

Release of California's Second Set of Draft UP Railyard Health Risk Assessments (UP Railyards: ICTF/Dolores, Colton, City of Industry, and Oakland)

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 four BNSF and four UP designated railyards, and one additional non-designated BNSF railyard, were released to the public in May and June of 2007. Public comments on the nine draft railyard HRAs were provided at two sets of public meetings and written comments were submitted during the summer of 2007. ARB staff responded to the public comments and finalized the nine railyard HRAs by November 2007. In addition, ARB staff held initial meetings to identify and design mitigation measures for each of the nine designated railyards in November and December 2007.

Another seven draft railyard HRAs have been prepared for release in early 2008. Four UP railyard HRAs are scheduled for release in February and three BNSF railyard HRAs are scheduled for release in March 2008. The three BNSF railyard HRAs are being released later to make improvements in meteorological data and air dispersion modeling results. A separate fact sheet for the second set of three BNSF railyard HRAs will be available in March 2008.

ARB staff prepared the health risk assessment portions of the draft HRAs. UP and BNSF completed the railyard emissions inventories and exposure modeling pursuant to ARB guidelines. ARB staff prepared the off-site emission inventories and exposure modeling pursuant to the 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). They are also similar to the combined Port of Oakland, UP Oakland railyard, and West Oakland Community HRA (scheduled for 2008).

ARB and the railroads will hold public meetings to present the results of the seven draft HRAs in March 2008. At the meetings, ARB and railroad representatives will discuss what we have learned, what is being done to reduce railyard pollution, and will answer questions. The release of the draft HRAs prior to the public meetings will start a period in which public comments will be sought. If necessary, a second series of public community meetings will held in April 2008. The purpose of these second set of meetings would be to allow another opportunity for public comment and questions, and to seek additional community suggestions on how to best to further reduce emissions. Based on the public comments, ARB will finalize the HRAs and work with the railroads and the public 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 individual¹. This leads to risk reduction efforts that are health protective for the more highly exposed individuals.

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

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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 2000². Excess risk in the San Francisco Bay Area, Mojave Desert region, and San Diego area are about 30 to 50 percent 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 sources 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.

Results from the Second Set of UP Railyard Health Risk Assessments

The first nine railyard HRAs showed that the diesel PM emissions from several railyards result in significantly higher pollution risks in nearby communities. The largest impacts from the first nine designated railyard HRAs were from 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 ports³. 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 residents⁴.

With the second set of UP railyard HRAs, the largest emissions and exposure (population) impacts occurred at the UP ICTF/Dolores railyard. Diesel PM emissions from the UP ICTF/Dolores railyard were estimated at about 24 tons per year. However, 4 of the 24 tons per year were for off-site (0.5 mile outside the railyard) locomotive and truck emissions. UP Colton has an estimated 16 tons per year, and UP City of Industry and UP Oakland each has about an estimated 11 tons per year of diesel PM emissions.

The draft assessments also estimate pollution risks from other sources of diesel PM. The major emission source is diesel truck traffic in a one 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 all of the railyards, offsite emissions, and air basin regional levels are 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 had adopted 18 measures under these efforts that directly relate to reducing diesel PM emissions in and around railyards, and has another 9 in various stages of development.

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 the overall cancer risk. For example, the estimated 1,000 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.

At the initial 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).

Locomotives represent about two-thirds (66%) on average of the diesel PM emissions at the designated railyards. Large classification railyards like UP Roseville and Colton and BNSF Barstow generate nearly all of their diesel PM emissions from locomotives, with line haul and yard switcher locomotives split evenly in their contributions. Large intermodal railyards like BNSF Hobart and UP ICTF/Dolores have about a 1/3 split between locomotive, cargo handling equipment, and heavy-duty diesel truck diesel PM emissions.

ARB staff estimates that existing measures have provided up to 30 percent reduction in railyard diesel PM emissions between 2005 and 2007. Measures fully implemented include, but are not limited to: 1) 2005 Statewide Railroad Agreement (up to 20%), 2) CARB diesel fuel regulation for intrastate locomotives (up to 14%), 3) replacement of switcher locomotives (up to 90%). Measures to be substantially implemented between 2008 and 2010 and are expected to provide up to another 30 percent reduction. These measures include: 1) Locomotive NOx Fleet Average Agreement in South Coast (up to 50%), 2) ARB Cargo Handling Equipment Regulation (up to 40%), 3) Port and Intermodal Railyard Regulation (up to 90%), and 4) TRU ATCM (up to 65%). These measures and others will be more fully implemented or initiated prior to 2015. The goal with all of these measures combined is to reduce locomotive and railyard related diesel PM emissions by up to 85 percent between 2015 and 2020.

