Public Meeting:
Discuss ARB Guidelines for Rail Yard Health Risk Assessments

August 28, 2006
(Sacramento, CA)

California Environmental Protection Agency
Air Resources Board
Overview of Presentations

• Statewide Locomotive and Railyard Strategies
• Statewide Railyard Agreement
• Railyard Health Risk Assessments (HRAs)
• Guidelines for Railyard HRAs:
  – Emission Inventories
  – Air Dispersion Modelling
  – Health Risk Assessments
• Air District and Public Comments
• Summary and Next Steps
Statewide Locomotive and Railyard Strategies

- South Coast Locomotive Agreement (1998)
- Statewide Railyard Agreement (2005)
- ARB Cargo Handling Equipment Regulation (2005)
- National rulemaking for Tier 3 locomotives (2007)
- Greater than 90% reduction in diesel PM and NOx by 2020 and localized risk reduction
Statewide Railyard Agreement

- Limit non-essential idling to 60 minutes.
- Install anti-idling devices.
- Use ultra-low sulfur diesel fuel.
- Identify and repair smoking locomotives.
- Reduce locomotive diesel PM by 20% in and around rail yards.
Statewide Railyard Agreement (cont’d)

- 16 new railyard risk assessments by 2008.
- Additional mitigation measures in the future.
Railyard HRA Responsibilities

- The Railroads (with their consultants)
  - 80% work within yards
  - Railyard emission Inventory
  - Railyard air dispersion modeling
- ARB
  - Review of emissions and modeling
  - Emissions/Modeling outside of the yards
  - Risk assessments
  - Draft HRA reports
RAILYARD EMISSION INVENTORY GUIDELINES
Railyard Emission Sources

- Locomotives (line-hauls, switchers, & passenger)
- Cargo handling equipment (e.g. forklifts)
- Off-road equipment (e.g. transport refrigeration units)
- On-road trucks & vehicles (e.g. container delivery trucks)
- Stationary Sources (point & area)
Methodology of Emission Inventory

- Fleet/Equipment population
- Operation activities
  - Operation hours
  - Vehicle mileage traveled
  - Daily activity hours
- Emission factors
- Fuel characteristics
  - Fuel usage
  - Sulfur content
Locomotive Emissions

- Population of locomotives by classes or groups
- Notch or power settings & idling
- Emission factors
- Hours of operation
- Fuel consumption and correction
Cargo Handling and Off-Road Equipment Emissions

- Population of equipment
- Emission factors by size and model year
- Activity hours
On-Road Truck/Vehicle Emissions

- Number of trucks and vehicles
- Emission factor per mileage traveled
- Vehicle mileage
- Idling emission and hours
Stationary Source Emissions

- Number of sources (point and area)
- Emission factor
- Fuel consumption
Spatial Distribution of Emissions

BNSF J.R. Davis Yard, Roseville
ARB Guidelines for Rail Yard Health Risk Assessment

August 28, 2006

California Environmental Protection Agency
Air Resources Board
Introduction

- Rail Yard Health Risk Assessment (HRA) Guidelines
- Identify the risks associated with toxic air contaminants (TACs), especially diesel particulate matter (DPM)
Introduction

- **Air Dispersion Modeling**
  - Emission inventory inputs
  - Meteorological inputs
  - Computer model → TAC concentration distributions

- **Health risk Assessment**
  - Concentration distributions → health impacts
  - 70-year-exposure for residents
  - 40-year-exposure for workers
Flow Chart of Railyard HRA

- Meteorological Inputs
- Air Dispersion Modeling
- Risk Assessment
- Draft HRA Report
- Railyard Emission Inventory
- Off-site Emission Inventory
Meteorological Inputs
Air Dispersion Modeling

- **Recommended model:** AERMOD
- **Other acceptable models:** ISCST3, CALPUFF, etc., on a case by case basis.
Risk Assessment

- Consistent with OEHHA HRA Guidelines and ARB Roseville Railyard Study.
- Estimate cancer risk, non-cancer chronic and acute health impacts.
Risk Assessment
## Railyard Health Risk Assessment Schedules

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*Draft Health Risk Assessments to be Completed by December 31, 2006*

*Draft Health Risk Assessments to be Completed by December 31, 2007*
Community Involvement

- Public workshops on Draft ARB Railyard Health Risk Assessment Guidelines:
  - Northern California: 8/28/2006 (Sacramento)
  - Southern California: 8/30/2006 (Commerce)

- Community meetings to discuss draft findings at each designated railyard:
  - Early 2007 (first set of railyard HRAs)
  - Early 2008 (second set of railyard HRAs)

- Additional discussions on mitigation measures for each designated railyard
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- **Jing Yuan**, Ph.D.
  - Air Dispersion Modeling and Health Risk Assessments
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- **ARB Railyard HRA Website:**
  - http://www.arb.ca.gov/railyard/hra/hra.htm