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Air Quality Management District**

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A REPORT FOR

GREENACTION FOR HEALTH
AND ENVIRONMENTAL JUSTICE



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**CONCRETE MANUFACTURERS AND
THE REGULATORY ROLE OF THE
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT**

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I. EXECUTIVE SUMMARY

This report discusses the results of an investigation into concrete manufacturers in the San Francisco Bay Area, the Bay Area Air Quality Management District's (BAAQMD) handling of the concrete plants' air pollution violations and the agency's failure to follow its own enforcement guidelines.

The investigation focused on three concrete manufacturers operating in the City of San Francisco and around the Bay Area because they generate harmful particulate matter: Cemex Construction Materials Pacific, LLC (Cemex), Central Concrete Supply Co., Inc. (Central), and Hanson Aggregates Mid-Pacific, Inc. (Hanson). Because asthma is prevalent in the Bayview Hunters-Point community, particulate matter pollution is of concern to both residents and public health advocates.

The investigation found numerous violations of requirements intended to bring sources that generate harmful particulate matter under control:

- Cemex regularly exceeded the amount of sand it was allowed to bring to its San Francisco facility by barge (i.e., sand "throughput") under its permit. The company also failed to keep required 12-month throughput records. Cemex also was given a permit that should have been denied based on health risks. Cemex facilities in Berkeley and Union City also exceeded throughput limits.
- Central had unpermitted equipment and failed to keep required 12-month throughput records. BAAQMD records raise an additional question whether a 2014 modification to its permit may have exceeded the allowable cancer risk for nearby workers.
- Hanson had an unpermitted operation at Pier 94 in San Francisco and another in Oakland.

Although the investigation initially focused on sources of particulate matter, it also exposed flaws in BAAQMD's enforcement program and its system for responding to Public Record Act requests.

First, BAAQMD was too lenient. It responded to one facility's unpermitted operations with a fix-it ticket rather than penalizing it for operating without a permit. The agency also issued the companies fix-it tickets for recordkeeping violations that should have been subject to penalties.

Second, BAAQMD's response to Public Records Act requests was far too slow and often included only partial sets of the documents sought.

II. BACKGROUND

The Bay Area construction industry is enjoying a significant resurgence,¹ resulting in a high demand for concrete. Concrete for construction projects in the Bay Area is provided by at least three companies operating in the City of San Francisco: Cemex, Central and Hanson. All three operate concrete batching facilities on property at Pier 92 owned by the Port of San Francisco, near the Bayview Hunters-Point community. Hanson also leases property at Pier 94, also Port-owned.

Concrete is composed primarily of water, cement, and both fine aggregate, like sand, and coarse aggregate, such as crushed stone or gravel. Concrete batching plants mix the ingredients that form concrete. Some plants measure and transfer the ingredients into mixer trucks, which combine them on the way to a job site. Concrete may also be manufactured in a central mixing facility and then transferred to trucks for transport.²

Concrete manufacturers are regulated by the Bay Area Air Quality Management District because they handle materials that generate particulate matter. Particulate matter, or PM, consists of small particles and aerosols that can get deep into the lungs and bloodstream causing significant health problems including aggravated asthma, decreased lung function, heart attack, and premature death.³

These concrete batching plants store large stockpiles of sand (sometimes as big as hills)⁴ and aggregate, which are regulated to minimize PM emissions.

The Environmental Law and Justice Clinic at Golden Gate University School of Law issues this report on behalf of Greenaction for Health and Environmental Justice to publicize BAAQMD's insufficient regulatory and enforcement responses. Investigation reveals that the agency inspected these concrete facilities only sporadically and when it discovered permit violations it failed to take adequate and timely enforcement action. Furthermore, BAAQMD's system for responding to Public Records Act requests was too slow and incomplete.

III. INITIAL INVESTIGATION

The initial investigation involved an inquiry into whether the three San Francisco concrete manufacturers were in compliance with their BAAQMD permits.

Beginning in late 2014, the Clinic made Public Records Act requests to BAAQMD for the companies' records. Record requests were also directed to the Port of San Francisco seeking the companies' leases.

A review of BAAQMD's records revealed that all three San Francisco facilities appeared to be in violation: some appeared to be operating without permits required under the federal Clean Air Act and BAAQMD's rules; some appeared to have failed to maintain records necessary to demonstrate permit compliance; and one appeared to have exceeded its permit limits.

