 our hearing is to receive your comments, not to engage in
21 a question and answer session.
22 We have a court reporter here to capture
23 comments verbatim, and after the close of the public
24 comment period, we will carefully consider and respond to
25 all comments in writing.

1 So at this point, are there any questions in
2 the purpose or the process of the meeting?
3 With that, I'll turn it over to Dave.
4 MR. WALLS: Okay. As Valerie mentioned, I'm
5 Dave Walls of the California Standards Commission.
6 Basically, the project description our proposal
7 last November to go through the process, regulatory
8 process, to remove the current amendment within the
9 California Plumbing Code that restricts the use of PEX.
10 We are the lead agency on that. There are five
11 responsible agencies: OSHPAD or Office of Statewide
12 Health Planning and Development; there's some hospitals;
13 Division of State Architect, which were the schools;
14 Department of Housing and Community Development for,
15 obviously, residential; Department of Agriculture, for
16 their area of authority in the dairies and the Department
17 of Public Health, which was formerly known as the
18 Department of Health Services.
19 With that, the proposals were submitted, as I
20 said, in November. We processed those and moved them to
21 our advisory committees, which were held in plumbing,
22 electrical, mechanical, and energy, advisory committees
23 for the Commission.
24 In January, after review of public comments,
25 they recommended we move forward with the proposed

1 project as it is. We then put it to the 45-day comment
2 period, which began in March and ended May 12th.
3 From those comments we're still waiting, of course,
4 from our statement of reasons, it's based on the EIR, the
5 Draft EIR that is out now. So what comes out of that
6 will shape the final regulatory process, but we are
7 responding to comments.
8 We do anticipate that probably September will
9 be the actual action meeting by the commissioners. I
10 think that's scheduled for September 11th currently.
11 The Building Standards Commission and our proposed
12 regulations. There was a little confusion regarding PEX
13 ALPEX. So we did have a 15-day comment period going on
14 right now to clarify that, make sure that people know
15 that we are strictly addressing the PEX cycle. That
16 comment period ends on June 16th.
17 With that, I will turn it over to Jason.
18 MR. BARRETT: Thanks Dave. I'm Jason Barrett.
19 I would like to mention I'm with EDAW, a member of the
20 team that helped develop the EIR for the project. I'm
21 just going to run through a few slides, a few slides on
22 the CEQA process and then I'll summarize the impacts that
23 we identified in the EIR. And then lastly I'll just
24 touch on the EIR schedule and then turn it back over to
25 Valerie for wrap-up and hear your comments.

1 So this first slide has us walking through
2 the process. Here, you see there's a number of steps in
3 the sequence process, and it is a process. We kicked
4 everything off last fall, on October 31st, 2007, with the
5 Notice of Preparation. And that's a document that was
6 prepared and released to the public to solicit any
7 comments on items that should be addressed in the EIR and
8 just alert the public that an EIR is being prepared.
9 And then we enter the public agency scoping
10 phase and that lasted a month. And then
11 we had seven meetings last fall throughout November and
12 that process wrapped up November 30th. And we did have
13 seven meetings and they were statewide, some of you may
14 have attended some of those meetings.
15 And then we move into the Draft EIR phase. Just
16 going down the steps on the third dots here that you can
17 see. And so that's based on some of the comments we
18 received in the scoping process and other materials. We
19 developed a Draft EIR, and then that process wrapped up
20 this spring.
21 And at the end of that process, we filed what's
22 known as a Notice of Completion and then a Notice of
23 Availability was developed and sent out to the public.
24 After that, we moved into the public review
25 phase. And you can see there that's a 45-day review

