Fact Sheet

May 2007

California Environmental Protection Agency
Air Resources Board

Release of California's Draft Railyard Health Risk Assessments

In the 2005 Statewide Railroad Agreement (Agreement), the Air Resources Board (ARB), Union Pacific Railroad (UP), and BNSF Railway (BNSF) committed to prepare health risk assessments (HRAs or assessments) for 16 designated railyards. This was done to quantify pollution risk levels near railyards, identify specific emission sources, and design measures to reduce health risks.

Draft assessments for nine designated railyards, and one additional non-designated railyard, will be released in May or June. Another seven are under development and will be ready in about seven months. ARB staff prepared the health risk assessment portions of the draft HRAs. UP and BNSF completed the emissions inventories and exposure modeling pursuant to ARB guidelines. These guidelines were developed with input from interested stakeholders and State health experts. The railyard HRAs are similar to the assessments for the UP Roseville Railyard (2004) and the combined Port of Los Angeles and Port of Long Beach (2006).

ARB and the railroads are holding public meetings to present the results of the draft HRAs. At the meetings, staff and consultants for the railroads will discuss what we have learned, what is being done to reduce railyard pollution, and will answer questions. The release of the draft HRAs will start a period in which public comments will be sought. This will be followed by a second series of community meetings. The purpose of these meetings will be twofold: 1) to allow another opportunity for comment and questions, and 2) to seek community suggestions on how best to further reduce emissions. Based on these results, ARB will finalize the HRAs and work with the railroads to identify additional feasible mitigation measures that could be implemented to reduce diesel PM emissions.

Health Risks from Exposure to Toxic Air Pollutants

Many chemical substances have been designated as toxic air contaminants (TACs). Some of these are found in California air at levels of concern, mostly due to their potential to increase the risk of cancer. Where sufficient data exist, the cancer risk due to breathing ambient air can be estimated. This risk is usually expressed as the number of additional cancer cases that might occur per million people exposed to a given concentration. Health risks are more likely to overestimate rather than underestimate risks for the average individual[1]. This leads to risk reduction efforts that are health protective for the more highly exposed individuals.

The ARB estimates that the excess cancer risk from TACs in the South Coast Air Basin was about 1,000 per million in the year 2000[2]. Excess risk in the San Francisco Bay Area and the San Joaquin Valley were about one-third lower. About 70 percent of the excess cancer risk from breathing ambient air is attributed to one TAC, diesel particulate matter (diesel PM). The average regional risk for diesel PM in urban areas was between 500 to 800 excess cancers per million in the year 2000.

Emissions from freight transport activities, also called goods movement, are a very significant source of diesel PM in California. These sources include ships, trucks, locomotives, and cargo handling equipment. Some residential areas are in close proximity to ports, railyards, and freeways where many diesel fueled sources operate. In these areas, increases in cancer risk from nearby diesel sources is often significant and can, in a few cases, equal or exceed the regional background levels. However, the concentration of diesel PM in the air declines rapidly with distance from any one source and the impact of even a large facility is much smaller for those living a mile or more from the source area.

[1] For example, exposure estimates are based on a lifetime (70-year) exposure to current levels and on breathing rates that represent active individuals.
[2] Reference ARB Almanac

Results from Railyard Health Risk Assessments

As expected, based on previous studies, the draft assessments show that the diesel PM emissions from several railyards result in significantly higher pollution risks in nearby communities. The largest impacts are associated with the four railyards in Commerce. Diesel PM emissions from these four yards (combined) were about 40 tons per year in 2005. This is about 0.5 percent of the regional diesel PM emissions, and much less than the emissions at the basin's ports[3]. However, the Commerce yards emissions are concentrated and occur next to populated areas. They result in an estimated 70 percent increase in exposure to TACs (over regional levels) for about 5,000 local residents[4]. Draft exposure increases from the other yards in the Los Angeles area are significantly less and fewer people are affected. Risk increases range from about 5 to 20 percent increase over regional levels, resulting in an increase of about 0.1% in overall cancer risk. The draft results are summarized in Table 1.

The draft assessments also estimate pollution risks from other sources of diesel PM. The major emission source is diesel truck traffic in a one to two mile zone around each railyard. Generally, offsite diesel PM emissions result in similar or higher diesel PM exposure than railyard related emissions. A summary of diesel PM emissions from each railyard and air basin regional levels is presented in Table 2.

Actions to Reduce Diesel PM Emissions In and Around Railyards

The ARB recognizes that diesel PM levels, both regionally and near ports, freeways and railyards, are far too high. The Board identified diesel PM as a TAC in 1998. In 2000, the Board adopted a Statewide Diesel Risk Reduction Plan. Recognizing the problems posed by the rapid growth in freight movement, the Board adopted a Goods Movement Emission Reduction Plan in 2006. Together these plans contain strategies to reduce diesel PM emissions by 85 percent. To date, the Board has adopted 16 measures under these efforts that directly relate to reducing diesel PM emissions in and around railyards, and has another 11 in various stages of development.

At the public meetings to release the draft HRAs, the ARB staff and railroad representatives will also discuss existing and planned strategies to reduce diesel PM emissions in and around railyards. The ARB is pursuing a comprehensive approach to reduce locomotive and railyard emissions. Our efforts include voluntary agreements, state and federal regulations, and incentive mitigation programs, including early replacement of California's line haul and yard locomotive fleets. These efforts are explained in more detail in a Fact Sheet entitled "Strategies to Reduce Locomotive and Associated Railyard Emissions" (May 2007). ARB staff estimates that these efforts have provided about a 15 percent reduction in railyard diesel PM emissions between 2005 and 2007. Measures to be applied between 2007 and 2010 are expected to provide another 30 to 50 percent reduction in that period.

