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January 30, 2012

East Yard Communities for Environmental Justice
2317 Atlantic Blvd
Commerce, CA 90040

Attn: Mr. Angelo Logan

Subject: Comment Letter on Draft Environmental Impact Report (DEIR) for the Southern California International Gateway (SCIG) Project

Dear Mr. Logan:

At the request of East Yard Communities for Environmental Justice (EYC-EJ), Clark and Associates (Clark) has reviewed materials related to the above referenced project, including the Draft Environmental Impact Report (DEIR) prepared for the Port of Los Angeles (POLA) by the Los Angeles Harbor Department (LAHD). The applicant is proposing to “provide *an additional* (emphasis added) near-dock intermodal rail facility serving the San Pedro Bay Port marine terminals that would meet current and anticipated containerized cargo demands, provide shippers with comparable intermodal options, incorporate advanced environmental controls, and help convert existing and future truck transport into rail transport, thereby providing air quality and transportation benefits.”¹ The proposed Project requires POLA to acquire or lease non-LAHD properties by the project proponent BNSF and certain lease terminations and business relocations on LAHD properties.²

¹ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. ES-3-ES-4.

² POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. ES-2.

The proposed Project would occupy 96 acres of LAHD property and approximately 57 acres of non-LAHD property, for a combined total of 153 acres. The proposed Project site is located near the Wilmington community and the City of Carson to the west, the City of Carson to the north, and the City of Long Beach to the east, in a primarily industrial area bounded generally by Sepulveda Boulevard to the north, Pacific Coast Highway (PCH) to the south, the Dominguez Channel to the west, and the Terminal Island Freeway to the east. According to the DEIR, the general area is characterized by heavy industry, goods handling facilities and port-related commercial uses consisting of warehousing operations, trucking, cargo operations, transloading, container and truck maintenance, servicing and storage, and rail service.

The DEIR prepared for the project states that there are unavoidable significant impacts from the emissions associated with the project. The Air Quality analysis concludes that both the project and its alternatives would have significant unavoidable impacts³. Construction of both the proposed Project and the Reduced Project Alternative would result in emissions of criteria air pollutants that would exceed South Coast Air Quality Management District's (SCAQMD's) significance thresholds and air pollutant concentrations that exceed local, state and national ambient air quality standards. Mitigation measures will not reduce those emissions below the thresholds, and they will remain significant and unavoidable.

Operation of the proposed Project and alternatives would cause exceedances of one or more of the SCAQMD ambient thresholds for NO₂, PM₁₀, and PM_{2.5}, and the National Ambient Air Quality Standard (NAAQS) for NO₂.⁴ Mitigation measures applied to the proposed Project

³ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. ES-20.

⁴ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. ES-20.

and the Reduced Project Alternative will not reduce the impacts below the thresholds, and no mitigation can be applied to the No Project Alternative.⁵ Accordingly, impacts after mitigation will remain significant and unavoidable. The proponent concludes that the No Project Alternative would not be consistent with regional and local air quality plans and policies, which would constitute a significant impact that cannot be mitigated.

The DEIR notes that “The proposed Project and the Reduced Project Alternative would result in disproportionate effects on minority and low-income populations as a result of significant unavoidable impacts related to Aesthetics, Cultural Resources, and Noise. Significant impacts related to air quality, biology, greenhouse gases, land use, public services, and water resources would either be reduced through mitigation, or would not fall on human populations, or would not fall disproportionately on minority and low-income populations.

The No Project Alternative would not have new, significant effects with respect to minority and low-income population”⁶ These conclusions are premature and based upon a flawed analysis of the potential health risks impacts for the communities adjacent to the proposed project.

Documents reviewed by Clark for this analysis include:

1. POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011
2. SCAQMD. 1993. CEQA Air Quality Handbook

⁵ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. ES-20.

⁶ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. ES-25-ES-26.

Clark's review of the materials in no way constitutes a validation of the conclusions or materials contained within the plan. If we do not comment on a specific item this does not constitute acceptance of the item.

DEIR Analysis

The DEIR was issued prematurely without considering the serious flaws in the Proponent's analysis of the project, and these flaws are replicated in the DEIR. The flaws include:

1. The DEIR Fails To Meet The Standard For Environmental Impact Reports
2. The DEIR Fails to Adequately Consider the Traffic Impacts and Resulting Air Quality Impacts on the Communities Immediately Adjacent to The Proposed Project;
3. The DEIR's Health Risk Assessment is Flawed and Fails to Accurately Calculate the Potential Health Risks on the Residents in Nearby Communities

I. CEQA LEGAL STANDARD FOR ENVIRONMENTAL IMPACT REPORTS

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report (EIR) (except in certain limited circumstances). (See, e.g., Pub. Res. Code § 21100.) The EIR is the very heart of CEQA. (*Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652.) "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." (*Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal. App. 4th 98, 109.)

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant

environmental effects of a project. (14 Cal. Code Regs. (“CEQA Guidelines”) § 15002(a)(1).) “Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR ‘protects not only the environment but also informed self-government.’” (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564) The EIR has been described as “an environmental ‘alarm bell’ whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.” (*Berkeley Keep Jets Over the Bay v. Bd. of Port Comm’rs.* (2001) 91 Cal. App. 4th 1344, 1354 (“Berkeley Jets”); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810). “The EIR’s function is to ensure that government officials who decide to build or approve a project do so with a full understanding of the environmental consequences and, equally important, that the public is assured those consequences have been taken into account.” (*Communities for a Better Environment v. City of Richmond* (Cal. Crt Appeal Case No. A125618, 2010 Cal. Lexis (April 28, 2010).)

