Final Air Quality Report for Kniesel's Proposed Shingle Springs Collision Center

Prepared for:
Kniesel's Collision Centers
4680 Pacific Street
Rocklin, CA 95677
Contact: Rob Champe
Phone: (916) 315-8888

Prepared by:
Rimpo and Associates, Inc.
6097 Garden Towne Way
Orangevale, CA 95662
Contact: Tim Rimpo
Phone: (916) 337-8449

September 14, 2009

Executive Summary

Kniesel's Collision Centers is proposing to build an Auto Collision Center (Center) at 4031 Wild Chaparral Drive in Shingle Springs, California. The proposed Center would repair, repaint, and customize cars, trucks, and other vehicles. During normal operations, the Center would generate emissions of particulate matter (measured as PM10) and reactive organic gases (ROG).

This report examines the Center's emissions and evaluates their potential to cause health impacts to nearby residents. The report finds that the Center's emissions of particulate matter (measured as PM10) and reactive organic gases (ROG) would be less than levels considered significant by the California Air Resources Board and the El Dorado County Air Quality Management District.

The project's emissions were also compared to emissions from the adjacent one mile segment of Highway 50. The project would release 10% of the ROG and 50% of the PM10 emitted by vehicles traveling on Highway 50.

Even though PM10 and ROG emissions would be less than significant, the individual constituents of PM10 and ROG could pose acute, chronic, and carcinogenic health risks. To address these risks, a screening level health risk assessment (HRA) was conducted. The HRA found that the project would not result in significant acute, chronic, or carcinogenic health risks to individuals living in the project vicinity.

Table of Contents

Introduction

Kniesel's Collision Centers is proposing to build an auto collision center at 4031 Wild Chaparral Drive in Shingle Springs, California (Figure 1). This report estimates the air emissions from this facility and analyzes potential health risks to nearby residents.

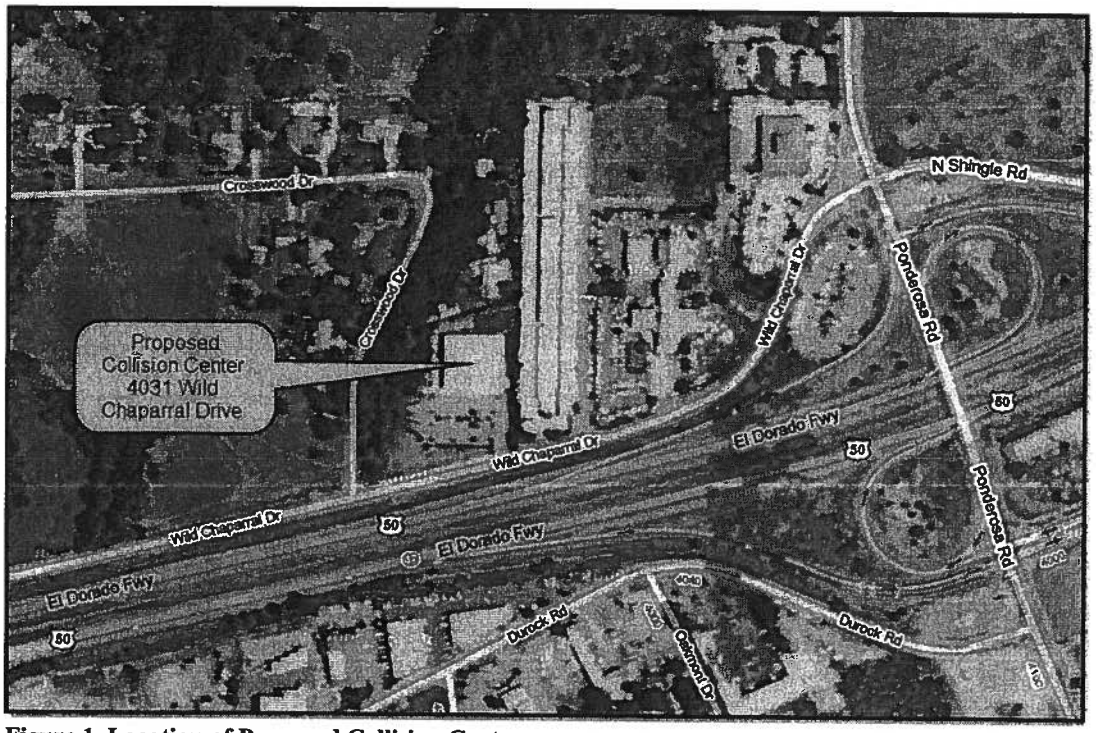

Figure 1. Location of Proposed Collision Center

The proposed project would repair, repaint, and customize cars, trucks, and other vehicles. The activities to be conducted include sanding, cleaning, and painting, all of which release pollutants into the air and may contribute to health concerns in the community.

Regulatory Background

The two primary classes of pollutants that would be emitted by the Shingle Springs Collision Center (Center) include particulate matter less than 10 microns in diameter (PM10), and reactive organic gases (ROG). State and federal ambient standards have been set for PM10. Table 1 summarizes the state standards, which are more restrictive than federal standards. They include a maximum allowable concentration of 50 micrograms PM10 per cubic meter (24-hour average) and 20 micrograms PM10 per cubic meter (annual average).