In April and May 2016, the Clinic conferred with BAAQMD, including in a meeting with its Compliance & Enforcement and Engineering Division staff, that these apparent violations were in fact violations. During the meeting, BAAQMD staff also revealed that the agency inspected the three facilities after the Clinic requested the meeting with the agency. As a result of the inspections, BAAQMD issued Notices to Comply and Notices of Violation to the facilities.

A. Cemex-San Francisco: Permitting Irregularities

Our investigation found two permitting problems with Cemex in San Francisco (Cemex-San Francisco).⁵ First, it appeared to be violating a throughput⁶ limit. Its permit limited the throughput of sand in its barge off-loading conveyor-belt system to 60,000 tons per year (tpy). This conveyor belt system appeared to be the only way sand was delivered to the facility.

However, other regulated sources were permitted for significantly more sand throughput – up to 240,625 tpy.⁷ During the Clinic’s meeting with BAAQMD, staff agreed the permit limits were in contradiction and said they would look into the matter.

On April 7, 2016, BAAQMD inspected Cemex-San Francisco. On May 2, 2016, it issued a Notice of Violation⁸ for exceeding the 60,000 tpy sand throughput limit. The agency also issued a Notice to Comply⁹ for Cemex’s failure to keep 12-month throughput records for its conveyor belt system. Prior to the April 2016 inspection, BAAQMD had last inspected Cemex in April 2010.

The second permitting problem with Cemex-San Francisco concerned the calculation of health risks. In December 2014, Cemex applied for an increase in the overall throughput for its operations.¹⁰ The application required a Health Risk Screening Analysis to estimate the increased health risks for people who could be exposed to emissions of one or more toxic air contaminants, such as toxic metals contained in PM emissions from the truck mixer, premixer, cement and cement supplement silos. The District is required to deny a permit if the analysis shows that risk exceeds (1) a cancer rate of 10 in a million; (2) a chronic hazard index of 1.0; or (3) an acute hazard index of 1.0.¹¹

In Cemex’s case, the original Health Risk Screening Analysis calculated the acute hazard index to be 2.6, more than double the 1.0 threshold. Acute hazard here refers to health harm from short-term exposure.¹² The author of the analysis, a Principal Air Quality Engineer, concluded, “the project acute HI [hazard index] is not acceptable” based on nickel emissions.¹³ This level of risk required that the permit be denied.¹⁴

However, the engineer was asked by his supervisor to redo the calculations using a different method, one that considered only “incremental” emissions increases (resulting solely from the increase in throughput) rather than total emissions (resulting from the total throughput), as was originally done. The engineer began his memorandum reporting the reworked calculations as follows: “Per your request, we have revised the results of the April 15, 2015 [Health Risk Screening Analysis] for this application to include your corrections to the hourly emission rate at the existing concrete batch plant. The previous version assumed hourly emissions at the maximum machine capacity. This version considers only the incremental hourly emissions from the proposed throughput increase.”¹⁵ This change resulted in an acute hazard index within the “acceptable” limit (that is, 0.52), not 2.6 as the Principal Air Quality Engineer had originally calculated. BAAQMD then issued the permit based on this revised calculation.

In April and May 2016, BAAQMD agreed with the Clinic that the revised Health Risk Screening Analysis had been done using the wrong formula and that the engineer’s original calculation had been correct.¹⁶ As a result, the permit was granted wrongfully because the health risk calculation underestimated risks. BAAQMD told us it would address the issue in the annual permit renewal process, but to date it has not disclosed what action, if any, it has taken.

B. Central-San Francisco: Possible Health Risk Miscalculation, Unpermitted Operations and Lack of PM Control

BAAQMD conducted an inspection of Central-San Francisco on April 11, 2016, one day before its meeting with the Clinic. BAAQMD issued Central three Notices of Violations on May 16, 2016, for four unpermitted silos; an unpermitted slag surge hopper; and an inoperable dust collector that is required to reduce PM pollution. BAAQMD also issued one Notice to Comply for failure to operate its water sprayer dust-suppression system at all times of operation, as required to reduce PM emissions; and failure keep 12-consecutive months of throughput records. The last time Central-San Francisco was inspected was in March 2014.

