State of California—Health and Human Services Agency
California Department of Public Health

RON CHAPMAN, MD, MPH
Director & State Health Officer

EDMUND G. BROWN JR.
Governor

December 20, 2012

Lauren Shalaby
225 W. 8th Street
Santa Rosa, CA 95401

Dear Ms. Shalaby:

The California Department of Public Health (CDPH) received your email dated June 21, 2012, indicating concerns for your health and the health of your community, regarding emissions from an asphalt plant (BoDean Company Inc.) in Santa Rosa, 1060 Maxwell Drive. Please accept our apologies that our response has taken so long. The Site Assessment Section (SAS) of CDPH evaluates community concerns from releases of hazardous materials as part of a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The findings of our evaluation are summarized in this letter. CDPH has send a letter with these findings and recommendations to the Bay Area Air Quality Management District (BAAQMD).

CDPH did not review if a "Minor Conditional Use Permit" is appropriate for the proposed equipment, or if a categorical exemption should be granted under the California Environmental Quality Act (CEQA).

Background: Asphalt Plant in Santa Rosa

An asphalt plant has been in operation at 1060 Maxwell Drive since approximately 1953. The City granted use permits in 1961, 1967, 1968 and in 1987 the City granted a Conditional Use Permit to construct a 78 ft. tall storage silo. In November 2011, BoDean Inc. filed for a Minor Conditional Use Permit to add three silos and associated equipment (a drag conveyor, two horizontal conveyors, three batchers and a blue smoke control system for the new silos and load-out point).

The current capacity of the BoDean plant is limited by the presence of only one storage silo: this requires the plant to turn on the "asphalt manufacturing equipment" (batcher unit) as soon as customer demand depletes the silo. This causes the batcher unit to be turned on and off frequently, increasing fuel consumption from warming up phases. Filling up four silos at a time will result in longer non-stop operation of the batcher unit compared to turning the batcher unit on and off to fill a single silo four times. The increased storage capacity will allow satisfying peak-time customer demand and

storage of different products, resulting in a likely increase of volume throughput and total asphalt sales, compared to the current operation. In their permit application to the Bay Area Air Quality Management District (BAAQMD), BoDean agreed to limit the throughput to 759,000 tons per year (tpy), which is based on the current peak production per day. This throughput is usually not reached every day. The emission associated with fuel consumption from the batcher unit per hour of operation will likely decrease, but it is not clear if the increased operation time will offset these fuel savings. The number of trucks is likely to increase to accommodate increased asphalt sales; the idling time per truck may decrease, but it is not clear if these fuel savings will offset the increased number of trucks.

The operation of the new silos and load-out will significantly reduce emissions due to the blue-smoke control system; however, this control system is not associated with the old silo and load out. It is not specified in the Minor Conditional Use Permit application to the City, if the asphalt will be routed to the new silos first or to the old silo, or to both. No emission reduction would be achieved if the asphalt is routed primarily to the old silo and to the new silos only if customer demand is high.

A neighborhood meeting that was held on February 8, 2012, and on April 26, 2012 the Planning Commission approved the Minor Conditional Use Permit to allow the equipment upgrades. An appeal was filed on May 3, 2012 by “Citizens for Safe Neighborhoods”. The City Council was asked to rule on the appeal in the meeting on June 19, 2012. At this meeting the City Council heard several presentation and voted 3 (aye), 2 (no), (2 members absent) to deny the appeal. BoDean holds a permit to operate from the Bay Area Air Quality Management District (BAAQMD) and has applied for a permit to operate the new equipment.

Documents reviewed

CDPH reviewed the following documents:

1. Staff Report by the City of Santa Rosa provided at the City Council Meeting on June 19, 2012, “Air Quality and Climate Change Impact Assessment” by SESPE Consulting (available on the webpages of the City of Santa Rosa, City Council, Agendas)

2. BoDean Inc. permit application at BAAQMD, including a Health Screening analysis and the Draft BAAQMD Evaluation Report (available on the webpage of the BAAQMD)

3. ATSDR’s Health Consultation on asphalt plants (“APAC Carolina Inc. and Associated Asphalt Inc., North Carolina”, February 14, 2007, available on ATSDR’s webpage)

Summaries and Comments

1. Report from SESPE Consulting Inc.: "Air Quality and Climate Change Impact Assessment".

SESPE Consulting Inc. prepared the "Air Quality and Climate Change Impact Assessment" for BoDean Inc. The report concluded that there will be beneficial impacts from the proposed facilities due to reductions in health risks to nearby receptors, reductions in criteria pollutant emissions, GHG emissions, CO impacts and odors. CDPH did not review the emission calculations related to the proposed construction, only the portions of the report related to the operation of the new equipment. The calculations predict a reduction of 4.15 tons per year of Reactive Organic Gases (ROG). ROGs are a collection of air pollutants which are precursors for photochemical smog. In addition, other air pollutants are also expected to be reduced based on the assumptions used in the calculations.