Although no state or federal ambient standards have been set for ROG, the El Dorado County Air Quality Management District (EDCAQMD) has established a mass emission

significance threshold of 0.041 pounds PM10 per day and 82 pounds ROG per day (EDCAQMD, 2002). Table 1 summarizes the PM10 and ROG concentration and mass emission thresholds.

Table 1. PM10 and ROG Emission Standards

Pollutant	Standard
PM10	50 $\mu g/m^3$ 24-Hour Average
	20 $\mu g/m^3$ Annual Average
	0.41 pounds per hour
ROG	82 pounds per day

Notes: The concentration thresholds are based on the California ambient air quality standards for PM10. The mass emission thresholds are based on CEQA standards established by the EDCAQMD.

Center Emission Estimates for ROG and PM10

This section evaluates the Center's PM10 and ROG emissions and compares them to the PM10 and ROG standards listed in Table 1. Another concern not addressed by the standards shown in Table 1 is that the individual constituents of the project's ROG and PM10 emissions may pose health hazards to residents living in the vicinity. These are often referred to as toxic air contaminants or TACs. Consequently, the following section of this report evaluates the health risks from the Center's TAC emissions.

The Center would generate PM10 emissions from a range of activities, including sanding and paint overspray. PM10 from sanding would be controlled with vacuum capture equipment. PM10 from paint overspray would be controlled using negative pressure and by ducting the overspray through a series of filters that capture at least 98 percent of PM10 emissions. The 98 percent capture level has been established by the U.S. EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP Subpart HHHHHH). All remaining PM10 emissions will be ducted to a stack on the Center's roof.

The Center would generate ROG emissions from the evaporation of coatings, which would also be ducted to the stack on the Center's roof. The Center would use low-VOC (volatile organic compound) containing water-based coatings for most applications. The use of these low-VOC coatings minimizes the amount of ROG that would be released from the facility[1].

Table 2 compares the Center's emissions to the standards shown in Table 1. The emission estimates assume that the average collision repair job requires painting three automotive panels per day, and that three repair jobs would occur per day. The Center's hourly PM10 emissions (2.6 pounds per day/8 hours/day = 0.325 pounds/hour) would be

[1] For this report volatile organic compounds or VOCs include solvents and related evaporative compounds in liquid form. When VOCs evaporate and become airborne, they are considered to be reactive organic gases or ROG.

less than the EDCAQMD's significance threshold (for industrial sources) of 0.41 pounds PM10 per hour (EDCAQMD, 2002). The Center's daily ROG emissions of 3.7 pounds would be less than EDCAQMD's 82 pound per day threshold.

SCREEN3 modeling was used to estimate the worst case daily and annual ambient PM10 concentrations. As Table 2 shows, the worst case 24-hour concentration associated with the project equals 19.4 micrograms per cubic meter ($\mu g/m^3$). This is less than the 24-hour ambient standard of 50 $\mu g/m^3$. Also, the project's worst case annual concentration of 12.6 $\mu g/m^3$ is less than the California ambient standard of 20 $\mu g/m^3$.

Table 2. Comparison of the Collision Center's Emissions to Established Standards

Pollutant	Standards	Estimated for Project	Exceed Standard?
PM10	50 $\mu g/m^3$ 24-hr	19.4 $\mu g/m^3$ 24-hr	**No**
	20 $\mu g/m^3$ Annual	12.6 $\mu g/m^3$ Annual	**No**
	0.41 pounds per hour	0.325 pounds per hour	**No**
ROG	82 pounds per day	3.7 pounds per day	**No**

Notes:

Standards are set by the California Air Resources Board and the El Dorado County Air Quality Management District, as described in the notes of Table 1. The project's PM10 concentrations were estimated using the SCREEN3 model. The project's hourly and daily emissions were based on estimates of average daily collision repairs expected for the Center.

The Center's ROG and PM10 emissions were also compared to emissions from vehicles traveling on the one mile segment of Highway 50 adjacent to the project. Highway 50 emissions were estimated using Caltrans traffic counts and the California Air Resources Board's EMFAC2007 on-road vehicle emissions model.

Figure 2 shows that the Center would emit 3.7 pounds per day of ROG, which is approximately 10 percent of the ROG emitted by traffic traveling on Highway 50. The Center's PM10 emissions would equal 50 percent of the emissions produced by vehicles traveling on Highway 50.