Second, CEQA requires public agencies to avoid or reduce environmental damage when “feasible” by requiring “environmentally superior” alternatives and mitigation measures. (CEQA Guidelines § 15002(a)(2) and (3); See also, *Berkeley Jets*, 91 Cal. App. 4th 1344, 1354; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.) The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to “identify ways that environmental damage can be avoided or significantly reduced.” (Guidelines §15002(a)(2)) If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has “eliminated or substantially lessened all significant effects on the environment where feasible” and that any unavoidable significant effects on the environment are “acceptable due to overriding concerns.” (Pub.Res.Code § 21081; Guidelines § 15092(b)(2)(A) & (B).)

When reviewing an EIR, the courts use an “abuse of discretion” standard -- if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence. (Guidelines § 21168.5.) Substantial evidence in this context means —enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. (Guidelines, § 15384(a).)

While the courts review an EIR using an “abuse of discretion” standard, “the reviewing court is not to ‘uncritically rely on every study or analysis presented by a project proponent in support of its position. A ‘clearly inadequate or unsupported study is entitled to no judicial deference.’” (*Berkeley Jets*, 91 Cal. App. 4th 1344, 1355 (emphasis added), quoting, *Laurel Heights Improvement Assn. v. Regents of University of California*, 47 Cal. 3d 376, 391 409, fn. 12 (1988)) As the court stated in *Berkeley Jets*, 91 Cal. App. 4th at 1355:

“A prejudicial abuse of discretion occurs “if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process.” (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal. App. 4th 713, 722]; *Galante Vineyards v. Monterey Peninsula Water Management Dist.* (1997) 60 Cal. App. 4th 1109, 1117; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal. App. 4th 931, 946).

If an environmental impact report does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decisionmaking cannot occur under CEQA and the EIR is inadequate as a matter of law. (*RiverWatch v. Olivenhain Municipal Water Dist.* (2009) 170 Cal.App.4th 1186, 1201; *Bakersfield Citizens for Local Control v. City of Bakersfield*

(2004) 124 Cal.App.4th 1184, 1197-1198; *Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

Finally, when new information or analysis is required to make the EIR adequate, CEQA Guidelines Section 15088.5 sets the standard for requiring recirculation. New information added to an EIR is significant when “the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project’s proponents have declined to implement.” The Guidelines also require recirculation when the EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. *Mountain Lion Coalition v. Fish and Game Com.* (1989) 214 Cal.App.3d 1043.

II The DEIR Fails to Adequately Consider the Traffic Impacts and Resulting Air Quality Impacts on the Communities Immediately Adjacent to The Proposed Project.

The traffic impact analysis and air quality analysis performed in the DEIR fails to adequately analyze the local impacts of the project. The traffic studies utilized in the DEIR for the “baseline condition” for the SCIG were completed in 2008 and supplemented in 2009. The baseline traffic estimates are confusing and appear to overestimate the actual traffic conditions at the site. Since the baseline condition is being used to determine the air quality and health impacts for the DEIR it is critical to have a clear and representative count of traffic conditions at the SCIG site.

According to the DEIR⁷, the proposed Project site is currently occupied by container and truck maintenance; servicing; storage; rail service; and auto salvage activities. The existing site has four access points: Pacific Coast Highway ramps and three driveways accessing Sepulveda Boulevard, a driveway west of Intermodal Way, a driveway south of the ICTF driveway, and a driveway at Middle Road. Trip generation by the existing uses was determined by collecting traffic counts during the AM (6:00 – 9:00 AM) MD (1:00– 4:00 PM) and PM (4:00 – 6:00 PM) periods in August 2008.⁸

The models used to estimate traffic impacts are less than reliable. According to a 2009 Memo from Iteris Inc to POLA, “the empirical data from the January 2009 and February 2009 counts at ICTF indicate that Quicktrip is overestimating chassis trips associated with intermodal facilities, which supports the higher chassis reuse shown in the BNSF and UPRR estimates for their intermodal facility projects (see Table 3)”

In addition, the DEIR assumes that 95% of truck traffic (current and future) will be going only to the new SCIG facility rather than the Hobart yard. This assumption forces a regional air quality issue (the movement of large numbers of trucks) onto a small geographic area. The impact is to shift the burden of known toxic air contaminants emitted from one area of the Los Angeles Air Basin onto another. This shift flies in the fundamental requirement of CEQA to “identify ways that environmental damage can be avoided or significantly reduced.” (Guidelines §15002(a)(2)).

There is no legally binding agreement that would prevent the use of both the Hobart yard and the SCIG. Without such an agreement, the DEIR assumptions on the impacts from the project become specious. Given the

⁷ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. 3.10-25

⁸ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. 3.10-25

unfair burden being placed on the communities immediately adjacent to the proposed project, the proponent should re-evaluate the impacts from traffic on the local communities and prepare a new EIR that clearly quantifies impacts from current and future conditions at the site.

III The DEIR's Health Risk Assessment (HRA) Is Flawed And Fails To Accurately Calculate The Potential Health Risks On The Students and Residents In Nearby Communities

The DEIR's health risk assessment is flawed and fails to accurately calculate the potential health risks to students attending local schools and to children growing up in the nearby communities when it fails to account for the differences in childhood exposure.

