A white refrigeration unit is mounted on the side of a white truck. The unit has a logo consisting of a blue square with a white 'T' and the text 'KD-II SR' to its right. The truck's body is visible, including a vertical metal pipe and an orange marker light.

 **KD-II SR**

**AIRBORNE TOXIC CONTROL MEASURE
FOR IN-USE DIESEL-FUELED
TRANSPORT REFRIGERATION
UNITS (TRU), TRU GENERATOR SETS,
AND FACILITIES WHERE TRUs OPERATE**



California Environmental Protection Agency

Air Resources Board

What is a TRU?

- **Transport Refrigerator Units**
- **Powered by a diesel engine to control the environment of temperature-sensitive products**
 - **Trailer vans**
 - **Truck vans**
 - **Railcars**
 - **Shipping containers**



What's An ATCM ?

(Airborne Toxic Control Measure)

- ☀ Diesel Exhaust Identified as a Toxic Air Contaminant in 1998**
- ☀ Diesel Risk Reduction Plan adopted in 2000, includes TRUs**
- ☀ Over 40,000 TRUs operate in California**
- ☀ The ATCM is designed to minimize the public's exposure to diesel exhaust from TRUs**

Health Benefits

- ★ Avoid an estimated 211 premature deaths
- ★ Potential cancer risk to all receptors reduced

Risk Reduction Plan to Reduce
Particulate Matter Emissions from
Diesel-Fueled Engines and Vehicles



California Environmental Protection Agency
 Air Resources Board

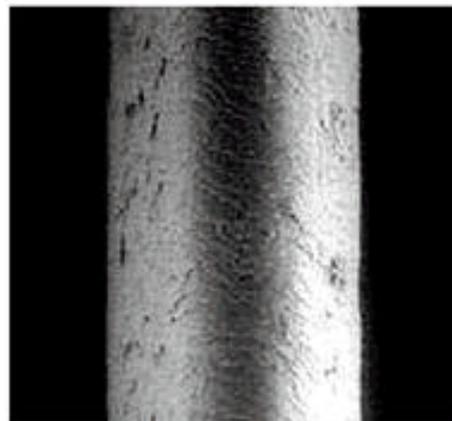
Stationary Source Division
Mobile Source Control Division

October 2000

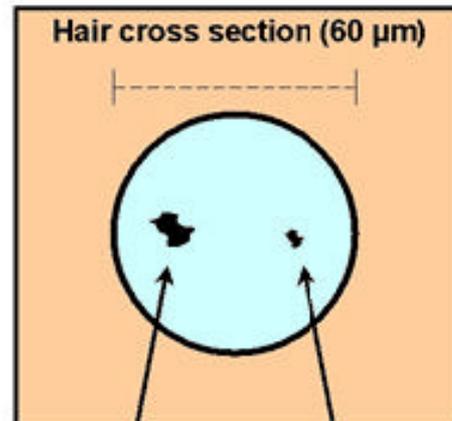
What's in Diesel Exhaust ?

Particulate Matter

HOW SMALL IS PM?