Comments:

a) The report states that "*Only incremental effects of the Project are presented*." This means, that only the anticipated changes in emission due to operating the new equipment under the assumed conditions are shown, not the cumulative impact of old and new equipment.

b) The total emissions (tons per year) for the air pollutants are not presented at any point in this document. Rather, "emission rates" are presented (emission pounds per 1000 tons of asphalt produced) or emission changes (tons per year) based on peak production.

c) Tables 2 and 7 lists the "Significance Threshold" for air pollutants as published from the BAAQMD. However, these thresholds were found not to be in compliance with CEQA and the BAAQMD was ordered from the Alameda County Superior Court to stop the dissemination of these thresholds (March 5, 2012). http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx. An appeal is pending.

d) Emissions that are not changing due to the new equipment are not included in the calculations. For example: emissions that occur at the point when the hot aggregate is mixed with the asphaltic oil were "*intentionally excluded*" from the calculations (page 6). Another example is particulate emissions, the majority of which occurs at the aggregating drying and handling stage. These emissions are not reduced due to the new equipment, but will likely increase due to increased asphalt sales: PM10: 0.027 lb/ton (or 20,493 lb/year for maximum yearly throughput) and PM2.5: 0.008 lb/ton (or 6,072 lb/year for maximum yearly throughput).

e) In Appendix C (Summary of Operational Emissions and Assumptions), the assumptions for the calculations are listed: based on a total peak throughput of 759,000 tpy, 70% will be processed through the new silos (531,000 tpy) and 30% through the old silo (227,000 tpy). The calculated reductions are based on these assumptions at peak production. However, it is not clear through which silos the asphalt will be routed on slow and medium load days: if the old silo is used first or exclusively, the blue smoke control system would not be used and only old emission rates should apply. No emission reductions will be realized.

f) The emissions are estimated based on published emission factors for the equipment, not on actual emission measurements. A 95% emission reduction from the blue smoke emission control system may be overly optimistic.

g) The use of other material in the asphalt process (for example: ground up tires) is not accounted for in the report. This may lead to additional air contamination which is not reflected in the report.

h) The batcher unit will run uninterrupted for longer periods of time, resulting in less start/stop cycles and less fuel consumption per ton of asphalt produced, but the entire operation time is longer. It is unclear if the fuel savings will be off-set by the increased operation time.

i) If more asphalt is sold the truck traffic will increase. The timing of the truck traffic will depend on the peak demand times. The idling time per truck may decrease due to faster load-out, but it is unclear if these fuel savings and emission reduction will be off-set by increased truck traffic due to increased asphalt sales.

j) The emission reduction rates may be overly optimistic, if less than 70% of the asphalt routed through the new silos. The report does not account for existing emissions that are not mitigated (PM emission from aggregate handling and ROG emissions from mixing asphaltic oils with aggregate).

k) From a public health standpoint, not the emission rate (lb ROG /1000 tons of asphalt) or the potential reduction (4.15 tons per year of ROG) are meaningful, but the actual concentration of the air pollutants to which the resident or worker or child is exposed. The SESPE report does not attempt to model the concentrations. The overall emissions and air quality that the future operation will result in are not addressed in this report.

l) CDPH does not agree with the SESPE's conclusions, specifically that the "*Project Operation phase results in a beneficial impact (i.e. reduction of) criteria pollutant emissions…* [and] … *health risk to nearby receptors*"). The assumptions used for generation this report may not pertain to the actual operating conditions (70% of asphalt routed through new silos; 95% emission reduction from emission control system) and the reduction maybe be small. The overall effect of the additional equipment will depend on the overall demand of asphalt that the plant

has to satisfy, and the portion that will be routed through the old equipment without emission control.

2. Bay Area Air Quality Management District (BAAQMD)

Per information from the BAAQMD, "*the District has not issued any Notice of Violations to this facility. Also, the District has received 106 complaints so far in 2012, and there were 10 complaints that were confirmed by the District's inspector*." (email 7/16/2012).

BoDean has submitted a permit application for "*three new hot mix asphalt silos (S-25) and the truck load-out operation underneath the new silos (S-26)*", application number 23889.