1 period and that started May 9, and that's going to wrap
2 up on June 23rd. So we're right about in the middle of
3 that process right now and getting towards the end of
4 that.
5 After that, we move into the response to
6 comments and final EIR phase of the CEQA process. And
7 the final EIR is basically the Draft EIR responses to any
8 comments received on the Draft EIR. And then a document
9 is published, which is actually called the Final EIR, but
10 that Final EIR constitutes all that material. And all
11 that material together is what the lead agency uses to
12 base their decision on.
13 After that, the EIR is certified by the
14 Building Standards Commission, and then there's some sort
15 of project action. And then down towards the bottom of
16 the process here, you see there's findings that will be
17 developed, and if there's any over-riding considerations, and
18 mitigation measures will be involved. And then at the
19 end of that process, we file what's known in the CEQA as
20 a notice of determination on the project. And then
21 finally the responsible agencies can proceed with
22 regulatory packages when that process is done.
23 This next slide just focuses in on a few key
24 points on the CEQA process, and this is just a summary of
25 the previous slide to just focus in on a couple of things

1 here.
2 And then they mention the first bullet head,
3 the scoping period ended November 30th. And then the
4 public comment period on the Draft EIR, we're in the
5 middle of that right now, including public hearings of
6 which today is one of these public hearings. That's
7 running from May 9 until June 23, so we will be accepting
8 comments up to and through June 23rd. And then the Final
9 EIR is responses to any comments that we receive on the
10 Draft EIR.
11 And then just moving down the EIR conclusions,
12 provide the basis for the decision on the project and
13 that will authorize the use of the PEX Tubing. I'll
14 clarify that.
15 Then the State is certifying the EIR to take an
16 action, and then finally mitigation measures will be
17 reflected in the regulatory packages.
18 All right. Moving into the issues that were
19 addressed in the EIR and some of the impacts that we
20 found, and this slide just summarizes the issues that
21 were addressed. And there are basically five issues, as
22 you see on the slide; water quality, solid waste, air
23 quality, public health and hazards.
24 So based on those issues, we identified
25 different kinds of impacts, and those can be broken into

1 less than significant impacts and what are known as less
2 than significant impacts with mitigation. So with the
3 mitigation, if you apply that mitigation, then those
4 impacts would be less than significant.
5 So then starting with the less than significant
6 impacts first. We had some air quality impacts related
7 to the production and combustion of the PEX tubing. We
8 found that to be less than significant.
9 There are also public health and hazards
10 impacts related to biofilm inside the pipe and issues
11 like potential for ignition and fire spread. And we also
12 analyzed those issues and found those to be less than
13 significant.
14 And then finally we also looked at solid waste.
15 And solid waste, for example, could be construction waste
16 associated with the use of PEX Tubing. We also found
17 that to be less than significant.
18 So moving into the other impacts that were also
19 less than significant with mitigation. First off,
20 related to air quality and public health and hazards, we
21 did identify some impacts that would be public health and
22 air quality impacts resulting from mold pollution, and
23 that would come from a potential pipe rupture. And one
24 of the mitigations there is we're suggesting PEX be
25 certified using a more rigorous standard, and

especially particularly focused on the use of continuous use of recircling hot water systems, and then that would also be a water system -- water service areas that used chlorine for disinfection. So with that mitigation we did find those impacts related to pipe failure and then the potential mold issues to be less than significant.

And we also identified a few water quality impacts, mainly focused on leaching, taste and odor and permeation. For leaching and permeation testing to drinking water standards that we could identify, we did show that the pipe would be within drinking water standards and that would be the proper mitigations and to get that impact less than significant.

In the case of underground installation, we identified mitigation of the preparation of the phase one environmental site assessment, showing that soils are clean to prevent permeation, we will address that impact. So with the application of those mitigations, those permeations and then leaching impacts would be less than significant.