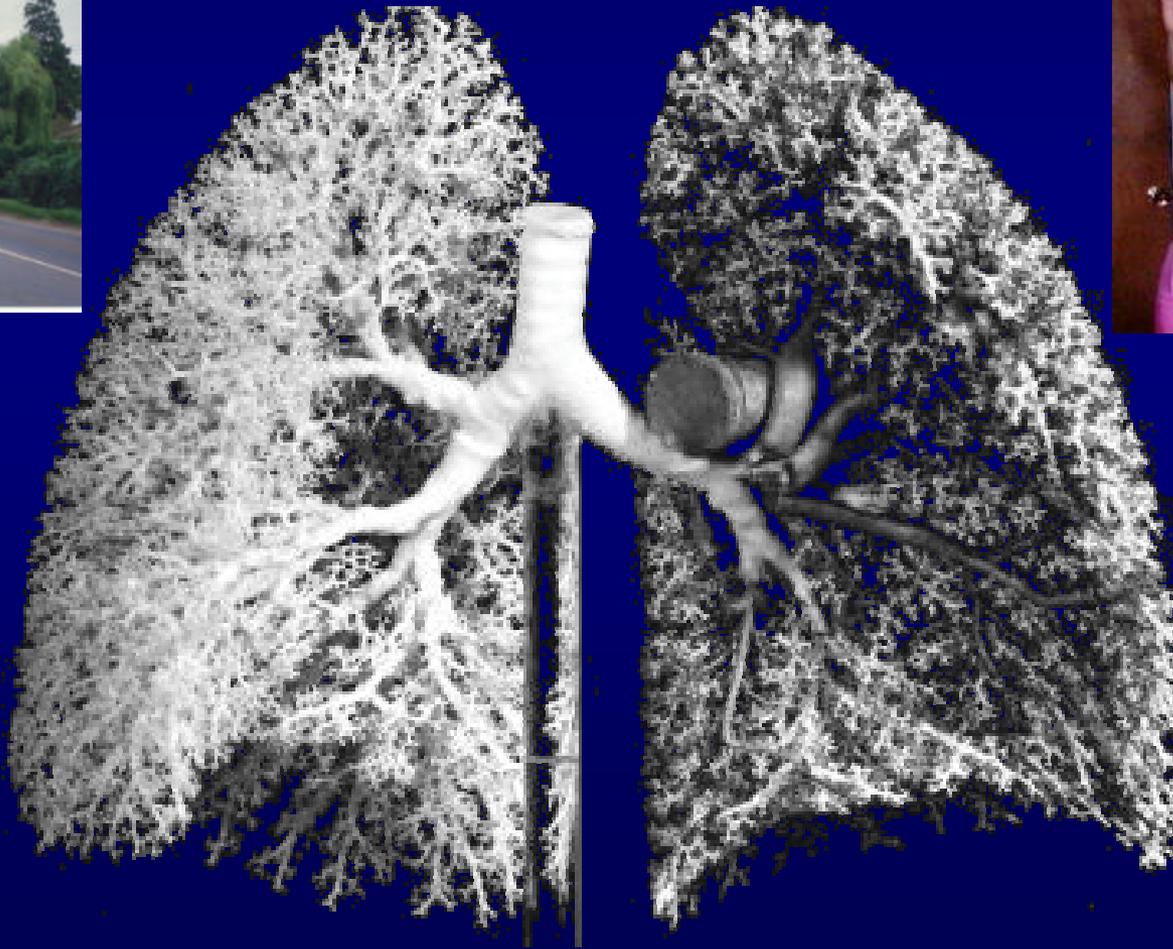
Human Hair
(60 μm diameter)



PM10
(10 μm)

PM2.5
(2.5 μm)