In the BAAQMD "Evaluation Report (Draft)" the emissions calculations are for "Precursor Organic Compounds" (**POC**), whereas the SESPE report used "Reactive Organic Gases" (**ROG**). What is the difference?
According to the Cal/EPA Air Resource Board's Glossary (http://www.arb.ca.gov/html/gloss.htm), **ROG** refers to a photo chemically reactive chemical gas, composed of non-methane hydrocarbons that may contribute to the formation of smog. **The definition for POC is similar (Stanford University, Env. Safety and Health:** http://www-group.slac.stanford.edu/esh/environment/air_quality/p_definitions.htm**):**
Precursor organic compound (POC). Any **organic compound (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate and methane** (excepting the NPOCs). POCs react in the atmosphere to form photochemical smog.
For the purpose of this letter, POC and ROG will be used interchangeably.

In the application, BoDean agrees voluntarily to the following conditions of the permit (based on past peak hourly throughput): the highest hourly throughput is 294 tons/hr, the highest daily production rate is 7,075 tons per day, the highest annual production limit is 759,000 tpy. Only one truck at a time will be loaded at the facility, even though several load-out points are available.

The BAAQMD emission calculations are based on these assumptions. On page 2 the entire annual throughput is assumed to go through the new silos ("S-26"). Looking only at the POC/ROG, if no emission control system was in place (conditions of operating the old silo only), 9259 pounds/year (equivalent to 4.6 tons per year) of POC/ROG are expected according to this model. Using only the new silos with emission control, 185 pounds/year of POC/ROG are expected (equivalent to 0.093 tpy). If only the new silos were operated, a significant decrease of emissions would be expected:

	OLD Operating conditions No Emission Control System ONLY: Old Silo /Truck Load-out		**NEW** Operating Conditions With Emission Control System ONLY: New Silos / Truck Load-out	
Annual Through-put	759,000 tpy		759,000 tpy	
Silo filling	POC: 4.6 tpy	PM10: 0.2 tpy	POC: 0.093 tpy	PM10: 0.004 tpy
Truck Load out	POC: 1.48 tpy	PM10: 0.2 tpy	POC: 0.175 tpy	PM10: 0.023 tpy
TOTAL	**POC: 6.08 tpy**	**PM10: 0.4 tpy**	**POC: 0.268 tpy**	**PM10: 0.027 tpy**

Based on these calculations from the BAAQMD report, running the entire throughput of the facility through the new equipment would cause considerable reduction in emissions from organic compounds and particulate matter during the storage and load-out phases. The POC emissions would be reduced by 96%, and the particulate matter emission would be reduced by 90%. However, this is only the case if the entire throughput is run through the new equipment. The BAAQMD calculated the S-26 (new silo) and S-27 (new truck-load-out) emissions based on the entire throughput (759,000 tpy). It follows that the BAAQMD permit will be written such that the entire throughput should go through the new equipment and no portion of the throughput through the old silo.

According to the BAAQMD calculations, the emissions of three toxic pollutants exceeded the "trigger levels" and therefore required a "Health Risk Screening Analysis". This HRSA showed that these emissions will result in an additional cancer risk of 0.14 in a million (0.14E-06), a chronic hazard index of 0.00019 and an acute hazard index of 0.0025. The BAAQMD concludes that "*these are acceptable risks*".

Comments:

a) CDPH agrees that the emission reduction during the storage and load-out phases of the operation will be significant if only the new equipment is operated.

b) CDPH does not agree that the risks associated with the toxic air pollutants can be called "acceptable" without further evaluation of the actual air concentrations in the vicinity of the plant (see recommendations below).

3. <u>Agency for Toxic Substances and Disease Registry (ATSDR) Health Consultation</u>

   In 2007 ATSDR published a Health Consultation that evaluated community exposures and potential health impacts from asphalt plant emissions in seven locations in Arizona, California, North Carolina, Georgia, New York, North Carolina and Utah. The facility in California was not identified. The studies were initiated from North Carolina citizen's complaints: most frequently related to respiratory distress and eye irritation. ATSDR conducted ambient air monitoring and emission tests in residential areas at seven locations near asphalt facilities. Data was collected for hydrogen sulfide (H_2S), volatile organic compounds (VOC), poly-aromatic hydrocarbons (PAH) and Particulate Matter (PM: $PM_{2.5}$ and PM_{10}). The levels

detected in this study do not appear to pose a short term or long term public health hazard. VOCs and PAH were detected at very low concentrations. H_2S, $PM_{2.5}$ and PM_{10} were slightly elevated. However, the study noted: "*Some of the highest values of contaminants in Salisbury* [North Carolina] *may produce respiratory irritation in children and other more sensitive populations (e.g., elderly, people with pre-existing respiratory conditions, etc.)*." Responses to environmental odors vary with the individual. The fact that an odor can be detected is not necessarily associated with health effects. However, odor–related symptoms include innate odor aversion, stress-induced illness, and aggravation of existing medical conditions such as bronchial asthma. These symptoms may occur at thresholds below levels that are considered hazardous.