An additional irregularity, however, has not been resolved. A Central-San Francisco permit application¹⁷ triggered a Health Risk Screening Analysis because of elevated levels of chromium and arsenic. The analysis resulted in a maximum cancer risk calculation of 7.7 in a million for nearby workers. A subsequent application¹⁸ resulted in a Health Risk Screening Analysis cancer risk calculation of 4.4 in a million for nearby workers. The way the Clinic reads BAAQMD's regulations¹⁹ the risk calculation should be additive; added together, the cancer risk would be 12.1 per million, exceeding the regulatory threshold (10 in a million). The Clinic believes BAAQMD could have misapplied its regulations in granting the second application. But the agency has not provided us with enough information to reach that conclusion with certainty.

C. Hanson-San Francisco: Unpermitted Operations

BAAQMD did not produce any documents relating to Hanson's Pier 94 facility in response to the Clinic's Public Records Act requests. At the Clinic's meeting with BAAQMD, agency staff were surprised to hear about the facility although it had apparently been operating for many years; the lease was assigned to Hanson from another company on January 1, 2001.

On April 26, 2016, after inspection, Hanson-San Francisco was issued a Notice to Comply for stockpiling sand at Pier 94 with less than 5% moisture content.²⁰ Despite years of operating without permits, the Notice to Comply stated that compliance could be achieved by submitting a permit application. Hanson faced no other consequences.

D. BAAQMD's Process After Issuing Notices to Comply and Notices of Violation

Notices to Comply are "fix-it" tickets without sanctions accompanying them. Only Notices of Violation can result in penalties.

BAAQMD's procedure for resolving Notices of Violations involves several steps. First, a confidential in-house report is written detailing the evidence of violations. The report is forwarded to BAAQMD's Office of Legal Counsel, where agency attorneys establish a settlement posture, including the amount of fines, if any, to be sought. The agency then meets with the violator to see whether a settlement can be reached. Only when a settlement is finalized does it become a matter of public record.

In these cases, the process has been glacial. BAAQMD has seemed to attach little urgency to following up on the Notices it has issued. As of April 26, 2017, the last time we checked with

BAAQMD, the Notices of Violations that were issued to Cemex and Central were still pending, without resolution.

IV. INVESTIGATION EXPANSION

Because all three San Francisco plants had compliance problems, the Clinic expanded its investigation to include some of the three companies' other Bay Area facilities. The Clinic also sought additional records for the San Francisco operations of the three companies.

A review of the firms' websites identified 26 Bay Area locations. Google Earth showed that 25 of the 26 addresses each had at least one open and uncovered stockpile.

To narrow down the number of facilities, the Clinic collected demographic data on the communities around each plant, using CalEnviroScreen, a tool available from the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA).²¹ The Clinic screened for education level, unemployment rate, poverty rate and percentage of ethnic population. A numeric score for each facility was calculated based on CalEnviroScreen, with a higher score indicating a more disadvantaged community. The Clinic targeted the highest-scoring facilities for each company and sent Public Records Act requests to BAAQMD for each one, seeking permits, permit applications and Annual Data Updates, which list annual throughput for regulated equipment.²²

The additional violations uncovered are discussed below.²³

A. Cemex

Cemex-San Francisco: Cemex-San Francisco has consistently exceeded the throughput limit for its sand conveyor-belt system. The exceedances grew larger every year. Nevertheless, BAAQMD took no enforcement action before the 2016 inspection prompted by the Clinic's investigation. Though the conveyor-belt sand throughput limit in the permit was 60,000 tpy, Cemex-San Francisco reported total throughput of 155,808 tons, more than double the limit, in 2011; 165,516 tons in 2012; and 192,890 tons, more than triple the limit, in 2013. Handwritten notes on the 2012 records say, "over" and "60,000 is limit," next to the 165,516 figure, indicating BAAQMD at some point recognized Cemex was in violation. It is unclear whether the notations were made before or after the Clinic alerted BAAQMD. BAAQMD did not supply records (Annual Data Updates) for 2014 and 2015.

Cemex-Berkeley: On January 31, 2014, BAAQMD inspected Cemex-Berkeley. It found the facility exceeded a 6,000 tpy throughput limit for its cement hopper and cement storage bins; the actual throughput was 10,382 tpy. In two locations on the inspection report, it states, "10,382 tons/year of cement throughput (limit 6,000 tons/year)" (parenthesis in the original). An April 15, 2014 Annual Data Update reported the cement hopper had a throughput of 10,383 tpy, i.e., 4,383 tons over its allowable limit. Despite the exceedance, no Notice of Violation was issued.