The primary chemical of concern, diesel particulate matter (DPM) is the risk driver of the analysis. In 1998 the State of California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines as a toxic air contaminant.⁹ SCAQMD's MATES-II and MATES-III (for Multiple Air Toxics Exposure Study) showed that average cancer risk in the South Coast Air Basin (Basin) ranged from 1,100 in a million to 1,750 in a million, with an average regional risk of about 1,400 in a million. DPM accounted for more than 70 percent of the cancer risk.

In its 2005 comments on the Notice of Preparation of a Draft Environmental Impact Report for the Southern California International Gateway, SCAQMD noted that the location of the project is in a non-attainment area, adjacent to an already-impacted residential community and in close proximity to several schools. SCAQMD later stated that based on its sampling data, the average elemental carbon at the Hudson Elementary School was 59 percent higher than any other study site evaluated in the

⁹ Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. ARB and OEHHA. April 22, 1998 as cited in SCAQMD, 2003. Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis

Long Beach and Wilmington areas. The SCAQMD cautioned that the EIR should thoroughly consider the effects on these sensitive receptors.

In the HRA for the DEIR presented in Appendix C.3, the analysis of “Student impacts” is based upon a student exposures of 6 hours per day, 180 days per year for *6 years (emphasis added)*.¹⁰ In the immediate vicinity of the proposed project, there are primary and secondary schools which local residents attend school. In addition to the Elizabeth Hudson Elementary School, schools within ½ mile of the proposed project include the Garfield Child Development Center (preschool), St. Lucy Catholic School (pre-K through 8th grade), William Logan Stephens Junior High School (Grades 6 through 8), and Cabrillo High School (Grades 9 through 12). The exposure analysis used in the HRA, assuming only 6 years of exposure, clearly underestimates the potential impacts to students in the area. The HRA must be recalculated assuming that students attend school in the area from pre-Kindergarten through high school and resubmitted for analysis.

In addition, it is apparent that the analysis does not include factors that take into account the sensitivity of children to chemicals. Consistent with guidance from the United States Environmental Protection Agency (U.S. EPA) and California Environmental Protection Agency’s Office of Environmental and Human Health Assessment (OEHHA), incorporating a weighting cancer risk by a factor of 10 for exposure that occur from the third trimester of pregnancy to 2 years of age, and by a factor of 3 for exposure that occur from 2 years through 15 years of age is recommended.¹¹ The analysis presented by the proponents in the HRA does not appear to incorporate the weighting factors recommended by

¹⁰ POLA. 2011. Southern California International Gateway Project: Draft Environmental Impact Report. Prepared by Environmental Management Division, Los Angeles Harbor Department. September, 2011. C.3-33

¹¹ BAAQMD. 2011. Recommended Methods for Screening and Modeling Local Risks and Hazards. Bay Area Air Quality Management District. May, 2011

OEHHA. The analysis should be performed again utilizing the appropriate weighting factors and resubmitted for review.

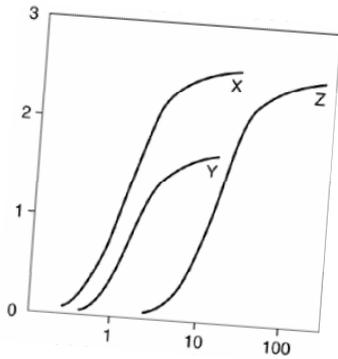
Conclusion

The proponents must re-analyze the impacts in a new EIR that accurately estimates the impacts. This concludes my comments.

Sincerely,

A handwritten signature in blue ink, appearing to read "James Clark".

James Clark, Ph.D.



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James J. J. Clark, Ph.D.

Principal Toxicologist

Toxicology/Exposure Assessment Modeling

Risk Assessment/Analysis/Dispersion Modeling

Education:

Ph.D., Environmental Health Science, University of California, 1995

M.S., Environmental Health Science, University of California, 1993

B.S., Biophysical and Biochemical Sciences, University of Houston, 1987

Professional Experience:

Dr. Clark is a well recognized toxicologist, air modeler, and health scientist. He has 20 years of experience in researching the effects of environmental contaminants on human health including environmental fate and transport modeling (SCREEN3, AEROMOD, ISCST3, Johnson-Ettinger Vapor Intrusion Modeling); exposure assessment modeling (partitioning of contaminants in the environment as well as PBPK modeling); conducting and managing human health risk assessments for regulatory compliance and risk-based clean-up levels; and toxicological and medical literature research.

Significant projects performed by Dr. Clark include the following:

LITIGATION SUPPORT

Case: Rose Roper V. Nissan North America, et al. Superior Court of the State Of California for the County Of Los Angeles – Central Civil West. Civil Action. NC041739

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to multiple chemicals, including benzene, who later developed a respiratory distress. A review of the individual's medical and occupational history was performed to prepare an exposure assessment. The exposure assessment was evaluated against the known

outcomes in published literature to exposure to respiratory irritants. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: O'Neil V. Sherwin Williams, et al. United States District Court Central District of California

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to petroleum distillates who later developed a bladder cancer. A review of the individual's medical and occupational history was performed to prepare a quantitative exposure assessment. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Summary judgment for defendants.