And finally, we also identified cumulative water quality impacts related to leaching of MTBE and TBA, and that would be mainly in areas where water ~~slides~~ service areas contained MTBE and TBA, and again, there we would need to

1 show that the pipes have been certified below limits, and
2 actually in this case, there were no detectable levels of
3 these constituents. An application for mitigation would
4 bring that impact to less than significant levels.
5 All right. Moving on to the EIR schedule, just
6 to kind of summarize some key dates here. Again the NOP
7 for the project was circulated October 31st, 2007.
8 Scoping meetings were held in November 2007, and then the
9 Draft EIR for the project was circulated May 9th of this
10 year, 2008. And right now we're in the Draft EIR public
11 meetings phase and that's occurring this week, June 3rd,
12 4th and 6th. Today is the last meeting, and then the
13 Draft EIR review period is going to close on June 23rd.
14 And we're anticipating that the Final EIR will be
15 prepared in July of 2008 and then the EIR would be
16 certified in September 2008.
17 So with that, I'll turn it back over to Val.
18 MS. NAMBA: I think our next slide is just the
19 contact information. For any information on the
20 rule-making process or the environmental review process,
21 you can access that on the Building Standards Commission
22 website, which is www.bsc.ca.gov. And then the mailing
23 address for written comments, you see above, it is my
24 address which is 707 Third Street in West Sacramento,
25 California. The address is also listed on the

1 Notice of Availability, which we have extra copies of.
2 You can get those on the table in the hallway there, so
3 if you have any questions.
4 If you have any questions on the process, you
5 can give me a call. My number is (916) 376-1607, and
6 that will be calls, basically, on the process.
7 As you know, I will not be accepting comments
8 over the phone. We will not be accepting comments on the
9 website. We're taking your comments today, and we will
10 accept written comments, as I mentioned before, through
11 the close of business June 23rd.
12 So I just wanted to remind people that we are
13 taking oral comments today. If somebody else has the
14 same comments -- has spoken before and has the same
15 comment as -- that you had intention to make, there's no
16 need to repeat the comment unless you want to. The other
17 thing is you can submit your comments in writing.
18 So with that, I am going to open the floor to
19 any comments -- any comment~~aries~~ers that would like to speak
20 today.
21 Thank you for coming today. And when you
22 approach the podium here, if you could identify yourself
23 and your affiliation for the court reporter so that we
24 can have a complete record of the proceedings. That would
25 be appreciated.

1 KIM NIELSEN: Certainly. Well, my name is Kim
2 Nielsen, I'm with Griffin Industries located in
3 Calabasas, California.
4 MS. REPORTER: Spell your last name?
5 KIM NIELSEN: N-i-e-l-s-e-n. I made a few
6 notes.
7 I want to first preface this by letting you
8 know that I've worked for some of the largest builders in
9 the nation, and I'm reflecting back over that experience
10 and those extensive services the last 10 years. I'm
11 currently working with one of the oldest builders in the
12 Los Angeles, Southern California area, and they are PH3-1
13 responsible for about 60,000 homes, in that time period.
14 Although, my stint with that builder is shorter than that.
15 I've been installing crossed-link polyethylene
16 tubing since 1998, when we then switched from copper
17 effectively at that time frame. During that time, I've
18 installed approximately 4,000 residential units, just
19 under 2,000 multi-family units. To date, we've not had
20 any call-backs from end users complaining about PEX
21 issues, whether they were maintenance issues, performance
22 issues. Probably the most prevalent to builders in
23 today's litigious times are disconcerting differences in
24 taste or any type of taste related to the use of pipe.
25 We have in the past had problems with copper,

especially at the beginning of the process where we've got flux and things like that used in that process. do create a problem. QA has always had to go back and make sure that the pipe systems are adequately flushed before the homeowner ever uses the system to avoid any excess toxins, which is an issue that we do not have and never have had with PEX. You know, as I said,that's pretty much common for copper.

Since we've been installing PEX water distribution systems, we haven't had any call backs due to premature failures of the system. We've had numerous failures of copper systems from years past when Griffin, in particular, was this very aggressive quality assurance program for home residents who have homes as old as 10, 12 years. We found an issue that is related to workmanship, delivered the product in a sub-standard manner, possibly by the delivery. We wanted to make sure those are taken care of.

PH3-1 (Cont.)

PEX water distribution system has virtually eliminated all of the call-backs we had in lieu of using copper. We are continuing today to replace failing copper systems and galvanized systems with PEX tubing, where it's approved for use. There are some we're working at where it's listed as an alternative building product and, therefore, there's some scrutiny.