[3] For comparison, the major source of diesel PM emissions in the South Coast Air Basin is the Port of Los Angeles/Port of Long Beach which combined are about 1,760 tons per year, or about 23 percent of the South Coast Air Basin diesel PM emissions. Emissions from all sources in the South Coast Air Basin were about 7,800 tons in the year 2005.

[4] Air pollution cancer risks are a small fraction of overall cancer risk. For example, the estimated 1,000 excess cancer risk per million people exposed over a 70 year lifetime of exposure (based on Los Angeles area air quality in the year 2000) represents a one tenth of one percent (0.1%) cancer risk increase. An individual lifetime risk of having cancer is about 25 percent. Thus, even where localized diesel PM emissions significantly increase cancer risk from pollution, the change does not produce a large increase in an individual's overall chance of cancer.

Table 1
Added Cancer Risks in Locations Nearest to and Within One Mile of Railyards
(2005)

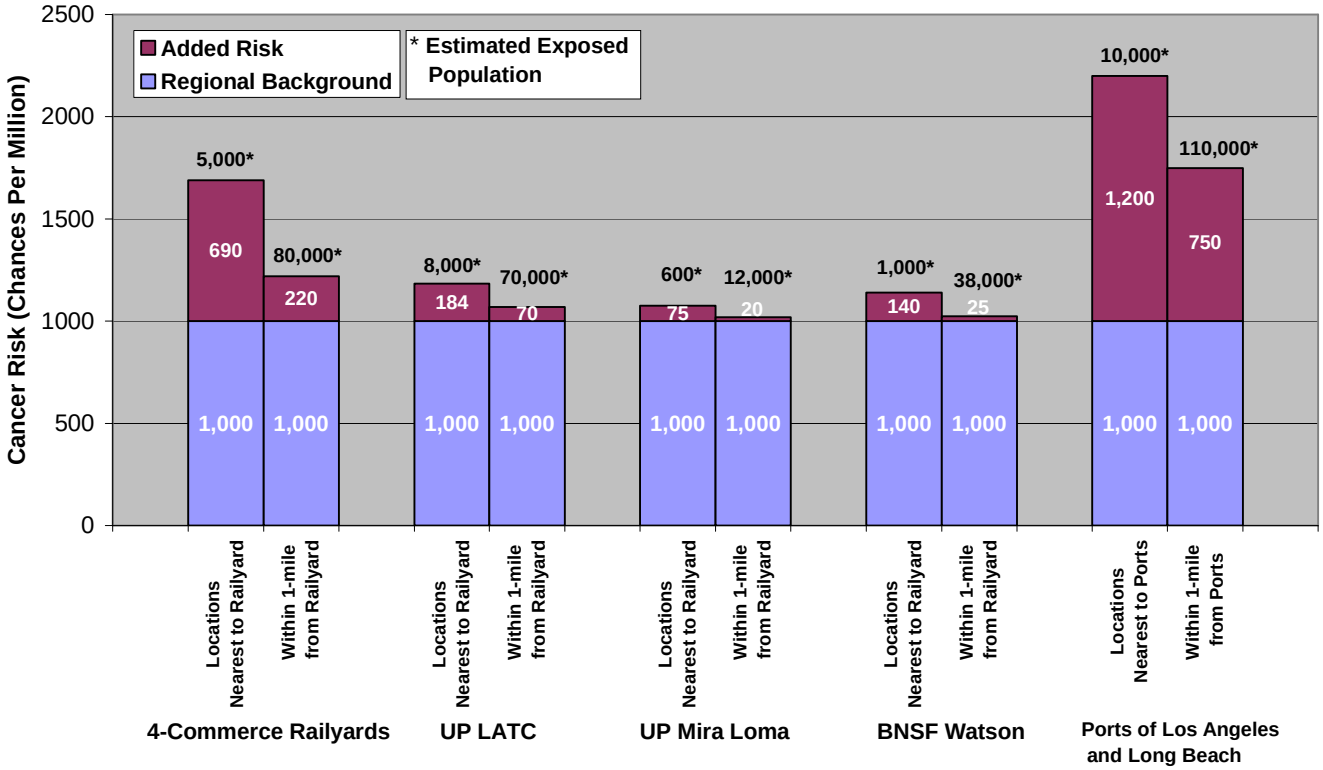

Table 2
Summary of Railyard, Port, Off-Site, and Air Basin Diesel PM Emissions
(2005)

PORT OR RAILYARDS	FACILITY Diesel PM (Tons Per Year)	OFFSITE* Diesel PM (Tons Per Year)	AIR BASIN Diesel PM (Tons Per Year)
Los Angeles Region			
Port of LA and Long Beach	1,760	N/A	7,800
Four Commerce Yards Combined	40	113	
UP LATC	7	33	
UP Mira Loma	5	31	
BNSF Watson	2	5	
Other Areas			
UP and BNSF Stockton Combined	10	10	4,000
BNSF Richmond	5	20	4,600
UP Roseville	25[1]	N/A	2,400

* Off-site diesel PM emissions were estimated within 1 mile of the railyard boundaries, except for the four Commerce railyards in which diesel PM emissions were estimated within 2 miles of the railyard boundaries. [1] Locomotive diesel PM emissions only.