(PM) Particulate Matter



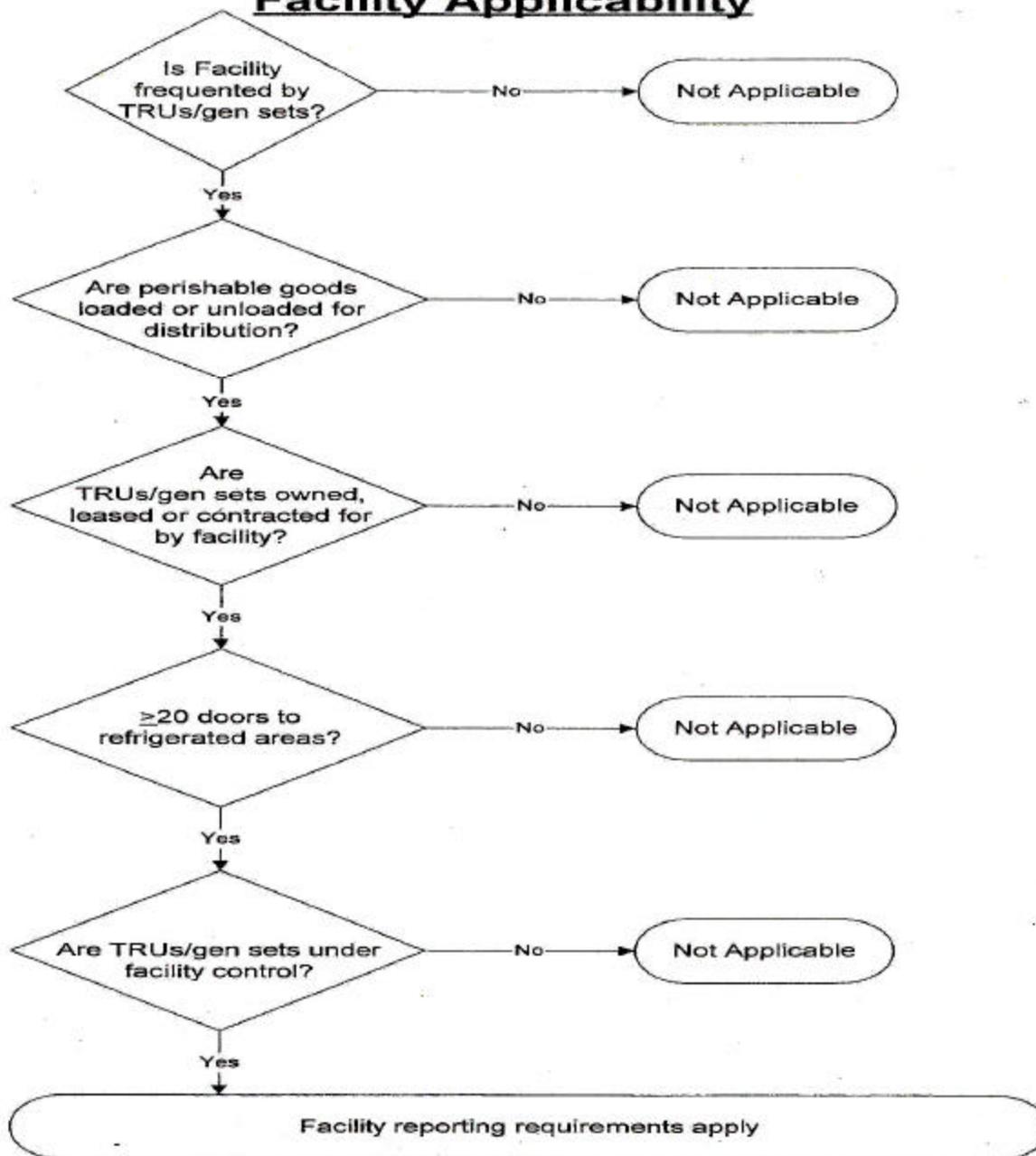
Why Control TRU Emissions?

- ✦ TRUs contribute 730 tons per year of diesel PM
- ✦ Results in elevated health risk to those living near facilities with TRUs
- ✦ Exposure to diesel PM may result in both cancer and non-cancer health effects

Who's Affected By The ATCM?

- ✦ **Operators and Owners of TRUs operated in California -**
 - ✦ **Regardless of where they are based**
- ✦ **Facilities with 20 or more loading dock doors serving refrigerated areas (see next slide for more criteria)**
- ✦ **Military Tactical Support Equipment are exempt**

TRU ATCM Facility Applicability



What Are The Requirements?

- ✦ **Engines must meet performance standards that vary by horsepower**
- ✦ **Three options**
 - ✦ **Use an engine that meets TRU In-Use Performance Standards Certification Level**
 - ✦ **Retrofit existing engine with a Verified Diesel Emission Control Strategy (VDECS)**
 - ✦ **Use Alternative Technology**

In-Use Performance Standards

<25 hp TRU and TRU Generator Set In-Use Performance Standards

In-Use Emission Category	Engine Certification	Engine Retrofit
	(g/hp-hr)	Equipped with
Low Emission TRU	0.30	Level 2
Ultra-Low Emission TRU	NA*	Level 3

* Not Applicable - ARB and U.S. EPA will perform a technical review in 2007 to evaluate a diesel oxidation catalyst- or filter-based standard for <25 hp category new engines in 2013. If a more stringent "long term" level for new Tier 4 engines is adopted by U.S. EPA for this horsepower category, staff will recommend adopting an engine certification in-use performance standard.

≥ 25 hp TRU and TRU Generator Set In-Use Performance Standards

In-Use Emission Category	Engine Certification (g/hp-hr)	Level of VDECS Equipped with
Low Emission TRU	0.22	Level 2
Ultra-Low Emission TRU	0.02	Level 3

Alternative Technologies

- ✦ Electrification - plug in while at facility
- ✦ Cryogenic temperature control system
- ✦ Alternative fuels (CNG, LNG, LPG)
- ✦ Alternative diesel fuels (biodiesel and synthetic diesel fuel)