And we've had great success and satisfaction, especially with our end-users. There's been an explanation period to tell them why the project rule now is different than when it was installed. We found when we educated the public, they've been very receptive to this and very happy with it because it's useable and not notable immediately after installation.

At Griffin Industries, PEX tubing is being installed above the slab only. Of course, with one exception and those would be isolated kitchen island applications, where we don't have the vertical ability to bring it down a column, bring it down a wall. In that particular instance, our in-house QA requirement is that all PEX be sleeved in 3 to 4 inch ABS, depending on the number of lines. PH3-1 (Cont.)

This does a couple of things for us. ABS, of course, shields from any issues we have from underground damage from other trades. This has been very, very huge and for even copper in the wall, we've had problems with it being dense or constricted having with water flow after the project was on. It's very, very difficult, if not impossible, to find a point of constriction. PEX virtually eliminates that process because it's -- if it is constricted, the pressure that constricted it at some point is usually removed and

1 actually will return to its normal shape. And it's
2 always been an issue with copper. If it's constricted or
3 crushed, it maintains, it's malable. It even became dead
4 volume. That's gone away. Any possible -- it also
5 prevents any possible permeation of contaminated or
6 pretreating slabs. They're pretreating foundations all
7 the time. We want to make sure that the PEX leading is
8 pulled in the loop after foundation so there's no
9 possibility of the termite process contaminating the
10 sleeving or PEX piping. These are things that we do that
11 may be a little bit above and beyond, I think, of the
12 common practices. PH3-1 (Cont.)
13 Since we have been installing PEX tubing, we
14 have not experienced any failures of the PEX tubing
15 connected with the fittings of any type which were installed
16 in a typical water distribution system or in a recirculating
17 system. Recirculating systems, of course, are under
18 additional scrutiny at this particular space and time.
19 We make sure that the product we are using has been
20 certified by NSF, the P171 protocol, which certifies the
21 pipe for hot corrugated water, basically at the same
22 time. It's an accelerated test, and again, it's not the
23 standard in the industry, but we feel much better using
24 products that are available to us. You know,
25 we don't have that availability anywhere else.

The other issue that has been -- made our lives much, much easier in the field is that we have a protocol for pressure testing our plumbing systems. And in the past when we've used rigid copper, the flux that's used in connection with the soldering, if the soldering joint is actually made, then I can pressure-test the copper, and it will actually hold pressure for a -- for a small amount of time. And if -- if they're not -- if they don't give it enough scrutiny, it will appear to hold pressure for a very short amount of time, air or hydraulic pressure. And then that will wane off over time because the copper is rigid and it doesn't flex, there's no room for expansion, it holds the fitting together.

PH3-1 (Cont.)

PEX is completely different. We pump up our PEX systems up to 100 psi after installation, and we keep that pressure gauge on there until after drywall or last applications, which are prone to intrusion from fasteners. With the PEX system, if you can pump up to 100 psi, if they missed a crimp fitting, it is immediately evident. There's no evolution over time and it's -- it's immediately evident. And that has really helped us in making sure that if there is a problem, it's noted at that time and the customer never sees it years or weeks down the road, and we don't end up with a mold issue from

a slightly dripping leak in a contained spot that goes unnoticed for months. And that's really very huge for us. PH3-1 (Cont.)

So we entirely endorse the product and appreciate your time.

BRUCE WICK: Hi. Thanks for having us today. My name is Bruce Wick, I'm the director of risk management for CALPASC, California Professional Association for Specialty Contractors. We have 43 plumbing contractor members across the state amongst our 550 various trade members.

And I won't repeat everything because Mr. Nielsen said everything I would say. Our experience across the state is virtually verbatim to everything he said. Especially that part about if PEX is going to fail, you know, you don't have a nail that eventually corrodes over a long period on a wall. That's your real mold issue. So we think it's time -- been a great way to improving public health. Thank you for your work on this and hope this is approved very quickly. Thank you, very much. PH3-2

MS. REPORTER: Your name again?