Cemex-Union City: The company reported several overages in 2014: throughput of 31,129 tpy for its "bulk cement unload" and for a "cement silo vent," exceeding the limit of 26,000 tpy; throughput for its "fly ash silo vent" of 3,262 tpy, surpassing the limit of 1,500 tpy; and throughput for sand and gravel storage of 201,614 tpy, whereas the limit was 175,000 tpy. Like

Cemex-San Francisco's 2012 records, handwritten notes saying, "over," were next to these exceedances. Here, too, no Notices of Violations were issued. Instead, BAAQMD allowed Cemex-Union City to apply for an increase in its throughput limits with no sanctions for having exceeded them.

Cemex-Oakland: The Oakland facility was inspected on April 24, 2012. BAAQMD issued one Notice of Violation for exceeding its total output of concrete; the limit was 150,000 cubic yards per year but output from March 2011 to March 2012 was 248,676.1 cubic yards. Cemex told the inspector the increase was because "Cemex had an increase in business and produced more concrete than the company's permit allowed." Cemex indicated in a letter of response to the Notice of Violation that it had exceeded its annual throughput as of January 2012. In March 2012, it applied for an increase in throughput to 300,000 cubic yards per year,²⁴ a request that was granted. Cemex was never penalized for exceeding its permit limit.

B. Hanson

Hanson-Oakland: BAAQMD had no record of this facility. This is a replay of what the Clinic uncovered regarding Hanson's unpermitted Pier 94 San Francisco location. The Clinic requested that BAAQMD inspect the facility. We do not know whether BAAQMD has done so.

Hanson-Union City: Hanson's Union City facility may no longer be operating; a December 14, 2015 Update reported zero output.

V. BAAQMD'S FAILURE TO FOLLOW ITS OWN POLICIES

Although the investigation focused on concrete manufacturers, it also exposed flaws in BAAQMD's enforcement program and its system for responding to Public Record Act requests.

A. Inadequate Enforcement Culture

BAAQMD routinely allows facilities to exceed the throughput limits in their permits. It also treated what should be considered "major" violations as "minor" ones, precluding sanctions. We believe that these patterns are indicative of the agency's failure to place sufficient emphasis on enforcement.²⁵

Violations that are committed knowingly, willfully, or intentionally are major violations, not minor ones.²⁶ Among other criteria, violations are major if they "preclude or hinder the District's ability to determine compliance with . . . permit conditions, or requests for information or records."²⁷ The agency's own rule defines a minor recordkeeping violation as an "[i]nadvertent omission or deficiencies in recordkeeping, either a missing element on any day or any few days, that do not prohibit an overall compliance determination. The weight of evidence should indicate compliance."²⁸

Minor violations trigger Notices to Comply, which carry no penalties. These notices are required to describe how to resolve the violation cited; none is issued if the violation is fixed in the presence of the inspector.

BAAQMD issued Notices to Comply to Cemex and Central for failure to keep 12-month throughput records. But these violations are major violations. They do not qualify as minor ones.

First, failure to keep throughput records hinders, if not completely precludes, the agency's ability to determine compliance with permit conditions. Second, failing to keep records over a full year, as Cemex and Central did, falls decidedly outside of "any day or any few days," and would tend to show at least knowing violations. Cemex and Central are held to know what their permit conditions require – permits they renew every year. Notices of Violation should have been issued.

Furthermore, a Notice to Comply was issued for a wholly unpermitted facility, Hanson's San Francisco Pier 94 operations. Operating without the required permits should also result in Notices of Violation. In addition, the Notice of Violations issued to Cemex-Oakland should have carried penalties; the company acknowledged that it knew that it was exceeding its permit limit.

B. Health Risk Assessment Manipulation

BAAQMD failed to follow its own regulations when it granted Cemex-San Francisco a permit based on a Health Risk Screening Analysis that was manipulated so the risk was minimized. As stated above, the original analysis found the risk exceeded a regulatory limit and the permit should have been denied. However, a supervisor directed that a second analysis be done using an altered – and incorrect – formula, which brought the risk within the regulatory limit and the permit was granted.