Case: Moore V., Shell Oil Company, et al. Superior Court of the State Of California for the County Of Los Angeles

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to chemicals while benzene who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a quantitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Raymond Saltonstall V. Fuller O'Brien, KILZ, and Zinsser, et al. United States District Court Central District of California

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to benzene who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a quantitative exposure

assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Richard Boyer and Elizabeth Boyer, husband and wife, V. DESCO Corporation, et al. Circuit Court of Brooke County, West Virginia. Civil Action Number 04-C-7G.

Client: Frankovitch, Anetakis, Colantonio & Simon, Morgantown, West Virginia.

Dr. Clark performed a toxicological assessment of a family exposed to chlorinated solvents released from the defendant's facility into local drinking water supplies. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to chlorinated solvents. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: JoAnne R. Cook, V. DESCO Corporation, et al. Circuit Court of Brooke County, West Virginia. Civil Action Number 04-C-9R

Client: Frankovitch, Anetakis, Colantonio & Simon, Morgantown, West Virginia.

Dr. Clark performed a toxicological assessment of an individual exposed to chlorinated solvents released from the defendant's facility into local drinking water supplies. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to chlorinated solvents. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Patrick Allen And Susan Allen, husband and wife, and Andrew Allen, a minor, V. DESCO Corporation, et al. Circuit Court of Brooke County, West Virginia. Civil Action Number 04-C-W

Client: Frankovitch, Anetakis, Colantonio & Simon, Morgantown, West Virginia.

Dr. Clark performed a toxicological assessment of a family exposed to chlorinated solvents released from the defendant's facility into local drinking water supplies. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to chlorinated solvents. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Michael Fahey, Susan Fahey V. Atlantic Richfield Company, et al. United States District Court Central District of California Civil Action Number CV-06 7109 JCL.

Client: Rose, Klein, Marias, LLP, Long Beach, California

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to refined petroleum hydrocarbons who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Settlement in favor of plaintiff.

Case: Tanya Drummond V. E.I. Dupont De Nemours and Company, Meadowbrook Corporation, Mattheissen & Hegler Zinc Company Inc, Nuzum Trucking Company, T.L. Diamond & Company, Inc., and Joseph Paushel, Circuit Court of Harrison County, West Virginia. Civil Action Number 04-C-296-2.

Client: Cochran, Cherry, Givens, Smith, Lane & Taylor, P.C., Dothan, Alabama

Dr. Clark performed a comprehensive exposure assessment of a plaintiff exposed to toxic metals from a former zinc smelting facility. The site has undergone a CERCLA mandated removal action/remediation for the presence of the toxic metals. Intensive modeling results (from physical and numerical models) were used to determine a daily dose of metals in the plaintiff over a life time of exposure along with a causal analysis to determine the contribution of the toxic metals to the renal carcinomas the plaintiff died from.

Case Result: Settlement in favor of plaintiff.

Case: City of Stockton v. BNSF Railway Co., et al. Eastern District of California, Case No. 2:05-CV-02087

Dr. Clark offered opinions regarding the potential health risks from exposure to chemicals present in and emanating from the soil and into the air at a site formerly operated by the defendant using the regulatory guidance framework from USEPA and DTSC. The evaluation was designed to establish cleanup goals based upon the current and future land uses of the Site. A second objective was to evaluate whether current conditions at the Site put patrons and staff of the Children's Museum at an elevated potential health risk from exposure to chemicals present in and emanating from the soil and into the air at the Site.

Case Result: Judgment in favor of plaintiff.

Case: Constance Acevedo, et al., V. California Spray-Chemical Company, et al., Superior Court of the State Of California, County Of Santa Cruz. Case No. CV 146344

Dr. Clark performed a comprehensive exposure assessment of community members exposed to toxic metals from a former lead arsenate manufacturing facility. The former manufacturing site had undergone a DTSC mandated removal action/remediation for the presence of the toxic metals at the site. Opinions were presented regarding the elevated levels of arsenic and lead (in attic dust and soils) found throughout the community and the potential for harm to the plaintiffs in question.

Case Result: Settlement in favor of defendant.

Case: Lori Lynn Moss and Rand Moss, et al. V. Venoco, Inc. et al. Superior Court of the State of California, County of Los Angeles, Central Civil West. Case Number BC 297083

Client: Baron & Budd, PC. Dallas, TX.

Dr. Clark performed a comprehensive exposure assessment of plaintiffs (former students at a school adjacent to the plant) to dioxin-like compounds from a large urban electrical utility generator and from multiple oil and gas production facilities adjacent to an active school. Modeling of emissions has confirmed that emissions from the facilities have impacted the school, resulting in significant exposure to carcinogens and neurotoxins. Intensive modeling results (from physical and numerical models) were used to determine a daily dose of contaminants from multiple sites over decades of exposure.

Case Result: Under Appeal.

Case: Michael Nawrocki V. The Coastal Corporation, Kurk Fuel Company, Pautler Oil Service, State of New York Supreme Court, County of Erie, Index Number I2001-11247

Client: Richard G. Berger Attorney At Law, Buffalo, New York

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to refined petroleum hydrocarbons who later developed a leukogenic disease. A review of the individual's medical and occupational history was performed to prepare a qualitative exposure assessment. The exposure assessment was evaluated against the known outcomes in published literature to exposure to refined petroleum hydrocarbons. The results of the assessment and literature have been provided in a declaration to the court.