BRUCE WICK: Bruce Wick. I'll give you a card.

MS. REPORTER: Okay.

MS. NAMBA: Do I have any other speakers?

1 BOB PAYNE: Good morning. My name is Bob Payne.
2 I'm a master plumber. I will cut it short with my
3 history because people say I can talk forever.
4 My job for the last 10 years has been a
5 cotechnical specialist for PEX pipe in Southern
6 California, and it goes from San Luis Obispo to the
7 Mexican border to the Colorado River. I have trained
8 thousands of inspectors, building officials, plumbers,
9 apprentices, apprenticeship training programs and spoke
10 at many organizations like ASPE, ICC and apprenticeship
11 programs also.
12 When this came down, and it talked about
13 possible leaching or something in the water, which I've PH3-3
14 never heard of. And so I called numerous building
15 officials and other patient people out there, and they
16 have never had a problem. I have not found one failure
17 anywhere on any system. There were a couple of systems
18 that worked their way back through from that. When I
19 went out and looked at the project, it wasn't even our
20 stuff. So you know, it was somebody had done something,
21 mickey-mouse, it was not under proper installation at
22 all.
23 So we've had no failures, I had no complaints,
24 and I have no building officials that are aware of any.
25 They have had none. So I don't know what else I can tell

you. It's just doesn't fail. I thank you very much. If you have any questions, I hope I answered them. Thank you. PH3-3 (Cont.)

MS. NAMBA: Would anybody else like to speak today?

RICK BANNER: My name is Rick Banner, and I'm with Keyline Sales. We represent Northern and Southern California and have since 1970.

Now, I just want to speak to a couple of quick points, particularly I want to let you know we -- we became reps in 1997, and up to this point we've shipped just over a hundred million feet of tubing in Southern California, alone. I don't know what the numbers are for Northern California. PH3-4

Being the president of the company, if we were having taste and odor issues in the field, those -- those issues would ultimately end up on my desk. They would go from Mr. Nielsen, you know, you get call-backs, go to the contractor and ultimately make it to us as the manufacturer reps to get involved and see what was going on.

To this point, I have had absolutely no calls about taste and odor or permeation or leaching. With regard to permeation, there are often questions from the field, you know, can permeation occur particularly

with regard to termicides, but they are usually questions that they -- come up, people hear about it, and they want to know what are the ways to mitigate that or need to.

One of those -- one of the ways we've mitigated that rather quickly over time instead of -- is most of the plumbers in this market are tending to go overhead and they may come through the -- through the footing on the surface and go overhead from there. We had very few of the -- of the larger -- the guys that are really doing a lot of -- a lot of work, very few go underground anymore with slab. So I think it takes care of that.

PH3-4 (Cont.)

In research, had no-shows there whatsoever. We didn't get any call-backs or any inquiries about failure due to research systems. Again -- again that's going to be mitigated over time as well as the demand of orientated systems we're moving to as we go forward.

Anyway, that's about it. I wanted to let you know, I mean with a hundred million feet, it would have ended up on my desk at some point to -- to address it, so thank you.

MS. NAMBA: Would anybody else like to speak today?

Well, if nobody else is going to volunteer to speak, I'm going to close the meeting for now. We'll be

1 here until noon today. If you should change your mind
2 and can accept comments -- we'll accept comments through
3 up until noon today.
4 And then also I just want to remind everybody
5 that we will be accepting written comments through June
6 23rd, and I thank you all for coming today.
7 (Off the record at 10:44 a.m.)
8 (Adjourned at 12:00 p.m.)
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STATE OF CALIFORNIA )
) s.s.
COUNTY OF LOS ANGELES )

I, RACHAEL HALL, a Certified Shorthand Reporter in and for the County of Orange, State of California, do hereby certify:

That said proceedings were taken before me at the time and place set forth, and was taken down by me in shorthand and thereafter reduced to computerized transcription under my direction and supervision; and I hereby certify the foregoing deposition is a full, true and correct transcript of my shorthand notes so taken.

