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# Executive Summary

**D**iesel pollution is well known to be hazardous to human health. Groups at particular risk include workers in diesel industries, such as trucking and rail, and communities located near major sources of diesel pollution, such as ports and freeways. Truck drivers who serve ports are at especially high risk. They may be exposed to pollution from their own diesel trucks, and they drive in locations where there are many other sources of diesel pollution—including other port trucks, cargo-handling equipment, ships, and locomotives—and are likely to inhale soot from the air around them.

Our investigation is one of the first to measure truck drivers' exposure levels to diesel soot, or black carbon, inside trucks serving our nation's ports. To do so, we monitored the air inside the cabs of trucks—ranging in age from 1981 to 2006 model years—for an entire work shift serving the Port of Oakland. What we found was disturbing. All of the average black carbon levels measured within the truck cabs were at least 10 times higher than the background level of 0.3  $\mu\text{g}/\text{m}^3$  found in a residential area of Oakland; samples from inside the 1981 truck showed levels of black carbon roughly 25 times higher than the background. These levels are significantly higher than what was previously found along truck corridors near the Port of Oakland and at Port of Oakland terminals, suggesting that diesel exhaust may be accumulating inside the truck cabs.

Thus port truck drivers face even greater health risks than do the residents of surrounding communities. The amount of black carbon we measured inside the truck cabs was high enough to increase health risks by up to 2,600 excess cancers per million drivers—double the level considered acceptable by the Occupational Safety and Health Administration (OSHA), and roughly 2,000 times greater than the level typically considered acceptable by state and federal environmental protection agencies. Although we were unable to quantify them, the non-cancer health risks, such as premature death, are likely to be even greater.

Our investigation indicated that the air in newer trucks tends to be slightly cleaner than the air in the oldest trucks, implying that some portion of the diesel particulate matter (DPM) that the drivers inhale comes from their own trucks. However, the DPM levels found inside the cabs of newer, cleaner trucks remained elevated across model years, showing greater variation depending on the location. This led us to conclude that most of the exposure was from surrounding diesel sources in the port environment.

Based on direct observations of three separate truck drivers' shifts, we also found that drivers spent a lot of time waiting in lines at the port, amounting to almost two-thirds of their day at or around the Port of Oakland. Levels of diesel soot at and around the port were second only to freeway levels among locations with the highest levels of diesel exhaust measured in this work.

To reduce health risks to drivers and local residents, it is necessary to clean up the port truck fleet, increase efficiency to reduce the time trucks spend at the terminals, and reduce pollution levels from other port sources.