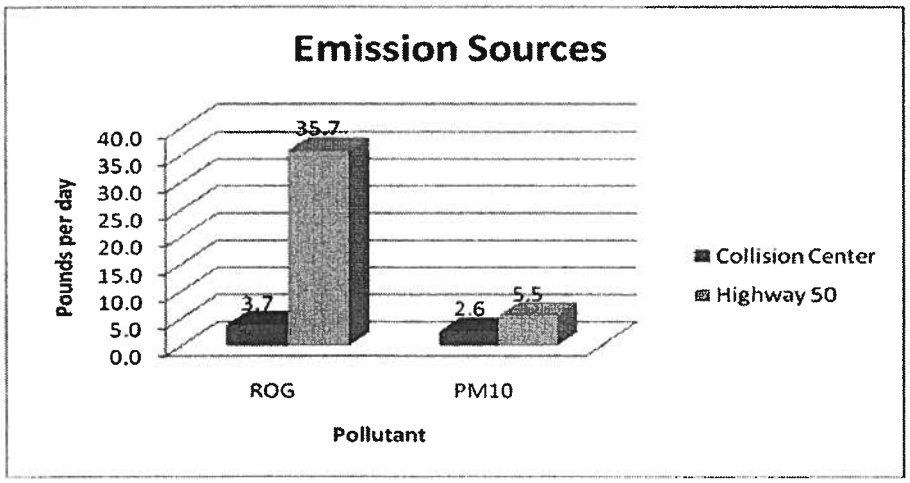

Figure 2. Collision Center Emissions Compared to Highway 50 Emissions

Health Risk Assessment

The analysis described above focuses on emissions of ROG and PM10. Both ROG and PM10 represent classes of pollutants made up of different chemical constituents. The individual constituents of PM10 and ROG represent another potential health risk. With regard to the Center, the individual constituents of coatings include different metals that make up PM10, and different types of solvents that are part of ROG emissions.

A health risk assessment (HRA) was conducted to determine whether the Center would present acute (short term), chronic (long term but non-carcinogenic), or carcinogenic health risks. This HRA focused on the individual constituents of ROG and PM10, referred to here as toxic air contaminants (TACs). TACs include substances that cause acute (short-term) and chronic (long-term) non-cancerous health effects and substances that cause cancer.

We first obtained material safety data sheets (MSDS) for the coatings that would be used at the Center. The MSDS forms list the individual chemical constituents of each coating. We then examined each coating's individual constituents to determine whether they have been listed by the California Office of Environmental Health Hazard Assessment (OEHHA) as either an acute, chronic, or carcinogenic inhalation risk.

We then estimated emissions of each TAC listed by OEHHA as posing a potential health risk. Then, using the SCREEN3 model, we estimated the ambient concentration at the closet receptor. Finally, using OEHHA's recommended procedure, we calculated whether the estimated ambient concentrations of each TAC represented a significant acute, chronic, or carcinogenic health risk.

For chronic TACs, a hazard index (HI) is determined by dividing the annual exposure level by the reference exposure level (REL). The REL is the dose at or below which no adverse health effects are anticipated. The REL varies by individual TAC. If the HI is less than 1, the chronic health impact is considered less than significant.

For acute substances, an HI is determined by dividing the 1-hour exposure level by the substance's REL. If the resulting HI is less than 1, the acute health impact is considered less than significant.

For TACs that are carcinogenic, the project is considered to result in a significant impact if the project would increase the cancer risk by more than 10 in one million (El Dorado County Air Quality Management District, 2002).

The screening-level health risk assessment conducted for this analysis is based on the methodology recommended in the CalEPA Office of Environmental Health Hazard Assessment (2003). The SCREEN3 model, an extremely conservative air dispersion model, was used for this analysis. SCREEN3 assumes worst-case meteorological

conditions and is used to calculate the worst-case 1-hour concentrations at varying distances from an emissions source. The maximum 1-hour concentrations produced by SCREEN3 were converted to annual concentrations by multiplying by 0.08 (U.S. EPA, 1992).

The results of the SCREEN3 health risk assessment are shown in Table 3. This health risk assessment (HRA) accounts for the inhalation health risks associated with the emission of TACs. This HRA assumes that all TACs are emitted from the emission stack that would be located on the top of the Center building.

The combined cancer risk of 0.002 per million is less than the significance threshold of 1 per million. This cancer risk represents a worst case using the extremely conservative SCREEN3 model. The cancer risk estimates are based on the maximum predicted downwind concentration of TACs emitted by the Center's emission sources and assume that all emission sources are released from the stack.

The chronic and acute health hazards indices shown in Table 2 represent the total risk of all TACs that would be emitted by the project's stationary sources. The project would not pose a significant health risk to nearby residents because those indices, both individually and combined, are less than 1. This conservative screening analysis indicates that the project would not pose a significant health risk to residents living in the project vicinity.

Table 3. Health Risk Assessment Results

Screening Criteria	Risk
Cancer risk (significant if greater than 10 per million)	0.002 per million
Chronic Risk (significant if greater than 1)	0.00006
Acute Risk (significant if greater than 1)	0.00003

References

El Dorado County Air Pollution Control District. 2002. Guide to Air Quality Assessment, Determining the Significance of Air Quality Impacts Under the California Environmental Quality Act – First Edition. February. Placerville, CA.

U.S.Environmental Protection Agency. 1992. Screening Procedures for Estimating the Air Quality Impact of Stationary Sources. EPA-454-R-92-019.