

Leak Detection

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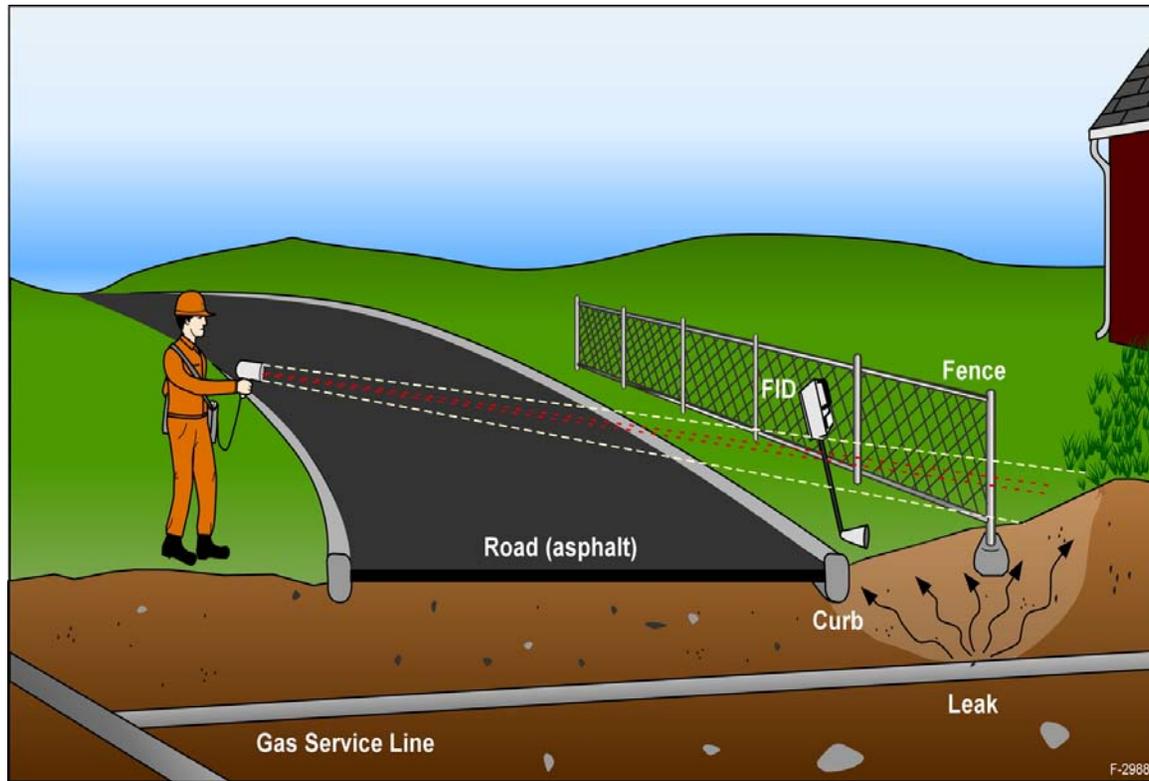
10th Annual Natural Gas STAR
Implementation Workshop

Session 4: Leak Detection
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Heath Consultants Incorporated
1-800-HEATH-US
www.heathus.com

Remote Methane Leak Detector (RMLD) A Portable Standoff Survey Tool



PHYSICAL SCIENCES INC.



Remote Methane Leak Detector (RMLD)

Compressor Station Inspections



Stack and Vent Inspections





***Catalytic Oxidation /
Thermal Conductivity
Detector***

Catalytic Oxidation / Thermal Conductivity Detector





Flame Ionization Detector

Ultrasonics Detector



Controller

Transceiver



RMLD Sponsors

- **Physical Sciences Inc. – Developer**
- **Heath Consultants Inc. – Commercializer/ Distributor**
- **Funding Agencies/Companies:**
 - US Environmental Protection Agency
 - NYSEARCH Member Companies
 - Public Service Electric and Gas
 - Keyspan Energy Delivery Co.