BAAQMD has been aware of the discrepancy between the two Health Risk Screening Analyses since April 2016. As far as the Clinic is aware, the agency has taken no action on the permit, which should not have been granted.

C. Responding to Public Records Act Requests

BAAQMD's responses to Public Records Act requests have been deficient. First, it did not respond in a timely manner. In some instances, the Clinic waited several months for information to be provided. Its own guidelines require more: "The district shall make available the records requested within a reasonable period of time."²⁹ Months to wait for PRA responses is not a "reasonable period of time." BAAQMD's inordinate delays in response time are a recurring pattern in the Clinic's experience. In one instance unrelated to this investigation, for example, documents were produced seven months after the request was made.³⁰

Second, Public Records Act responses were incomplete and required multiple follow-up requests to ensure that we had complete files. BAAQMD should have timely provided all of the documents sought, not partial sets of them, or specify that documents did not exist.

The agency's failure to respond in a timely manner significantly delayed the Clinic's investigation.

VI. RECOMMENDATIONS

BAAQMD has done a poor job regulating concrete manufacturers and has not followed its own enforcement guidelines. In the rare case where BAAQMD has pursued enforcement action, it has taken far too long; a year has passed since the inspections of the San Francisco concrete manufacturers and yet there has still been no publicly-disclosed resolution.

Overall, concrete manufacturers should be properly regulated and should take adequate steps to prevent emission of particulate matter into communities like Bayview Hunters-Point, which already bears a heavy pollution burden. To better protect such communities, BAAQMD should consider, for example, CalEnviroScreen 3.0 data on environmental, health and socio-economic indicators of an affected community when it sets enforcement agendas and conducts permit reviews. And in resolving enforcement actions, BAAQMD should seek redress for potential environmental damage through requiring additional pollution reductions that would not otherwise be required.

BAAQMD should also comply with its own policies and procedures. Notices to Comply, for example, should not be issued for operating unpermitted facilities or for long-term record keeping violations. There needs to be more accountability to ensure that facilities comply with throughput and recordkeeping requirements. BAAQMD should also closely monitor repeat violators. Moreover, BAAQMD should put a greater emphasis on timely enforcement.

Furthermore, BAAQMD should adopt a policy of consulting with affected communities when it comes to setting terms for settling violations. These communities are the ones who often notice potential enforcement problems because they are impacted in the first instance. They should be given the opportunity to have input into resolving the violations that affect them.

Finally, BAAQMD should conduct an internal audit to determine how these permitting and enforcement irregularities occurred and to prevent them from occurring in the future; and to determine how complying with its policies, including environmental justice guidelines and civil rights laws, may have prevented these irregularities. In particular, it should publicly explain how and why the properly done Health Risk Screening Analysis for Cemex-San Francisco's permit application was supplanted by an improperly calculated analysis which lowered the risk enough to meet regulatory standards.

Documents in Dropbox

The following documents are located at:

https://www.dropbox.com/sh/74t1f4xza6dp6mc/AADZQgdnSNQepdaGU_FSNm57a?dl=0

1. Central-San Francisco Notices of Violation and Notice to Comply
2. Cemex-San Francisco Notice of Violation and Notice to Comply
3. Cemex-Oakland Notice of Violation and Notice to Comply
4. Cemex-San Francisco Health Risk Screening Analyses
5. Cemex-Berkeley 2014 Inspection Report
6. Cemex-Union City 2014 Annual Data Update
7. Cemex-San Francisco Annual Data Updates 2010-2013
8. Hanson-San Francisco Notice to Comply
9. BAAQMD Responses to the Environmental Law and Justice Clinic
10. December 6, 2016 letter to BAAQMD from the Clinic re: Enforcement Concerns

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¹ Nate Sheidlower, *Construction Boom Brings Industry Jobs Back to the Bay Area*, Oakland North (Sept. 14, 2016), <https://oaklandnorth.net/2016/09/14/construction-boom-brings-industry-jobs-back-to-the-bay-area/>.

² U.S. EPA, Emission Factor Documentation for AP-42 Section 11.12 Concrete Batching, at 2 (June 2006) [“AP-42”], available at <https://www3.epa.gov/ttn/chief/ap42/ch11/bgdocs/b11s12.pdf>.