I further certify that I am neither counsel for nor related to any party to said action nor in any way interested in the outcome thereof.

IN WITNESS WHEREOF, I have hereunto subscribed my name this 16th day of June, 2008.

A Certified Shorthand
Reporter in and for
the State of California

CSR NO. 11104

| Public Hearing 3 Response | Public Hearing, Los Angeles, CA<br>June 6, 2008 |
|---|---|

**PH3-1** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

**PH3-2** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

**PH3-3** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

**PH3-4** This comment is acknowledged. No further response is necessary as no issues related to the environmental impacts of the project were raised.

# 3 CHANGES TO THE DRAFT AND RECIRCULATED DRAFT EIR

As described in the RDEIR, significant new information was received during public review of the DEIR that resulted in new analysis and recirculation of portions of the DEIR, including Section 4.4, "Water Quality"; Chapter 5, "Cumulative Impacts"; and Chapter 7, "Alternatives to the Proposed Project." No changes or revisions to the content of the RDEIR were necessary following public review or in responses to comments.

Minor changes to the text of the DEIR were required and are presented below. Text deletions are shown in strikeout (~~strikeout~~), and text additions are shown in underline (underline).

## Section 4.2, Public Health and Hazards

### Mitigation Measure 4.2-1, DEIR page 4.2-13, is hereby revised as follows:

"Mitigation Measure 4.2-1: Risk of Premature or Unexpected PEX Failure and Flooding Potentially Increasing the Incidence of Mold.

The Building Standards Commission will adopt regulatory language requiring that when installing PEX for continuously recirculating hot water systems in jurisdictions that use chlorine for disinfection, the PEX tubing must be certified using the NSF P171 CL-R standard or a yet-to-be adopted equally rigorous standard that assumes 100% continuously recirculating chlorinated hot water, would ensure a conservative product lifetime of 40 years and is approved by the Building Standards Commission for testing PEX for continuously recirculating hot chlorinated water. Because the NSF P171 CL-R standard assumes 100% hot water and includes a safety factor to ensure a conservative product lifetime of 40 years, this would reduce the risk of premature or unexpected PEX failure to less than significant."

## Section 4.4, Water Quality

### Table 4.4-1, DEIR page 4.4-1, is hereby revised as follows:

## Table 4.4-1
## Chemicals Potentially Present in PEX Tubing and Comparison between NSF Criteria and California Drinking Water Standards (in Mg/L)