RMLD Performance Criteria

- **Able to locate leaks from 100 feet away.**
- **Achieve sensitivity to 5 ppm-m methane.**
- **Eye-safe laser light source.**
- **Rechargeable battery lasting more than 8 hrs.**
- **Lightweight, rugged and weather-resistant.**
- **User friendly interface with audible signals.**
- **Withstand temperatures from -20°F to 120°F.**

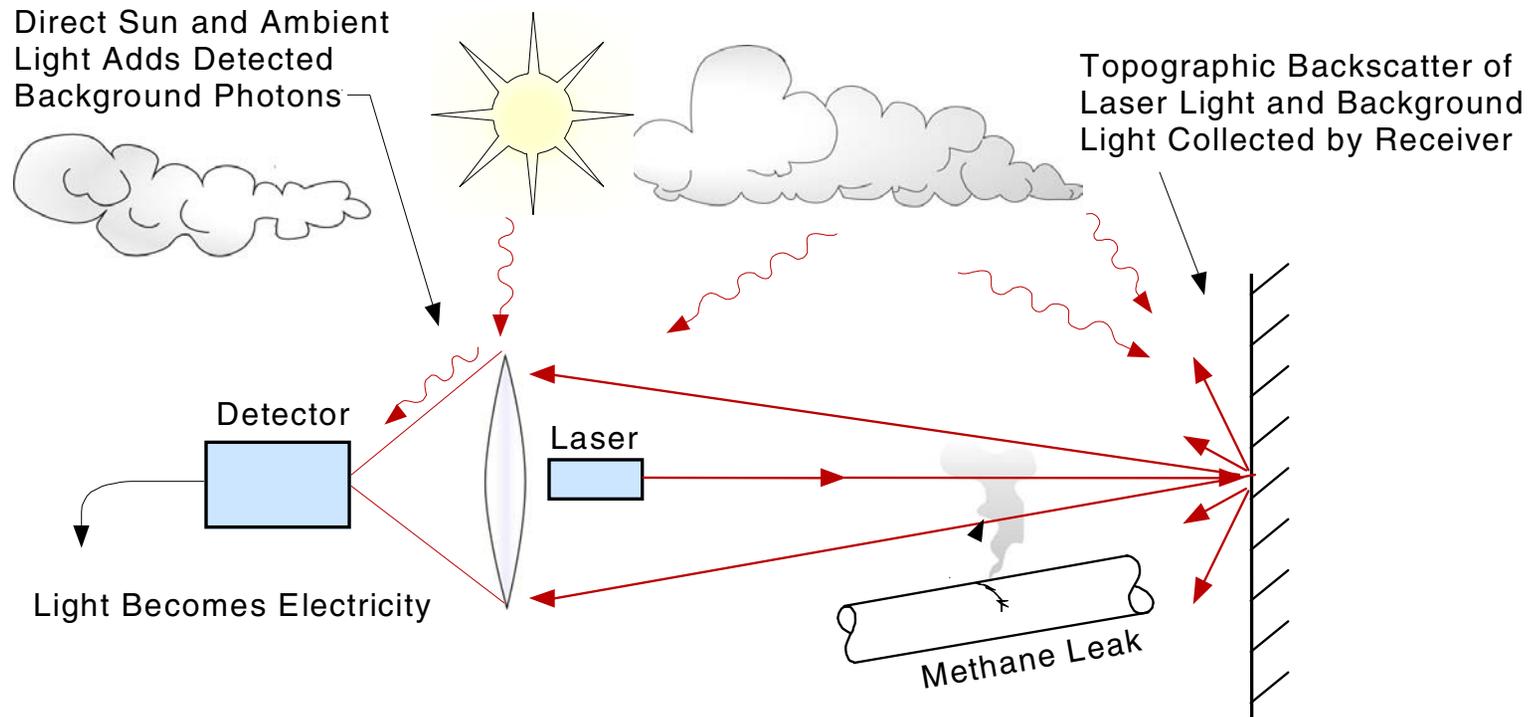
Expected RMLD Benefits

- **Improved leak search operations:**
 - hard to reach or difficult areas
 - senses “only” methane
- **Sense leaks inside buildings or confined spaces from outside via a closed window or access**
- **Estimates show productivity savings up to 50% for the average size station**

