

Health Risk Assessments for Rail Yards

The Air Resources Board (ARB) entered into the Statewide Railroad Agreement (Agreement) with the Union Pacific Railroad (UP) and BNSF Railway (BNSF) on June 24, 2005. The Agreement requires a number of short-term and long-term actions to reduce diesel particulate matter emissions.* As part of the Agreement, the railroad companies must also prepare health risk assessments for 16 major rail yards. The information derived from the rail yard health risk assessments can serve as a basis in the future to identify the greatest opportunities for future emission reduction measures.

First Things First: Identifying the Air Pollution Sources

One of the first tasks in performing a rail yard health risk assessment is to quantify air toxic emissions released within a rail yard and significant sources of air toxic emissions nearby the rail yard. UP and BNSF are responsible to provide information on the sources operating within the rail yards, which includes both of the emission inventory and air dispersion modeling data. The ARB will use these data, in conjunction with other sources of information, to characterize the distributions of emissions within the rail yards and significant sources of emissions nearby the rail yard (e.g., freeways, refineries, trucks operating outside the rail yard). The ARB will use all of this information to estimate air pollution exposure and to develop the health risk assessments.

What is a Health Risk Assessment?

A health risk assessment is a tool that is used to evaluate the potential for a chemical to cause cancer or other illness. A risk assessment uses mathematical models to estimate the health impacts from exposure to certain concentrations or levels of toxic air pollutants released from a facility or found in the air.

What Information Does the Health Risk Assessment Provide?

Health risk assessments provide information to estimate potential lifetime cancer and non-cancer health risks. Health risk assessments do not gather information or health data on specific individuals, but are estimates for the potential health impacts on a population at large.

- ◆ For **cancer** health effects, the risk is expressed as the number of chances in a population of a million people who might be expected to get cancer over a 70-year lifetime. The number may be stated as "10 in a million" or "10 chances per million". Often times scientific notation is used and you may see it expressed as 1×10^{-5} or 10^{-5} . Therefore, if you have a potential cancer risk of 10 in a million, that means if one million people were exposed to a certain level of a pollutant or chemical there is a chance that 10 of them may develop cancer over their 70-year lifetime. This would be 10 new cases of cancer above the expected rate of cancer in the population which is about 200,000 to 250,000 chances in a million (one in four to five people).
- ◆ For **noncancer** health effects, a reference exposure level or REL is used to predict if there will be certain identified adverse health effects, such as lung irritation, liver damage, or birth defects. These adverse health effects may happen after chronic (long-term) or acute (short-term) exposure. To calculate a noncancer health risk number, the REL is compared to the concentration that a person is exposed to and a "hazard index" (HI) is calculated. The greater the HI is above 1.0 indicates a greater potential for possible adverse health effects. If the HI is less than 1.0, then it is an indicator that adverse effects are not likely to happen.

Has There Been a Risk Assessment Done Before for a Rail Yard?

Yes. The ARB staff performed a health risk assessment related to locomotives and their activity at the J. R. Davis Yard (Yard) in Roseville, California. The study report can be found at: <http://www.arb.ca.gov/diesel/documents/rrstudy.htm>. The Yard is the largest service and maintenance rail yard in the West with over 30,000 locomotives visiting annually. The results of the risk assessment show a large area impacted by the diesel particulate matter emissions associated with the operations and activities of the Yard. The potential cancer risk exceeded 500 in a million for some areas. The impact was spread over a very large area with elevated cancer risks of greater than 10 to a 100 in a million over most of the city.

Which Rail Yards Will Be Subject to Risk Assessments?

UP - Southern California

Dolores/ICTF
Commerce
LATC (Los Angeles)
City of Industry
Mira Loma

BNSF – Southern California

Hobart (Los Angeles Intermodal)
Commerce/Eastern
Watson/Wilmington
San Bernardino
Barstow
Colton
San Diego

UP – Northern California

Oakland
Roseville *
Stockton

BNSF – Northern California

Richmond
Stockton

* UP Roseville was completed in 2004.

When Will the Risk Assessments be Done?

Draft health risk assessments are scheduled to be completed for nine major rail yards by early Spring 2007; and the other seven are scheduled for completion by the end of 2007.

What are the Next Steps?

ARB staff will present the draft health risk assessments to the public for review and comment. Once the public review process has been completed, the rail yard health risk assessment information will be used to evaluate and identify future mitigation measures that can be implemented at each of the rail yards.

More information on California's railyard health risk assessments can be found at: <http://www.arb.ca.gov/railyard/hra/hra.htm>



You may obtain this document in an alternative format by contacting ARB's ADA Coordinator at (916) 323-4916 (voice); TTY/TDD/Speech-to-Speech users may dial 7-1-1 for the California Relay Service.