| Chemical | NSF Values (Standard 61)[1] | | | | | | | | | | | California Standards | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | D1 | | D2 | | | D3 | | D4 | E1 | | E2 | | | | | | |
| | USEPA/ Health Canada MCL/MAC | USEPA/ Health Canada SPAC | NSF Peer-Reviewed Aqua TAC | NSF Peer-Reviewed SPAC | NSF Peer-Reviewed STEL | NSF based on USEPA guidance Aqua TAC | NSF based on USEPA guidance SPAC | TOE[7] | NSF International Aqua TAC | NSF International SPAC | TOE[7] | Listed in Prop. 65?[2] | Prop 65 Safe Harbor | PHG[3] | MCL[4] | Secondary MCL [4] | Notification/ Response Levels[5] |
| | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | | mg/L | mg/L | mg/L | mg/L | mg/L |
| **Chemicals in Polyethylene, HDPE or PEX[8]** | | | | | | | | | | | | | | | | | |
| acetophenone | | | 0.2 | 0.02 | 1 | | | | | | | | | | | | |
| 2,4-bis(dimethylethyl)phenol | | | | | | | | | | | | | | | | | |
| Benzene | 0.005 | 0.0005 | | | | | | | | | | x | .0064 | 0.00015 | 0.001 | | |
| benzothiazole | | | | | | | | x | | | | | | | | | |
| bis-(dimethylethyl)benzene | | | | | | | | | | | | | | | | | |
| bisphenol A | | | | | | | | | 0.1 | 0.01 | | | | | | | |
| BHT (methyl di(t-butyl)phenol) | | | | | | | | | | | | | | | | | |
| carbon disulfide | 0.7 | 0.07 | | | | | | | | | | x | | | | | .16 / 1.6 |
| cyclohexadienedione | | | | | | | | | | | | | | | | | |
| cyclo-hexanone | | | 30 | 3 | 40 | | | | | | | | | | | | |
| cyclopentanone | | | | | | | | x | | | | | | | | | |
| diazadiketo-cyclotetradecane | | | | | | | | | | | | | | | | | |
| dicyclopentylone | | | | | | | | | | | | | | | | | |
| dimethylhexanediol | | | | | | | | x | | | | | | | | | |
| di-t-butyl oxaspirodecadienedione | | | | | | | | | | | | | | | | | |
| hydroxymethylethylphenyl ethanone | | | | | | | | | | | | | | | | | |
| isobutylene | | | | | | | | x | | | | | | | | | |
| methanol | | | 20 | 2 | 20 | | | | | | | | | | | | |
| methyl butenal | | | | | | | | x | | | | | | | | | |
| methyl di-t-butyl hydroxyphenyl proprionate | | | 0.02 | 0.002 | 0.1 | | | | | | | | | | | | |
| methyl (di-t-butylhydroxy-phenyl) propionate | | | | | | | | | | | | | | | | | |
| methylbutenol | | | | | | | | | | | | | | | | | |
| nonylcyclopropane | | | | | | | | | | | | | | | | | |
| phenolics | | | | | | | | | | | | | | | | | |
| phenylenebis-ethanone | | | | | | | | | | | | | | | | | |
| propenyl-oxymethyl oxirane | | | | | | | | | | | | | | | | | |
| tertiary butyl alcohol | | | 9 | 0.9 | 40 | | | | | | | | | | | | 0.012/ 1.2 |
| tetrahydrofuran | | | | | | | | | 1 | 0.37 | | | | | | | |
| trichloroethylene | 0.005 | 0.0005 | | | | | | | | | | x | | 0.0008 | 0.005 | | |
| **Polyurethane coatings and liners (h):** | | | | | | | | | | | | | | | | | |
| 1,4-butanediol | | | | | | | | | | | | | | | | | |
| 4,4-methylenedianiline | | | | | | | | | 0.001 | 0.0001 | | x | .0004 | | | | |
| bis(2-ethylhexyl)phthalate | | 0.0006 | 0.0006 | | | | | | | | | x | | 0.012 | 0.004 | | |
| bisphenol A diglycidyl ether | | | 1 | 0.1 | 5 | | | | | | | | | | | | |
| butyl benzyl phthalate | | | | | | 1 | 0.1 | | | | | x | | | | | |
| diphenyl(ethyl)phosphine oxide | | | | | | | | | | | | | | | | | |
| di-t-butyl methoxyphenol | | | | | | | | | | | | | | | | | |
| ethylhexanol | | | | | | | | | 0.05 | 0.05 | | | | | | | |
| tetramethyl peperidinone | | | | | | | | | | | x | | | | | | |
| toluene diamine | | | | | | | | | | | | x | | | | | |
| **Additional Chemicals[9]:** | | | | | | | | | | | | | | | | | |
| methyl tert butyl ether (MTBE) | 0.1[6]~~05[6]~~ | | | | | | | | | | | | | 0.013 | 0.013 | 0.005 | |
| phthalates | | | | | | | | | | | | | | | | | |
| carbon black | | | | | | | | | | | | x | | | | | |
| benzo(a)pyrene | 0.0002 | 0.00002 | | | | | | | | | | x | .00006 | 0.000004 | 0.002 | | |
| mercury | 0.002 | 0.0002 | | | | | | | | | | x | | 0.0012 | 0.002 | | |
| cadmium | 0.005 | 0.0005 | | | | | | | | | | x | .0041 | 0.00004 | 0.005 | | |
| PAHs | | | | | | | | | | | | | | | | | |
| **Additional Chemicals[10]:** | | | | | | | | | | | | | | | | | |
| 4-butoxyphenol | | | | | | | | | | | | | | | | | |
| 5-methyl-2-hexanone (MIAK) | | | 0.06 | 0.006 | 0.8 | | | | | | | | | | | | |
| **Additional Chemicals [11]:** | | | | | | | | | | | | | | | | | |
| chloroform | 0.08 | 0.008 | | | | | | | | | | x | .02 | | | | |
| toluene | 1 | 0.1 | | | | | | | | | | x | 7 | 0.15 | 0.15 | | |

