

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

### RSD COMPARED TO EPA REFERENCE METHOD

<u>Title</u>	<u>Date</u>	<u>Report Available</u>	<u>Publication Source*</u>	<u>Author</u>	<u>Affiliation</u>	<u>Tests Conducted By</u>	<u>Vehicle Selection</u>	<u>Test Location</u>	<u>Number Tested by RSD</u>	<u>Reference Methods</u>	<u>Number Tested by Reference Method</u>	<u>Comments</u>
"1992-93 CARB Roadside RSD Study"	1992/ 1993	No	NA	NA	NA	CARB	High RSD Reading	CA	30,000+	FTP & IM240	500+	Study not complete.
"Technologies to Improve the Detection of High Emitting Vehicles in a Vehicle Inspection Program: Report to the California Legislature"	1992	Yes	CARB	CARB	CARB	CARB	Random	CA	431	FTP	340	
"Evaluation of the Use of Multiple Remote Sensing Devices to Identify High Emitting Vehicles"	1992	No	NA	NA	EPA Office of Mobile Sources	EPA Contractor	Random	Phoenix, AZ	470	IM240	470	Testing complete, draft report in progress
"Cooperative Study in Michigan"	1992	No	NA	NA	CRC	GM, Ford, Chrysler, EPA Office of Research & Development	High RSD Reading	Detroit, MI	10,000+	FTP & IM240	<100 and 200	Roadside testing complete. Laboratory testing in progress.

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

Evaluation of the Stedman (FEAT) Vehicle Emissions Sensing System	1992	Yes	SAE #922314	Elliot, Kaskavaltzis, Topaloglu	Ministry of Transportation Ontario	MTO	Non-random	Downsview, Ontario	1000	FTP	40	On-board analyzer readings were also used in this study.
---	------	-----	-------------	---------------------------------	------------------------------------	-----	------------	--------------------	------	-----	----	--

NOTE: Reports can be obtained from the publication source

### RSD COMPARED TO EPA REFERENCE METHOD

<u>Title</u>	<u>Date</u>	<u>Report Available</u>	<u>Publication Source</u>	<u>Author</u>	<u>Affiliation</u>	<u>Tests Conducted By</u>	<u>Vehicle Selection</u>	<u>Test Location</u>	<u>Number Tested by RSD</u>	<u>Reference Methods</u>	<u>Number Tested by Reference Method</u>	<u>Comments</u>
The Cost of Reducing Emissions from Late-Model High-Emitting Vehicles Detected via Remote Sensing	1992	Yes	AWMA	Rueff	Amoco Oil Company R & D	Amoco	Non-random	Naper-ville, IL	2800	FTP	10	
Provo Pollution Prevention Program: A Pilot Study of Cost-Effectiveness...	1991/1992	Yes	University of Denver	Stedman and Bishop	University of Denver	University of Denver	Roadside	Provo, UT	8,000	I/M Idle/2500	47	47 vehicles selected for voluntary repairs, most were older than 1984 model year.

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

"Evaluation of a Remote Sensing Device at a Centralized I/M Lane"	1991	Yes	SAE #922315	Glover and Whitney	EPA Office of Mobile Sources	EPA Contractor	Random	Phoenix, AZ	15,959	Loaded I/M	8260	
"Dynamometer Testing of On-Road Vehicles from the Los Angeles In-Use Emissions Study"	1991	Yes	EPA	Knapp	EPA Office of Research & Development	EPA ORD	High RSD Reading	El Monte, CA	10,000+	IM240	80	
"Identifying Excess Emitters with a Remote Sensing Device"	1990	Yes	SAE #911672	Glover and Clemmens	EPA Office of Mobile Sources	EPA Contractor	Random	Hammond, IN	5,000+	IM240	403	
Emissions from In-Use Motor Vehicles in Los Angeles	1989	Yes	JAWM	Lawson, Groblicki, and Stedman	University of Denver	University of Denver	Roadside	CA	60	I/M Idle/2500	60	Journal of Air and Waste Management 40(8):1096,1990