Table 1
Added Cancer Risks in Locations Nearest to and Within 1 Mile of Railyards

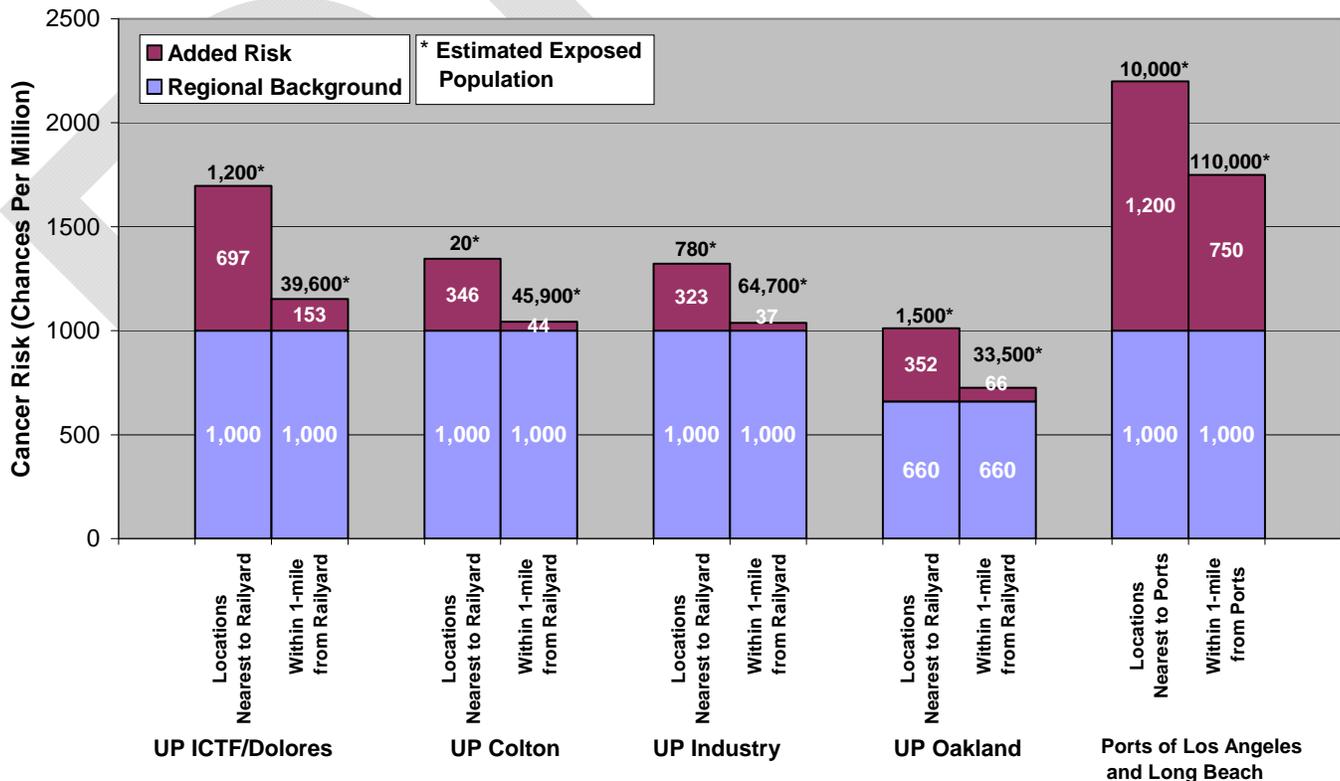


Table 2
Summary of Railyard, Port, Off-Site, and Air Basin Diesel PM Emissions – Tons Per Year
(2005)

| PORT OR RAILYARDS | FACILITY | OFFSITE | AIR BASIN |
|--|----------|---------------------|-----------|
| Los Angeles Region | | | |
| Port of Los Angeles/Long Beach | 1,760 | N/A | 7,800 |
| Four Commerce Yards Combined | 40 | 113 (2 mile radius) | |
| UP ICTF/Dolores | 24 | 50 | |
| BNSF San Bernardino | 20 | 11 | |
| UP Colton | 16 | 42 | |
| UP City of Industry | 11 | 28 | |
| UP LATC | 7 | 33 | |
| UP Mira Loma | 5 | 31 | |
| <u>BNSF Watson</u> | <u>2</u> | 6 | |
| Subtotal | 125 | | |
| Other Areas | | | |
| BNSF Barstow (<i>Mojave Desert</i>) | 28 | 26 | 3,000 |
| UP Roseville (<i>Sac Valley</i>) | 25 | N/A | 2,400 |
| UP Oakland (<i>Bay Area</i>) | 11 | * | 4,600 |
| BNSF Richmond (<i>Bay Area</i>) | 5 | 20 | 4,600 |
| UP Stockton (<i>San Joaquin</i>) | 7 | 10 | 4,000 |
| BNSF Stockton (<i>San Joaquin</i>) | 3 | 10 | 4,000 |
| <u>BNSF San Diego (<i>San Diego</i>)</u> | <u>2</u> | 6 | 1,800 |
| Subtotal | 81 | | |

Note: 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.

* Off-site emissions will be provided in the West Oakland HRA community study to be released in 2008.