Compliance Schedule

Table 4:  TRU and TRU Gen Set Engines
In-Use Compliance Dates

MY	In-Use Compliance Year ⁵													
	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20
'01 & Older		L	L	L	L	L	L	L	U	U	U	U	U	U
'02			L	L	L	L	L	L	L	U	U	U	U	U
'03 ⁶				U	U	U	U	U	U	U	U	U	U	U
'04					U	U	U	U	U	U	U	U	U	U
'05						U	U	U	U	U	U	U	U	U
'06							U	U	U	U	U	U	U	U
'07								U	U	U	U	U	U	U
'08									U	U	U	U	U	U
'09										U	U	U	U	U
'10											U	U	U	U
'11												U	U	U
'12													U	U
'13														U

L = .30 g/hp-hr

(or Level 2 VDECS)

U = .02 g/hp-hr

(or Level 3 VDECS)

Compliance Schedule

Table 5: TRU and TRU Gen Set Engines
In-Use Compliance Dates

MY	In-Use Compliance Year ⁷													
	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20
'01 & Older		L	L	L	L	L	L	L	U	U	U	U	U	U
'02			L	L	L	L	L	L	L	U	U	U	U	U
'03 ^B				U	U	U	U	U	U	U	U	U	U	U
'04					U	U	U	U	U	U	U	U	U	U
'05						U	U	U	U	U	U	U	U	U
'06							U	U	U	U	U	U	U	U
'07								U	U	U	U	U	U	U
'08									U	U	U	U	U	U
'09										U	U	U	U	U
'10'											U	U	U	U
'11												U	U	U
'12													U	U
'13														U



7 years later

L = 0.22 g/hp-hr
(or Level 2 VDECS)

U = .02 g/hp-hr
(or Level 3 VDECS)

Early Compliance Provisions

- ★ Encourages early compliance with low-emission TRU in-use performance standards
 - ★ Applies to 2002 and earlier model years
 - ★ Each year of early compliance extends the compliance date for ultra-low emission standard by one year
 - ★ Maximum extension of 3 years

Additional Requirements

- ★ **One-Time Facility Report**
- ★ **Owner/Operator Report**
- ★ **Registration and I.D. numbering system**



“Facility” Reporting Requirements

- ★ **One-time report – Due to the ARB by January 31, 2006**
 - ★ **Contact information**
 - ★ **Number of applicable loading docks**
 - ★ **Number of TRUs under facility control, by model year and horsepower**
 - ★ **Number of square feet of refrigerated storage space**

“Facility” Reporting Requirements (cont.)

- ✦ Engine operating hours at facility during 2005
- ✦ Average weekly number of inbound and outbound units and their engine hours of operation
- ✦ Records maintained for inspection for 3 years



“Owner/Operator” Reporting Requirements

- ★ Initial report – Due to the ARB by January 31, 2009
- ★ Contact information
- ★ List of all terminals in California
- ★ Number of TRUs owned or leased by make, model, year and serial number



“Owner/Operator” Reporting Requirements (cont.)

- ★ Each TRU identified by the ARB ID number, VIN, VLN, railcar or shipping container or company equipment number
- ★ Compliance status with the “in-use” performance standards
- ★ Update report due within 30 days of changes (add/remove units)

ARB Identification Numbering

- ☀ **California-based TRUs required to apply for I.D. Number**
- ☀ **Out-of-state operators that operate in California – voluntary**
- ☀ **I.D. Numbers include coded compliance information**
- ☀ **Quicker inspections with I.D. Number**

ARB Identification Numbering (cont.)

- ✦ **Apply to ARB by 1/31/09**
- ✦ **I.D. on TRU chassis in clear view**
- ✦ **Letter Requirements**
 - ✦ **Color contrast with backgrounds**
 - ✦ **Both sides of TRU chassis**
 - ✦ **Legible from 50 feet**

Accelerated Replacement or Retrofit and Useful Life

- ★ Staff's goal is to accelerate the retrofit or replacement of in-use engines
- ★ 7-year retrofit and/or replacement schedule designed to reduce emissions
- ★ Technology reviews in 2007 & 2009

Web Sites



ARB's TRU:

www.arb.ca.gov/diesel/tru.htm

ARB's Diesel Emission Control Strategies

Verification:

www.arb.ca.gov/diesel/verde/verde.htm

Carl Moyer Program:

<http://www.arb.ca.gov/msprog/moyer/moyer.htm>

Questions?