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

### ROAD SIDE STUDIES WITHOUT REFERENCE METHOD MEASUREMENTS

<u>Title</u>	<u>Date</u>	<u>Report Available</u>	<u>Publication Source</u>	<u>Author</u>	<u>Affiliation</u>	<u>Tests Conducted By</u>	<u>Vehicle Selection</u>	<u>Test Location</u>	<u>Number Tested by RSD</u>	<u>Reference Methods</u>	<u>Number Tested by Reference Method</u>	<u>Comments</u>
"Quantifying the Air Pollution Emissions Reduction Effectiveness and Costs of Oxygenated Fuels"	1992/ 1993	Yes	SAE #930374	Lyons and Fox	University of Denver	University of Denver	Roadside	Denver, CO	80,000	None	0	Study conducted with PRC Environmental
"Measurement of the Effects of Oxygenated Fuels on Vehicular CO Emissions in Clark County, NV"	1992	Yes	Clark County, Nevada	Johnson, Huang, and Ayoub	Clark County, Nevada	Clark County, Nevada	Roadside	Las Vegas, NV	5779	None	0	Draft Final report available from M.L.P. (702) 798-2363
"Remote Sensing for Mobile Source CO Emission Reduction: EPA Cooperative Agreement Final Report"	1990	Yes	EPA	Stedman and Bishop	University of Denver	University of Denver	NA	Denver, CO lab	5	None	0	EPA ORD Cooperative Research Agreement for laboratory study of RSD, Report No. CR-815778-01-0
"On-Road Carbon Monoxide and Hydrocarbon Remote Sensing in the Chicago Area"	1990	Yes	State of Illinois	Stedman, et. al.	University of Denver	University of Denver	Roadside	Chicago, IL	21,000	None	0	Illinois Report No. ILENR/RE-AQ-91/14

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

### ROAD SIDE STUDIES WITHOUT REFERENCE METHOD MEASUREMENTS, CONTINUED

<u>Title</u>	<u>Date</u>	<u>Report Available</u>	<u>Publication Source</u>	<u>Author</u>	<u>Affiliation</u>	<u>Tests Conducted By</u>	<u>Vehicle Selection</u>	<u>Test Location</u>	<u>Number Tested by RSD</u>	<u>Reference Methods</u>	<u>Number Tested by Reference Method</u>	<u>Comments</u>
"Remote Sensing Measurements of Carbon Monoxide from On-Road Vehicles"	1989	Yes	GM	Stephans and Cadle	GM	GM	Roadside	Denver, CO	4,000	None	0	Report No. GMR-7030
"An Analysis of On-Road Remote Sensing as a Tool for Automobile Emissions Control"	1989	Yes	State of IL	Stedman, et alia	University of Denver	University of Denver	Roadside	Chicago, IL	11,818	None	0	Illinois Report No. ILENR/RE-AQ-90/05
"On-Road Carbon Monoxide Emission Measurement Comparison for the 1988-89 Colorado Oxygen Fuel Program"	1989	Yes	SAE #891116	Stedman	University of Denver	University of Denver	Roadside	Denver, CO	4,578	None	0	
"University of Denver RSD Study: Ute Pass"	1989	Yes	Unknown	Stedman	University of Denver	University of Denver	Roadside	Ute Pass, CO	4,541	None	0	

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

### ANALYTICAL STUDIES OF RSD

<u>Title</u>	<u>Date</u>	<u>Report Available</u>	<u>Publication Source</u>	<u>Author</u>	<u>Affiliation</u>	<u>Tests Conducted By</u>	<u>Vehicle Selection</u>	<u>Test Location</u>	<u>Number Tested by RSD</u>	<u>Reference Methods</u>	<u>Number Tested by Reference Method</u>	<u>Comments</u>
"Cost Effectiveness of Remote Sensing of Motor Vehicle Emissions"	1993	Yes	RFF	Harrington and McConnell	RFF	none						Resources for the Future
"Remote Sensing of Motor Vehicle Emissions: Can it Replace I/M Programs?"	1993	Yes	RFF	Harrington and McConnell	RFF	none						Resources for the Future Report # QE93-03
"Empirical Model of Vehicle Emissions"	1993	Yes	ES&T	Pitchford	EPA Office of Research & Development	none						Environmental Science & Technology, No. 27 p. 741 -748, 1973
Remote Monitoring of High Tailpipe Emissions From On-Road Gas Vehicles with a Low Incidence of False Failures	1992	Yes	SAE #922313	Smith and McClintock	Remote Sensing Technologies	Various	Various	Various		Various		A review and synthesis based on several other studies

## SUMMARY OF RSD STUDIES CONDUCTED TO DATE

"An Evaluation of Remote Sensing for the Measurement of Vehicle Emissions"	1990	Yes	SR	Austin and Carlson	SR	none						Sierra Research Report No. SR90-08-02
"Analysis of Existing Remote Sensing Data"	1990	Yes	EPA	Glover	EPA Office of Mobile Sources	none						EPA Memorandum from Glover to Lorang, 10/9/90