Case Result: Judgement in favor of defendant.

Case: RFI et al., V. City of Santa Clarita, Superior Court of the State of California, County of Los Angeles

Client: City of Santa Clarita, Santa Clarita, California

Dr. Clark provided testimony regarding the characterization, remediation and development activities of a former 1,000 acre munitions manufacturing facility. The site is impacted with a number of contaminants including perchlorate, unexploded ordinance, and volatile organic compounds (VOCs). The site is currently under a number of regulatory consent orders, including an Immanent and Substantial Endangerment Order. Dr. Clark provided depositional testimony and trial testimony on the extent of contamination in the subsurface and groundwater, the migration of contaminants offsite, and cost estimates for remediating the contamination.

Case Result: Under Appeal.

Case: Costco Wholesale Corporation, etc, V. San Francisco Bay Area Rapid Transit District, etc., et. al., Superior Court of the State of California For the County of San Mateo

Dr. Clark evaluated analytical laboratory results to determine whether remediation efforts by the plaintiff were necessary based on the proposed site land use. Deposition testimony

was offered on the composition of petroleum hydrocarbons in the subsurface at the site, clean-up standards, and the necessity of remediation.

Case Result: Settlement in favor of defendant.

SELECTED AIR MODELING RESEARCH/PROJECTS

Client – Confidential

Dr. Clark performed a comprehensive evaluation of criteria pollutants, air toxins, and particulate matter emissions from a carbon black production facility to determine the impacts on the surrounding communities. The results of the dispersion model will be used to estimate acute and chronic exposure concentrations to multiple contaminants and will be incorporated into a comprehensive risk evaluation.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of air toxins and particulate matter emissions from a railroad tie manufacturing facility to determine the impacts on the surrounding communities. The results of the dispersion model have been used to estimate acute and chronic exposure concentrations to multiple contaminants and have been incorporated into a comprehensive risk evaluation.

Client – Los Angeles Alliance for a New Economy (LAANE), Los Angeles, California

Dr. Clark is advising the LAANE on air quality issues related to current flight operations at the Los Angeles International Airport (LAX) operated by the Los Angeles World Airport (LAWA) Authority. He is working with the LAANE and LAX staff to develop a comprehensive strategy for meeting local community concerns over emissions from flight operations and to engage federal agencies on the issue of local impacts of community airports.

Client – City of Santa Monica, Santa Monica, California

Dr. Clark is advising the City of Santa Monica on air quality issues related to current flight operations at the facility. He is working with the City staff to develop a

comprehensive strategy for meeting local community concerns over emissions from flight operations and to engage federal agencies on the issue of local impacts of community airports.

Client: Omnitrans, San Bernardino, California

Dr. Clark managed a public health survey of three communities near transit fueling facilities in San Bernardino and Montclair California in compliance with California Senate Bill 1927. The survey included an epidemiological survey of the effected communities, emission surveys of local businesses, dispersion modeling to determine potential emission concentrations within the communities, and a comprehensive risk assessment of each community. The results of the study were presented to the Governor as mandated by Senate Bill 1927.

Client: Confidential, San Francisco, California

Summarized cancer types associated with exposure to metals and smoking. Researched the specific types of cancers associated with exposure to metals and smoking. Provided causation analysis of the association between cancer types and exposure for use by non-public health professionals.

Client: Confidential, Minneapolis, Minnesota

Prepared human health risk assessment of workers exposed to VOCs from neighboring petroleum storage/transport facility. Reviewed the systems in place for distribution of petroleum hydrocarbons to identify chemicals of concern (COCs), prepared comprehensive toxicological summaries of COCs, and quantified potential risks from carcinogens and non-carcinogens to receptors at or adjacent to site. This evaluation was used in the support of litigation.

Client – United Kingdom Environmental Agency

Dr. Clark is part of team that performed comprehensive evaluation of soil vapor intrusion of VOCs from former landfill adjacent residences for the United Kingdom's Environment Agency. The evaluation included collection of liquid and soil vapor samples at site, modeling of vapor migration using the Johnson Ettinger Vapor Intrusion model, and calculation of site-specific health based vapor thresholds for chlorinated solvents, aromatic hydrocarbons, and semi-volatile organic compounds. The evaluation also

included a detailed evaluation of the use, chemical characteristics, fate and transport, and toxicology of chemicals of concern (COC). The results of the evaluation have been used as a briefing tool for public health professionals.

EMERGING/PERSISTENT CONTAMINANT RESEARCH/PROJECTS

Client: Ameren Services, St. Louis, Missouri

Managed the preparation of a comprehensive human health risk assessment of workers and residents at or near an NPL site in Missouri. The former operations at the Property included the servicing and repair of electrical transformers, which resulted in soils and groundwater beneath the Property and adjacent land becoming impacted with PCB and chlorinated solvent compounds. The results were submitted to U.S. EPA for evaluation and will be used in the final ROD.

Client: City of Santa Clarita, Santa Clarita, California

Dr. Clark is managing the oversight of the characterization, remediation and development activities of a former 1,000 acre munitions manufacturing facility for the City of Santa Clarita. The site is impacted with a number of contaminants including perchlorate, unexploded ordinance, and volatile organic compounds (VOCs). The site is currently under a number of regulatory consent orders, including an Imminent and Substantial Endangerment Order. Dr. Clark is assisting the impacted municipality with the development of remediation strategies, interaction with the responsible parties and stakeholders, as well as interfacing with the regulatory agency responsible for oversight of the site cleanup.