Notes: Shaded chemicals represent those for which NSF values are higher than California drinking water values.
ANS = American National Standard; aqua TAC = total allowable concentration; MAC = maximum acceptable concentration; MCL = maximum contaminant level; mg/L = milligrams per liter; NSF = NSF International, Inc.; PEX = cross-linked polyethylene; PHG = public health goal; SPAC = single product allowable concentration; STEL = short-term exposure level; TOE = threshold of evaluation.
[1] NSF and ANSI, 2007: Drinking water systems components Health effects. NSF/ANSI 61 - 2007.
[2] OEHHA, 2007: Chemicals Known to the State to Cause Cancer or Reproductive Toxicity. Safe Drinking Water and Toxic Enforcement Act of 1986. [http://oehha.ca.gov/prop65/prop65_list/Newlist.html]
[3] OEHHA, 2008: Public Health Goals for Water. [http://oehha.ca.gov/water/phg/allphgs.html]
[4] CDPH, 2008: Table 64444-A, Table 64431-A and Table 64449-A. Title 22 California Code of Regulations California Safe Drinking Water Act & Related Laws and Regulations. [http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Lawbook.aspx].
[5] OEHHA, 1999: Water Notification Levels. [http://www.oehha.ca.gov/water/pals/index.html].
[6] NSF Comment Letter to DGS (Bestervelt, pers. comm., 2008). ~~This NSF value was not found in NSF (2007a), but has been referenced by other sources.~~
[7] Chemicals that did not meet the minimum data requirements to develop chemical specific concentrations were evaluated under the threshold of evaluation (TOE). As defined by Section A.7.1 of NSF Standard 61 (NSF International 2007), a risk assessment is not required for a substance if the normalized concentration is less than or equal to the following concentrations: 3 µg/L (micrograms per liter) (chronic exposure, static normalization conditions), 0.3 µg/L (chronic exposure, flowing normalized conditions), and 10 µg/L (short-term exposure, initial laboratory concentration).
[8] List of chemicals found by NSF to leach from system components (Tomboulian et al., 2004). Many of these chemicals may not be found in PEX.
[9] Various sources.
[10] Testing on PEX pipes conducted by Skjevrak et al. (2003).
[11] Detected chemicals during NSF testing of Wirsbo Aqua PEX testing, April 2000. Only those with at least one available NSF value or California standard are listed.
Source: Provided by ENSR in 2008.

# 4 REPORT PREPARATION

## LEAD AGENCY

### California Building Standards Commission

David Walls ..... Executive Director

### California Department of General Services, Real Estate Services Division

Valerie Namba. ..... Senior Environmental Planner

## EIR CONSULTANTS

### EDAW

Sydney Coatsworth, AICP ..... Principal-in-Charge
Jason Barrett ..... Project Manager
Mike Avina ..... Environmental Planner
Nisha Chauhan ..... Environmental Analyst
Amber Giffin ..... Publications
Deborah Jew ..... Publications
Gayiety Lane ..... Publications

### ENSR (Subconsultant)

Ishrat Chaudhuri, Ph.D., DABT ..... Senior Toxicologist

### Remy, Thomas, Moose, and Manley LLP (Subconsultant)

Whitman Manley ..... Senior CEQA Regulatory Specialist
Kathryn Cotter ..... CEQA Regulatory Specialist

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Chaudhuri, Ishrat. Senior Toxicologist, ENSR Corporation. Westford, MA. April 23, 2008c—Memorandum to Heather Halsey of EDAW regarding the NSF over time testing method.

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