Following are some of the comparison values used from ATSDR, California Air Resources Board (CARB) and USEPA.

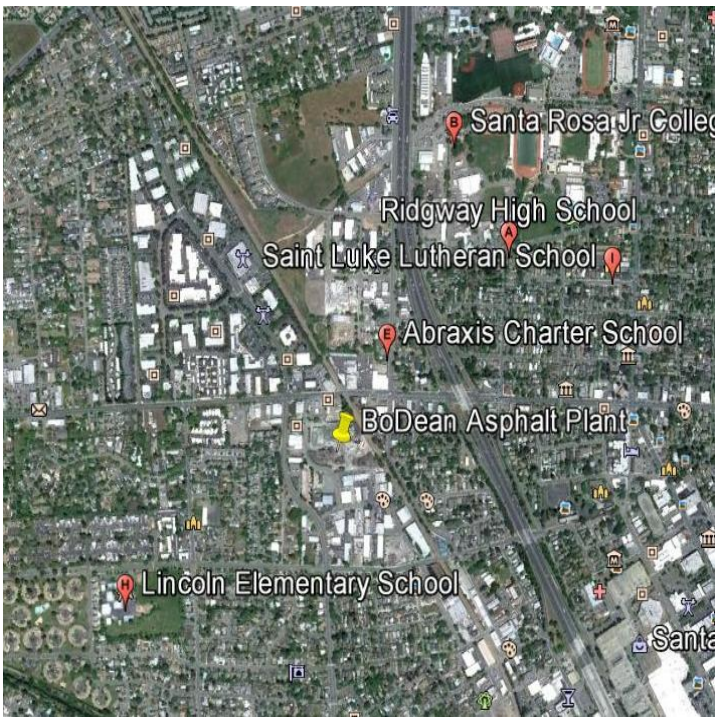
Compound	H_2S	Benzene	$PM_{2.5}$	PM_{10}	Fluoranthene	CO
Comparison Value	28 µg/m^3	9.6 µg/m^3 Ch-EMEG 19 µg/m^3 i-EMEG	35 µg/m^3	50 µg/m^3	150 µg/m^3	10 mg/m^3
Name of CV	i-EMEG	EMEG	NAAQS, 24 hr	CAAQS, 24 hr	RBC	CAAQS. 8 hrs
Source	ATSDR	ATSDR	USEPA	CARB	USEPA	CARB

i-EMEG: intermediate-Environmental Media Evaluation Guide; ch-EMEG: chronic Environmental Media Evaluation Guide; NAAQS: national Ambient Air Quality Standard; CAAQS: California Ambient Air Quality Standard; RBC: Risk Based Concentration; ATSDR: Agency for Toxic Substances and Disease Registry; CARB: California Air Resources Board

Potentially exposed populations in Santa Rosa

In addition to the residences and commercial businesses nearby, there is the potential for exposure of sensitive populations:

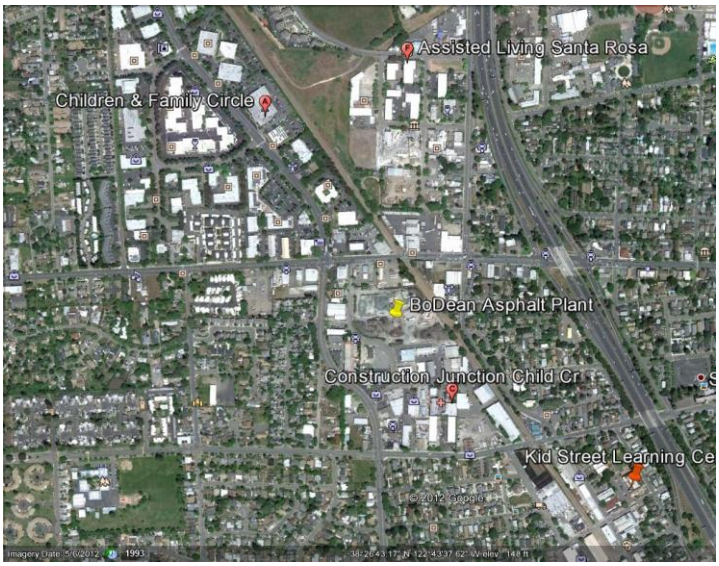
Schools near BoDean Plant



The following schools are located nearby:

- Abraxis Charter School, 1207 Cleveland Ave (app.850 ft. to the northeast)
- Kids Street Charter School, 709 Davis Street (2200 ft. to the southeast)
- Lincoln Elementary School, W 9th Street at Simpson Place (app. 2500 ft. to the southwest)
- Ridgeway High School, 325 Ridgeway Ave (app 2400 ft. to the northeast)
- Santa Rosa Jr. College, 1501 Mendocino Ave (2900 ft. to the northeast)
- Saint Luke Lutheran School, 905 Mendocino Ave (3200 ft. to the northeast)

Daycare Centers etc. near BoDean Plant



The following daycare centers/assisted living facilities were found nearby:

- Construction Junction, 28 Maxwell Court (app. 600 ft. to the south)
- Children and Family Circle, 1260 N. Dutton Ave, (app 1650 ft. to the north)
- Assisted Living Santa Rosa, 35 Frances Str. (app. 1900 ft. to the north)
- Kid Street Learning Center, 709 Davis Str. (app. 2000 ft. to the southeast)

Conclusions

The new silos and load out capacity will likely result in increased product sales and throughput, compared to current rates. Certain emission sources of this plant appear to be unaffected from the new equipment, or may increase due to increased product sales: for example, particulate emissions from aggregate drying and handling; emissions from mixing of heated aggregate with asphaltic oils; truck traffic increase due to increased asphalt product. Whether net emission reductions are achieved depends primarily on the operation of the old silo/load out, since it is not equipped with the blue smoke emission control system. Operating only the new equipment with the emission control system would significantly reduce emissions during the storage and load-out phases, especially the smog-precursor air pollutants. This reduction would greatly benefit the neighborhood, while allowing BoDean satisfying customer demand at peak times and greater product diversity.

Recommendations

CDPH has the following recommendations:

- The BAAQMD should conduct air quality monitoring near the facility (nearest residence, nearest day care center and school, downwind of predominant wind direction at fence line and at nearest residence). This would establish a baseline and provide the neighboring community with data on air quality. If exposure point concentrations are available, they can be compared to health thresholds to estimate potential health concerns.

- Only the new equipment (silos and load-out) should be used, which include the emission control system, as specified in the calculations of the BAAQMD. This would significantly reduce emissions from the facility's storage and load-out operations and benefit the air quality in the neighborhood, while allowing BoDean Inc. increased storage capacity and offering of multiple products.

- Ensure that the blue smoke control system is operated at all times. The operator should document any times that the control system is not operating.

- Other emission sources (particulate emission during aggregate handling; mixing of aggregate and asphaltic oils) should be reduced

- In addition to the Abraxis Charter School, the parents and teachers of Construction Junction, 28 Maxwell Court (app. 600 ft. to the south) should be informed of the pending permit changes at the BoDean plant.

The ATSDR Health Consultation concluded with the following general recommendations for evaluating emissions from Hot Mix Asphalt Plants:

- Analysis SO_2, NO_x, CO, CO_2, metals (nickel, manganese, barium, lead),, $PM_{2.5}$ and PM_{10}, volatile organic compounds (VOC), poly-aromatic hydrocarbons (PAH)

- Include sampling for compounds with the highest degree of significant/sustained odor at HMA plats such as SO_2, acetaldehyde, naphthalene, toluene, crotonaldehyde, xylene (m-,p-), heptane, ethylene, acrolein, acetone and H_2S.

- Consider how site-specific chemical mixtures may react and form other hazards such as acid gases and possibly include pH measurements where applicable.

In conclusion, based on your concerns and our review of available information, we recommend that the BAAQMD conduct ambient air monitoring according to the ATSDR recommendations near BoDean Inc. to determine the levels of contamination. In addition, it should be ensured that the proposed emission control system of the plant is used at all times, and that use of the old equipment is discontinued to achieve significant reductions in air pollutant emissions. Parents and teachers of all nearby schools should be informed of the pending permit changes at the BoDean plant.

CDPH has communicated these findings and recommendations to the BAAQMD in a letter.

If you have any questions, please do not hesitate to contact me at (510) 620 3610.

Sincerely,

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