Client: Confidential, Los Angeles, California

Prepared comprehensive evaluation of perchlorate in environment. Dr. Clark evaluated the production, use, chemical characteristics, fate and transport, toxicology, and remediation of perchlorate. Perchlorates form the basis of solid rocket fuels and have recently been detected in water supplies in the United States. The results of this research were presented to the USEPA, National GroundWater, and ultimately published in a recent book entitled *Perchlorate in the Environment*.

Client – Confidential, Los Angeles, California

Dr. Clark is performing a comprehensive review of the potential for pharmaceuticals and their by-products to impact groundwater and surface water supplies. This evaluation will include a review if available data on the history of pharmaceutical production in the United States; the chemical characteristics of various pharmaceuticals; environmental fate and transport; uptake by xenobiotics; the potential effects of pharmaceuticals on water treatment systems; and the potential threat to public health. The results of the evaluation may be used as a briefing tool for non-public health professionals.

PUBLIC HEALTH/TOXICOLOGY

Client: Brayton Purcell, Novato, California

Dr. Clark performed a toxicological assessment of residents exposed to methyl-tertiary butyl ether (MTBE) from leaking underground storage tanks (LUSTs) adjacent to the subject property. The symptomology of residents and guests of the subject property were evaluated against the known outcomes in published literature to exposure to MTBE. The study found that residents had been exposed to MTBE in their drinking water; that concentrations of MTBE detected at the site were above regulatory guidelines; and, that the symptoms and outcomes expressed by residents and guests were consistent with symptoms and outcomes documented in published literature.

Client: Confidential, San Francisco, California

Identified and analyzed fifty years of epidemiological literature on workplace exposures to heavy metals. This research resulted in a summary of the types of cancer and non-cancer diseases associated with occupational exposure to chromium as well as the mortality and morbidity rates.

Client: Confidential, San Francisco, California

Summarized major public health research in United States. Identified major public health research efforts within United States over last twenty years. Results were used as a briefing tool for non-public health professionals.

Client: Confidential, San Francisco, California

Quantified the potential multi-pathway dose received by humans from a pesticide applied indoors. Part of team that developed exposure model and evaluated exposure

concentrations in a comprehensive report on the plausible range of doses received by a specific person. This evaluation was used in the support of litigation.

Client: Covanta Energy, Westwood, California

Evaluated health risk from metals in biosolids applied as soil amendment on agricultural lands. The biosolids were created at a forest waste cogeneration facility using 96% whole tree wood chips and 4 percent green waste. Mass loading calculations were used to estimate Cr(VI) concentrations in agricultural soils based on a maximum loading rate of 40 tons of biomass per acre of agricultural soil. The results of the study were used by the Regulatory agency to determine that the application of biosolids did not constitute a health risk to workers applying the biosolids or to residences near the agricultural lands.

Client – United Kingdom Environmental Agency

Oversaw a comprehensive toxicological evaluation of methyl-*tertiary* butyl ether (MtBE) for the United Kingdom's Environment Agency. The evaluation included available data on the production, use, chemical characteristics, fate and transport, toxicology, and remediation of MtBE. The results of the evaluation have been used as a briefing tool for public health professionals.

Client – Confidential, Los Angeles, California

Prepared comprehensive evaluation of *tertiary* butyl alcohol (TBA) in municipal drinking water system. TBA is the primary breakdown product of MtBE, and is suspected to be the primary cause of MtBE toxicity. This evaluation will include available information on the production, use, chemical characteristics, fate and transport in the environment, absorption, distribution, routes of detoxification, metabolites, carcinogenic potential, and remediation of TBA. The results of the evaluation were used as a briefing tool for non-public health professionals.

Client – Confidential, Los Angeles, California

Prepared comprehensive evaluation of methyl *tertiary* butyl ether (MTBE) in municipal drinking water system. MTBE is a chemical added to gasoline to increase the octane rating and to meet Federally mandated emission criteria. The evaluation included available data on the production, use, chemical characteristics, fate and transport,

toxicology, and remediation of MTBE. The results of the evaluation have been used as a briefing tool for non-public health professionals.

Client – Ministry of Environment, Lands & Parks, British Columbia

Dr. Clark assisted in the development of water quality guidelines for methyl tertiary-butyl ether (MTBE) to protect water uses in British Columbia (BC). The water uses to be considered includes freshwater and marine life, wildlife, industrial, and agricultural (e.g., irrigation and livestock watering) water uses. Guidelines from other jurisdictions for the protection of drinking water, recreation and aesthetics were to be identified.

Client: Confidential, Los Angeles, California

Prepared physiologically based pharmacokinetic (PBPK) assessment of lead risk of receptors at middle school built over former industrial facility. This evaluation is being used to determine cleanup goals and will be basis for regulatory closure of site.

Client: Kaiser Venture Incorporated, Fontana, California

Prepared PBPK assessment of lead risk of receptors at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

RISK ASSESSMENTS/REMEDIAL INVESTIGATIONS

Client: Confidential, Atlanta, Georgia

Researched potential exposure and health risks to community members potentially exposed to creosote, polycyclic aromatic hydrocarbons, pentachlorophenol, and dioxin compounds used at a former wood treatment facility. Prepared a comprehensive toxicological summary of the chemicals of concern, including the chemical characteristics, absorption, distribution, and carcinogenic potential. Prepared risk characterization of the carcinogenic and non-carcinogenic chemicals based on the exposure assessment to quantify the potential risk to members of the surrounding community. This evaluation was used to help settle class-action tort.

