Roseville Rail Yard Study

Why Are We Here?

- Rail yard expansion in 1996
- Citizens complaints regarding odors
- Citizens concerns regarding Toxic Air Contaminants (TACs)
- District concerns about diesel PM and its impact on public health
- District unable to resolve complaints

Diesel Particulate Matter

- ARB identified diesel PM as a toxic air contaminant (TAC) in 1998.
- ARB approved a comprehensive Diesel Risk Reduction Plan in 2000 to reduce background diesel PM emissions.
- District asked ARB to conduct risk assessment of diesel PM emissions from Roseville rail yard.

District Macro Objectives

1. What is the risk to the public being exposed to the emissions from this facility?
2. What does it mean, in comparable terms, to other source of diesel emissions?
3. What can be done to reduce the emissions, and thereby reduce the risk?

District Specific Objectives

- Provide An Accurate Assessment
- Provide Full Disclosure To The Public
- Provide A Factual Presentation To The Public
- Identify Mitigation Measures
- Develop & Implement Risk Reduction Plan
- Air Monitoring Program

Additional Objective

- **Acute and chronic non-cancer health impacts associated with diesel PM emissions should also be assessed.**

USC Study *"The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age"* N Engl. J Med, 2004; 351:1057-67

How can the risk be reduced?

- Background DPM Emissions
- Locomotives / J.R. Davis Yard

Background DPM Risk Reduction

- **EPA heavy-duty engines and vehicle standards**
  - Regulating new emission standards for highway heavy-duty engines and vehicles will be effective in 2007
- **EPA Clean Air Non-Road Diesel Rule**
  - Regulating new emission standards for non-road engines and vehicles will be effective in 2008
- **California Diesel Risk Reduction Plan**
  - Retrofitting existing diesel engines and using low-sulfur diesel fuel to significantly reduce diesel PM emissions throughout the State
  - Expect to reduce diesel PM emissions and associated cancer risks by 75% in 2010 and by 85% in 2020

Current Federal Locomotive Emission Standards

- Three tiered emission standards for locomotives effective in 2000
- Tier 0 standards for locomotives-original or remanufactured date between 1973~2001
- Tier 1 standards for locomotives-original or remanufactured date between 2002~2004
- Tier 2 standards for locomotives-original or remanufactured date after 2005

DPM Reduction by Federal Locomotive Emissions Standards

- Tier 1 standards require 25% PM emissions reduction compared to Tier 0 standards.
- Tier 2 standards require 56% PM emissions reduction compared to Tier 1 standards.
- EPA expects a 46 % PM reduction fleet wide by 2040 (compared to 1995 inventory year).

Sulfur Content in Diesel Fuel

- Sulfur would result in damage to emission-control devices on diesel engines.
- Sulfur is one of major components in diesel PM.
- Study shows lower sulfur content diesel would reduce diesel PM emissions from locomotive engines.

Proposed Rules for Locomotive DPM Reduction

- **More restrictive federal locomotive emission standards**
  - regulating new locomotive emission standards when low sulfur diesel fuel for locomotives is available in 2012
- **State proposed Air Toxic Control Measure (ATCM)**
  - requiring California diesel fuel use for intrastate locomotives and harbor crafts

Additional Options to Reduce DPM from the Yard

- Accelerating the use of low sulfur diesel fuel
- Applying current available emission-control devices to locomotive engines
- Installing stationary air pollution control equipment to control idling emissions from repair/testing facility
- Accelerating replacement of older yard locomotives with new Tier 2 standard locomotives, new hybrid electric or other lower emission switchers

Completed Objectives

- Provide an accurate assessment
- Provide full disclosure to the public
- Provide a factual presentation of the assessment to the public
- Identifying mitigation measures for risk reduction

Objectives that are on-going

- Develop and implement a DPM Risk Reduction Plan with UPRR
- Follow-up the analytical assessment with an air monitoring program

Future Actions

- Public outreach
- Air monitoring
- Acute health effects investigation
- Risk reduction alternatives

Possible Risk Reduction Plan

➢Short-term strategies:

- Restrict unnecessary locomotive idling
- Implement Low-sulfur diesel fuel use at the yard
- Control emissions from the repairing and testing facility

➢Mid-term strategies:

- Install emission-control devices for locomotive engines
- Improve efficiency for yard operations
- Accelerate introduction of new Tier 1 and Tier 2 locomotives for regional use

➢Long-term strategies:

- All locomotives at the yard meet the most stringent federal locomotive emission standards at the earliest date