³ *Health and Environmental Effects of Particulate Matter (PM)*, U.S. EPA, <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm> (last updated July 1, 2016). For more on particulate matter, or PM, see Appendix A.

⁴ See the Investigative Unit story, NBC Bay Area, on May 24, 2017, at <http://www.nbcbayarea.com/investigations/>.

⁵ Throughout this report, the different locations of the three companies are denoted with the location after the company name.

⁶ Throughput is the quantity of material that passes through a system.

⁷ Application #12815. The permit application numbers are from BAAQMD’s system. All of the applications can be obtained from BAAQMD. They are also in the Clinic’s possession.

⁸ A Notice of Violation is a formal allegation of disobedience to a state law or Air District regulations. It carries penalty fees and, in serious cases, civil or criminal sanctions. Notice of Violation, BAAQMD, <http://www.baaqmd.gov/rules-and-compliance/compliance-assistance/notices-of-violations> (last updated May 20, 2015).

⁹ A Notice to Comply is a “fix-it” ticket issued for minor violations. It carries no penalties. Notice to Comply, BAAQMD, http://www.baaqmd.gov/~media/files/compliance-and-enforcement/notice_to_comply_revised_6_19_07.pdf (last updated May 20, 2015).

¹⁰ Application #26846 sought annual increases as follows: for 5 sources, from 310,625 tons of aggregate and 240,625 tons of sand to 380,000 tons each; for 1 source, from 240,000 tons of concrete and 39,813 tons of cement and supplement to 320,000 tons of concrete and 50,000 tons of cement and supplement; for 1 source, from 455,000 tons of concrete and 73,938 tons of cement and supplement to 600,000 tons of concrete and 90,000 tons of cement and supplement; for 2 sources, from 79,625 tons of concrete to 90,000 tons; and for 2 sources, from 113,750 tons of cement and supplement to 140,000 tons. Supplements are minerals added to “make the concrete mixtures more economical, reduce permeability, increase strength, or influence other concrete properties.” AP-42, *supra* note 2, 2.

¹¹ BAAQMD Regulation 2, Rule 5, § 302.

¹² See Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments (Feb. 2015), available at <https://oehha.ca.gov/media/downloads/crn/2015guidancemanual.pdf>.

¹³ Interoffice Memorandum from Ted Hull to Dharam Singh (Apr. 15, 2016) (emphasis in original) (in Dropbox under “Cemex-San Francisco Health Risk Screening Analyses”). Nickel can cause inflammation of the respiratory system and is a carcinogen. Agency for Toxic Substances & Disease Registry, U.S. Dep’t of Health and Human Servs., Public Health Statement for Nickel (Aug. 2005).

¹⁴ BAAQMD Regulation 2, Rule 5, § 302; see Interoffice Memorandum from Ted Hull to Dharam Singh (Apr. 15, 2016) (in Dropbox under “Cemex-San Francisco Health Risk Screening Analyses”).

¹⁵ Interoffice Memorandum from Ted Hull to Dharam Singh (Apr. 24, 2016) (emphasis in original omitted) (in Dropbox under “Cemex-San Francisco Health Risk Screening Analyses”).

¹⁶ See attachment to Sanjeev Kamboj’s email (May 13, 2016) (in Dropbox under “BAAQMD Responses to the Environmental Law and Justice Clinic”).

¹⁷ Application #24200.

¹⁸ Application #26351.

¹⁹ BAAQMD’s Permit Handbook, page 10, states in its section on Health Risk Assessments, “[I]n order to prevent circumvention which might be achieved by breaking a project into smaller pieces and submitting more than one permit application over a period of time, a project shall include those new or modified sources of TACs [toxic air contaminants] at a facility that have been permitted within the two-year period immediately preceding the date a complete application is received.” BAAQMD did not provide Application #24200 to the Clinic, and thus it is unclear when the Application was granted. However, the Clinic believes the application was granted in the fall of 2012, based on an attachment to an undated Engineering Evaluation Report, which was produced. The second application, #26351, was deemed complete on September 24, 2014. The Clinic believes, therefore, that the second application was made within two years of the prior application being granted, making them one project, and the cancer risk should therefore be additive.

²⁰ BAAQMD requires sand stockpiles to contain at least 5% moisture content by weight to prevent PM emissions.