Client: Confidential, Escondido, California

Prepared comprehensive Preliminary Endangerment Assessment (PEA) of dense non-aqueous liquid phase hydrocarbon (chlorinated solvents) contamination at a former printed circuit board manufacturing facility. This evaluation was used for litigation support and may be used as the basis for reaching closure of the site with the lead regulatory agency.

Client: Confidential, San Francisco, California

Summarized epidemiological evidence for connective tissue and autoimmune diseases for product liability litigation. Identified epidemiological research efforts on the health effects of medical prostheses. This research was used in a meta-analysis of the health effects and as a briefing tool for non-public health professionals.

Client: Confidential, Bogotá, Columbia

Prepared comprehensive evaluation of the potential health risks associated with the redevelopment of a 13.7 hectares plastic manufacturing facility in Bogotá, Colombia. The risk assessment was used as the basis for the remedial goals and closure of the site.

Client: Confidential, Los Angeles, California

Prepared comprehensive human health risk assessment of students, staff, and residents potentially exposed to heavy metals (principally cadmium) and VOCs from soil and soil vapor at 12-acre former crude oilfield and municipal landfill. The site is currently used as a middle school housing approximately 3,000 children. The evaluation determined that the site was safe for the current and future uses and was used as the basis for regulatory closure of site.

Client: Confidential, Los Angeles, California

Managed remedial investigation (RI) of heavy metals and volatile organic chemicals (VOCs) for a 15-acre former manufacturing facility. The RI investigation of the site included over 800 different sampling locations and the collection of soil, soil gas, and groundwater samples. The site is currently used as a year round school housing approximately 3,000 children. The Remedial Investigation was performed in a manner that did not interrupt school activities and met the time restrictions placed on the project by the overseeing regulatory agency. The RI Report identified the off-site source of

metals that impacted groundwater beneath the site and the sources of VOCs in soil gas and groundwater. The RI included a numerical model of vapor intrusion into the buildings at the site from the vadose zone to determine exposure concentrations and an air dispersion model of VOCs from the proposed soil vapor treatment system. The Feasibility Study for the Site is currently being drafted and may be used as the basis for granting closure of the site by DTSC.

Client: Confidential, Los Angeles, California

Prepared comprehensive human health risk assessment of students, staff, and residents potentially exposed to heavy metals (principally lead), VOCs, SVOCs, and PCBs from soil, soil vapor, and groundwater at 15-acre former manufacturing facility. The site is currently used as a year round school housing approximately 3,000 children. The evaluation determined that the site was safe for the current and future uses and will be basis for regulatory closure of site.

Client: Confidential, Los Angeles, California

Prepared comprehensive evaluation of VOC vapor intrusion into classrooms of middle school that was former 15-acre industrial facility. Using the Johnson-Ettinger Vapor Intrusion model, the evaluation determined acceptable soil gas concentrations at the site that did not pose health threat to students, staff, and residents. This evaluation is being used to determine cleanup goals and will be basis for regulatory closure of site.

Client –Dominguez Energy, Carson, California

Prepared comprehensive evaluation of the potential health risks associated with the redevelopment of 6-acre portion of a 500-acre oil and natural gas production facility in Carson, California. The risk assessment was used as the basis for closure of the site.

Kaiser Ventures Incorporated, Fontana, California

Prepared health risk assessment of semi-volatile organic chemicals and metals for a fifty-year old wastewater treatment facility used at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

ANR Freight - Los Angeles, California

Prepared a comprehensive Preliminary Endangerment Assessment (PEA) of petroleum hydrocarbon and metal contamination of a former freight depot. This evaluation was as the basis for reaching closure of the site with lead regulatory agency.

Kaiser Ventures Incorporated, Fontana, California

Prepared comprehensive health risk assessment of semi-volatile organic chemicals and metals for 23-acre parcel of a 1,100-acre former steel mill. The health risk assessment was used to determine clean up goals and as the basis for granting closure of the site by lead regulatory agency. Air dispersion modeling using ISCST3 was performed to determine downwind exposure point concentrations at sensitive receptors within a 1 kilometer radius of the site. The results of the health risk assessment were presented at a public meeting sponsored by the Department of Toxic Substances Control (DTSC) in the community potentially affected by the site.

Unocal Corporation - Los Angeles, California

Prepared comprehensive assessment of petroleum hydrocarbons and metals for a former petroleum service station located next to sensitive population center (elementary school). The assessment used a probabilistic approach to estimate risks to the community and was used as the basis for granting closure of the site by lead regulatory agency.

Client: Confidential, Los Angeles, California

Managed oversight of remedial investigation most contaminated heavy metal site in California. Lead concentrations in soil excess of 68,000,000 parts per billion (ppb) have been measured at the site. This State Superfund Site was a former hard chrome plating operation that operated for approximately 40-years.

Client: Confidential, San Francisco, California

Coordinator of regional monitoring program to determine background concentrations of metals in air. Acted as liaison with SCAQMD and CARB to perform co-location sampling and comparison of accepted regulatory method with ASTM methodology.