RMLD Overview

- **Laser light is projected over a distance onto a reflective target (e.g., grass, wall, pipe, etc.)**
- **A fraction of the light is scattered from the target surface and returns to the source**
- **Returned light is collected and focused onto a detector**
- **The presence of methane is encoded within the returned light**
- **Methane readings are reported in ppm-m**

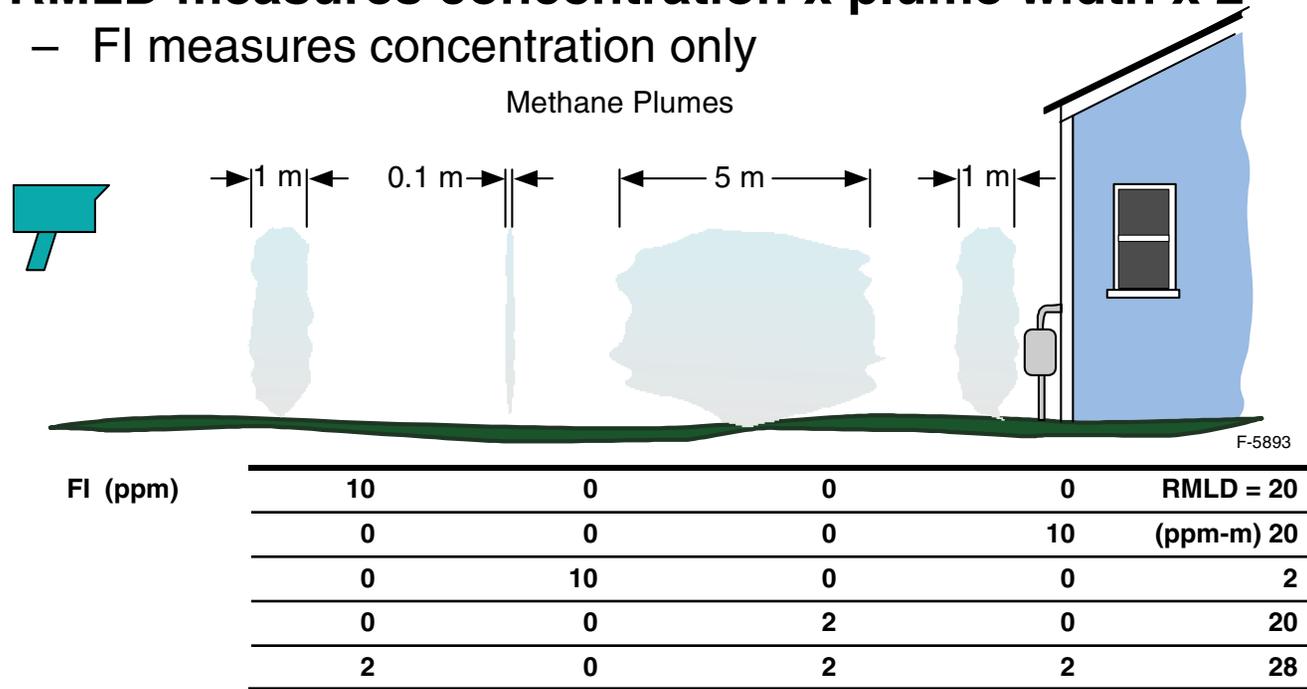
RMLD - Laser Light Path



- Amount of received laser light depends on angle of backscatter and characteristics of scattering surface
- More light yields better methane measurement precision
 - Direct backscatter, as shown, is best

Methane Column Concentration

- **RMLD measures concentration x plume width x 2**
 - FI measures concentration only



- **RMLD operates differently than FI**
- **Detects everywhere along sight line (do not need to be in plume)**
- **Sum of concentration x width**
- **Path summation permits rapid survey**
- **Triangulation to begin localization**

Summary

- **RMLD- AP has demonstrated that laser technology is as good as FI in most cases.**
- **NYSEARCH sponsor companies will continue field testing the units.**
- **Heath's current plan is to have RMLD ready for market by Summer, 2004.**
- **Survey crews, in general, like the technology, have a positive attitude and believe it will reduce survey time.**



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QUESTIONS?