²¹ The Clinic used CalEnviroScreen 2.0 because the current 3.0 version was not released until January 30, 2017.

²² As part of the permit renewal process, BAAQMD requires regulated facilities to file Annual Data Updates. BAAQMD, The Permit Renewal Process (Apr. 2008), http://www.baaqmd.gov/~media/files/engineering/forms/permit-renewal/permit_renewal_inst.pdf (copy of instructions mailed with permit renewal data update questionnaire).

²³ The discussion of the violations is based on documents available from Dropbox. The Clinic sought records but found no violations that could be detected from records at Central’s Oakland, Martinez, and Redwood City locations and no additional violations that could be detected from records at Central-San Francisco; or at Hanson-San Francisco. The addresses of the operations at various locations are as follows:

Cemex: 333 23rd Ave., Oakland, CA 94606; 900 Whipple Rd., Union City, CA 94587; 808 Gilman St., Berkeley, CA 94710.

Central Concrete Supply Co., Inc.: 2400 Peralta St. Oakland, CA 94607; 893 Waterbird Way, Martinez, CA 94553; 635 Seaport Blvd., Redwood City, CA 94063.

Hanson Aggregates: 4501 Tidewater Ave., Oakland, CA 94601; 30101 Industrial Parkway SW, Union City, CA 94587 (doing business as Lehigh Southwest Concrete).

²⁴ Application #24272.

²⁵ BAAQMD has been criticized for its lax enforcement. See Mark C. Newton, Legislative Analyst’s Office, Improving State Oversight and Direction of Local Air Districts (Jan. 25, 2001); Michael E. Wall, Miriam Rotkin-Ellman & Gina Solomon, Natural Resources Defense Council, *An Uneven Shield: The Record of Enforcement Violations Under California’s Environmental, Health, and Workplace Safety Laws* (Oct. 2008); see also Helen H. Kang, *Pursuing Environmental Justice: Obstacles and Opportunities – Lessons from the Field*, 31 Wash. U. J. of L & Pol’y 121 (2009).

²⁶ BAAQMD Regulation 1, Rule 2, § 301.

²⁷ BAAQMD Regulation 1, Rule 2, § 204.5.

²⁸ Regulation 1, Rule 2, Policies and Procedures Manual (emphasis added).

²⁹ BAAQMD Admin. Code § 11.6(c).

³⁰ Letter from Clinic to Nicholas Maiden, BAAQMD, commenting on Pacific Steel Casting’s Proposed SMOP Revision (Jan. 19, 2017), at 8.

APPENDIX A - PARTICULATE MATTER

Particulate matter (PM) pollution is a major concern for the San Francisco Bay Area; the American Lung Association's 2017 report ranked the San Jose-San Francisco-Oakland metropolitan area as the fourth most polluted in the United States for year-round PM_{2.5} pollution, up from sixth in 2016.¹

The Bay Area Air Quality Management District (BAAQMD) is the primary agency that regulates PM in the San Francisco Bay Area, including San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Napa and Marin Counties, and parts of Sonoma and Solano Counties.

What Is PM?

“Particulate matter (PM) describes a complex pollutant composed of an assortment of tiny airborne particles that vary in size and mass (ultrafine, fine, and coarse), physical state (solid or liquid), chemical composition, toxicity, and how they behave in the atmosphere.”² Some PM is emitted directly from a source such as construction sites or from piles of material.³

PM is classified according to the size of the particle: PM₁₀ are particles that are 10 micrometers (µm) or smaller in diameter, and PM_{2.5}, less than 2.5 µm. (a single human hair is approximately 70 µm.).⁴ These particles can remain in the atmosphere for days or weeks, depending on their size and the meteorological conditions.

What Are the Health Risks of PM?

Particulate matter contains particles that are so small that they can be easily inhaled and cause serious health problems.⁵ In particular, “[p]articles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into your lungs, and some may even get into your bloodstream.”⁶ “Health studies have shown that exposure to PM can have a wide range of negative health effects, including asthma, chronic bronchitis, impaired lung development in children, heart attack, stroke, and premature death.”⁷

Of further concern, “compelling evidence” exists that “fine particle concentrations well below the national standard are harmful to the cardiovascular and respiratory health of our elderly citizens.”⁸ “Lowering PM levels . . . prevent[s] deaths, mostly from heart attacks and heart

1 *Compare* American Lung Association, *State of the Air 2017*, at 16 (2017), available at <http://www.lung.org/assets/documents/healthy-air/state-of-the-air/state-of-the-air-2017.pdf>, with American Lung Association, *State of the Air 2016*, at 15 (2016), available at <http://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2016-full.pdf>.

