Thank you MR. GOLDSTENE and good morning CHAIRMAN NICHOLS and members of the Board. In today’s health update I will discuss a study on the health effects by occupation in the U.S. trucking industry. This study is the largest and most comprehensive nationwide assessment of diesel exposure effects on workers in the trucking industry. We will focus on the first set of findings from the study today.
First, I will briefly go over some background information on diesel. Diesel engines emit a complex mixture of gaseous and particulate matter air pollutants. In 1998, California identified diesel exhaust particulate matter (PM) as a toxic air contaminant based on its potential to cause cancer. Diesel PM from exhaust is also a contributor to ambient PM in California. A growing body of literature exists which links ambient PM exposure to adverse health effects, such as heart attacks, lung cancer and even premature death. However, fewer studies have investigated the effects associated with occupational exposure to diesel engine exhaust, which is a concern because employees working in and around trucks may be particularly at risk due to their continued exposure to diesel PM.
The study that I am presenting today is a national study led by Harvard University that involves the participation of about 54,000 members of the Teamsters Union from four companies. The investigators examined the medical history of Teamsters employed from 1985 to the year 2000 by job category. Each job category in this population has distinct exposure patterns. For example, long-haul and pickup and delivery drivers are exposed directly to traffic; dockworkers are exposed to trucks in the yard and exhaust from forklifts. A questionnaire was mailed to current workers to assess the distribution of smoking habits by job title and terminal characteristics. The smoking rates were similar to the general U.S. population for both drivers and non-drivers. To provide insight into death patterns associated with these exposures, the investigators examined death rates for specific causes by the different job categories in the trucking industry compared to the general U.S. population of the same age group.
Results

Compared with the general U.S. population this study found:

- All-cause death rate:
  - 28% lower

However:

- Heart disease death rate:
  - Drivers 49% higher
  - Dockworkers 32% higher

- Lung cancer death rate:
  - Drivers 10% higher
  - Dockworkers 10% higher

This study found that the employees had a lower overall death rate than the general population, as would be expected in a working population. However, when deaths due to heart disease and lung cancer were compared to the general U.S. population, the death rate observed was elevated, especially for drivers and dockworkers. The death rates for heart disease were elevated among drivers by 49% and dockworkers by 32%; and lung cancer death rate was also elevated among drivers and dockworkers by 10%. Note that this study did not have information on the participants' individual exposure or life style, including factors that could impact their health such as dietary preference and amount of exercise. Current research by the investigators are measuring the actual diesel exposures by job categories.
Conclusions & Implications

- Findings are important to:
  - U.S. trucking industry
  - General population that live, commute, or work in proximity to diesel-fueled vehicles

- ARB regulatory actions help the general population and also the U.S. trucking industry

The study’s findings are important to the U.S. trucking industry since they provide insight into the adverse health effects associated with job-specific exposures mostly from diesel exhaust. But these results are also important to the general population that live, commute, or work in proximity to diesel-fueled traffic or trucking terminals. The findings also provide the ARB with additional scientific information on the risks from exposure to diesel exhaust. Moreover, they suggest that regulations developed to reduce diesel exposures for the general population would also significantly reduce the occupational exposures and subsequent health risk to workers.
Conclusions & Implications (con’t)

- Last 40 years:
  - Engine diesel soot ~18 fold
  - Fuel usage ~6 fold
  - Ambient diesel soot ~3 fold

- Ongoing ARB regulatory actions:
  - Diesel Risk Reduction Plan
  - Carl Moyer Program
  - Goods Movement Emission Reduction Plan

It is worth noting, that over the last 40 years, as shown in this graph from the Lawrence Berkeley National Laboratory, there has been about a 18 fold decrease in diesel soot from improvements in on-road engines and fuel in the Bay Area. This reduction directly affects the occupational exposures for the trucking industry since it shows that diesel engines are getting cleaner. In addition, even though fuel consumption is going up about 6 fold, ambient diesel soot has decreased about 3 fold. This reduction in ambient and diesel engine soot is due in large part to ARB’s and federal regulations and enforcement programs. ARB’s more recent efforts include the Diesel Risk Reduction plan to reduce particulate matter emissions from diesel-fueled engines and vehicles. The Board also provides incentive funds to retrofit existing diesel fleets through the Carl Moyer Program, and we have implemented the Goods Movement Emission Reduction Plan to reduce impacts from diesel-fueled engines, especially from port, truck and locomotive associated activities. These and future regulatory efforts will reduce diesel exhaust exposure for workers and the general population, leading to an improvement in public health.

This concludes my presentation, and I will be happy to answer any questions.