Client: Confidential, San Francisco, California

Analyzed historical air monitoring data for South Coast Air Basin in Southern California and potential health risks related to ambient concentrations of carcinogenic metals and volatile organic compounds. Identified and reviewed the available literature and calculated risks from toxins in South Coast Air Basin.

IT Corporation, North Carolina

Prepared comprehensive evaluation of potential exposure of workers to air-borne VOCs at hazardous waste storage facility under SUPERFUND cleanup decree. Assessment used in developing health based clean-up levels.

Professional Associations

American Public Health Association (APHA)

Association for Environmental Health and Sciences (AEHS)

American Chemical Society (ACS)

California Redevelopment Association (CRA)

International Society of Environmental Forensics (ISEF)

Society of Environmental Toxicology and Chemistry (SETAC)

Publications and Presentations:

Books and Book Chapters

Sullivan, P., **J.J. J. Clark**, F.J. Agardy, and P.E. Rosenfeld. (2007). *Synthetic Toxins In The Food, Water and Air of American Cities*. Elsevier, Inc. Burlington, MA.

Sullivan, P. and **J.J. J. Clark**. 2006. *Choosing Safer Foods, A Guide To Minimizing Synthetic Chemicals In Your Diet*. Elsevier, Inc. Burlington, MA.

Sullivan, P., Agardy, F.J., and **J.J.J. Clark**. 2005. *The Environmental Science of Drinking Water*. Elsevier, Inc. Burlington, MA.

Sullivan, P.J., Agardy, F.J., **Clark, J.J.J.** 2002. *America's Threatened Drinking Water: Hazards and Solutions*. Trafford Publishing, Victoria B.C.

Clark, J.J.J. 2001. "TBA: Chemical Properties, Production & Use, Fate and Transport, Toxicology, Detection in Groundwater, and Regulatory Standards" in *Oxygenates in the Environment*. Art Diaz, Ed.. Oxford University Press: New York.

Clark, J.J.J. 2000. "Toxicology of Perchlorate" in *Perchlorate in the Environment*. Edward Urbansky, Ed. Kluwer/Plenum: New York.

Clark, J.J.J. 1995. Probabilistic Forecasting of Volatile Organic Compound Concentrations At The Soil Surface From Contaminated Groundwater. UMI.

Baker, J.; **Clark, J.J.J.**; Stanford, J.T. 1994. Ex Situ Remediation of Diesel Contaminated Railroad Sand by Soil Washing. Principles and Practices for Diesel Contaminated Soils, Volume III. P.T. Kostecki, E.J. Calabrese, and C.P.L. Barkan, eds. Amherst Scientific Publishers, Amherst, MA. pp 89-96.

Journal and Proceeding Articles

- Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, Volume 70 (2008) page 002254.
- Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, Volume 70 (2008) page 000527
- Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** (2007). "Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." *Environmental Research*. 105:194-199.
- Rosenfeld, P.E., **Clark, J. J.**, Hensley, A.R., and Suffet, I.H. 2007. "The Use Of An Odor Wheel Classification For The Evaluation of Human Health Risk Criteria For Compost Facilities" *Water Science & Technology*. 55(5): 345-357.
- Hensley A.R., Scott, A., Rosenfeld P.E., **Clark, J.J.J.** 2006. "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.
- Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2005. "The Value Of An Odor Quality Classification Scheme For Compost Facility Evaluations" The U.S. Composting Council's 13th Annual Conference January 23 - 26, 2005, Crowne Plaza Riverwalk, San Antonio, TX.
- Rosenfeld, P.E., **Clark, J. J.** and Suffet, I.H. 2004. "The Value Of An Odor Quality Classification Scheme For Urban Odor" WEFTEC 2004. 77th Annual Technical Exhibition & Conference October 2 - 6, 2004, Ernest N. Morial Convention Center, New Orleans, Louisiana.
- Clark, J.J.J.** 2003. "Manufacturing, Use, Regulation, and Occurrence of a Known Endocrine Disrupting Chemical (EDC), 2,4-Dichlorophenoxyacetic Acid (2,4-D) in California Drinking Water Supplies." National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Minneapolis, MN. March 20, 2003.

- Rosenfeld, P. and **J.J.J. Clark**. 2003. "Understanding Historical Use, Chemical Properties, Toxicity, and Regulatory Guidance" National Groundwater Association Southwest Focus Conference: Water Supply and Emerging Contaminants. Phoenix, AZ. February 21, 2003.
- Clark, J.J.J.**, Brown A. 1999. Perchlorate Contamination: Fate in the Environment and Treatment Options. In Situ and On-Site Bioremediation, Fifth International Symposium. San Diego, CA, April, 1999.
- Clark, J.J.J.** 1998. Health Effects of Perchlorate and the New Reference Dose (RfD). Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.
- Browne, T., **Clark, J.J.J.** 1998. Treatment Options For Perchlorate In Drinking Water. Proceedings From the Groundwater Resource Association Seventh Annual Meeting, Walnut Creek, CA, October 23, 1998.
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- Clark J.J.J.**, Brown, A., Ulrey, A. 1997. Impacts of Perchlorate On Drinking Water In The Western United States. U.S. EPA Symposium on Biological and Chemical Reduction of Chlorate and Perchlorate, Cincinnati, OH, December 5, 1997.
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