2 *Glossary*, BAAQMD, <http://www.baaqmd.gov/about-air-quality/glossary> (last visited May 23, 2017).

3 *See generally* *Particulate Matter (PM) Basics*, U.S. EPA, <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM> (last visited May 23, 2017).

4 *Id.*

5 *Id.*

6 *Id.*

7 *Glossary*, BAAQMD, *supra* note 2.

8 Press Release, National Institute of Environmental Health Sciences, *Elderly Have Higher Risk for Cardiovascular, Respiratory Disease From Fine Particle Pollution* (Mar. 8, 2006), available at

disease. Studies have shown a 15% decrease in the risk of heart disease deaths with every PM_{2.5} decrease of 10µg/m³ (micrograms per cubic meter).⁹

According to BAAQMD, PM is “the most hazardous air pollutant in the Bay Area in terms of health impacts.”¹⁰

Some Communities – Like Bayview Hunters Point – Are at Greater Risk

While overall air pollution continues to decrease in the Bay Area, some communities continue to experience higher concentrations of PM and other harmful air pollutants compared to their regional counterparts.¹¹ According to one report by the Bay Area Regional Health Inequities Initiative, where a person lives in the Bay Area is a significant factor in determining health outcomes: “West Oakland residents are expected to live an average of 10 years less than people in the Berkeley Hills; Bayview/Hunters Point residents are expected to live 14 years less than those living in Russian Hill; and in Contra Costa County, those in Bay Point can expect to live an average of 11 years less than residents in Orinda.”¹²

These numbers can in part be attributed to heightened levels of PM exposure; people who live or work near major roadways, ports, distribution centers, or large industrial facilities are often disproportionately exposed to certain types of PM, and the negative impacts on public health in these areas greater.¹³ In the Bayview Hunters-Point neighborhood, PM sources abound: major roadways such as U.S. Highway 101, Interstate 280, and Third Street crisscross the area; the Port of San Francisco is a known PM source; and construction has increased in the area with the development of the Candlestick Point and Hunters Point Shipyard areas.

BAAQMD classifies Bayview Hunters Point as a CARE (Community Air Risk Evaluation) Community precisely because it is one of the areas in the agency’s jurisdiction most affected by air pollution, with populations most vulnerable to pollution’s health impacts.¹⁴

<http://www.nih.gov/news/pr/mar2006/nihs-08.htm> (referring to Francesca Dominici et al., Fine Particulate Air Pollution and Hospital Admissions for Cardiovascular and Respiratory Diseases, 295 J. of American Med. Ass’n 1127 (Mar.8, 2006)).

⁹ Health Impacts of Fine Particles in Air, Centers for Disease Control and Prevention, <http://ephtracking.cdc.gov/showAirHIA.action> (last updated Dec. 17, 2013).

¹⁰ *Id.*

¹¹ See BAAQMD, *Improving Air Quality & Health in Bay Area Communities, Community Air Risk Evaluation Program Retrospective & Path Forward (2004-2013)*, at 18 (Apr. 2014), available at http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retrospective_April2014.ashx?la=en.

¹² *Id.*

¹³ *Community Air Risk Evaluation Program*, BAAQMD, <http://www.baaqmd.gov/plans-and-climate/community-air-risk-evaluation-care-program> (last visited May 23, 2017); see also SF Environment et al., *San Francisco Healthy Homes Project: Community Health Status Assessment*, at 17-18 (n.d.), available at https://sfenvironment.org/sites/default/files/fliers/files/sfe_ej_sfhh_community_health_status_assessment.pdf.

¹⁴ “The Bayview-Hunters Point is a focus area under the Air District’s CARE Program and the Air District is continuing to look at the air pollution impacts to this area.” Mary Romaidis, Clerk of the Board, *Summary of the Board of Directors Stationary Source Committee Meeting 9:30 a.m., Monday, Oct. 29, 2007*, http://www.baaqmd.gov/~media/Files/Board%20of%20Directors/2007/ssc_min_102907.ashx.