



Working Together for Clean Air

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A Case Study in Collaborative Rule- Making



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Shockley and Larry Vaughn**

Case Study Outline



- Why is vapor recovery required?
- What is vapor recovery equipment?
- Compliance History
- Stakeholder Process
- New Rule
- Outreach
- Show training Video



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Puget Sound Clean Air Agency
Larry Vaughn



Location: Washington State

**Counties: King, Pierce, Kitsap and
Snohomish**

Case Study

**Collaborative Gas Station Rule
Development**

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The Puget Sound Clean Air Agency
Larry Vaughn



PS Clean Air Agency and Gas Stations

- Registered stations 1297
 - 750 with stage 2
 - 547 without stage 2
- 1.5 Billion gallons of Gasoline sold in area
 - 1.4 Billion gallons through vapor recovery systems

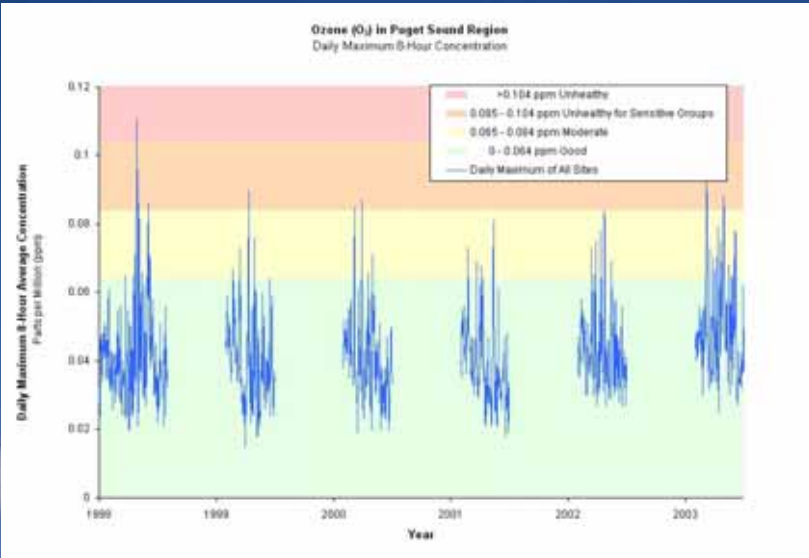
Seattle Smog



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Average Ozone During Summer Months



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Ozone Formation



Ozone Precursors

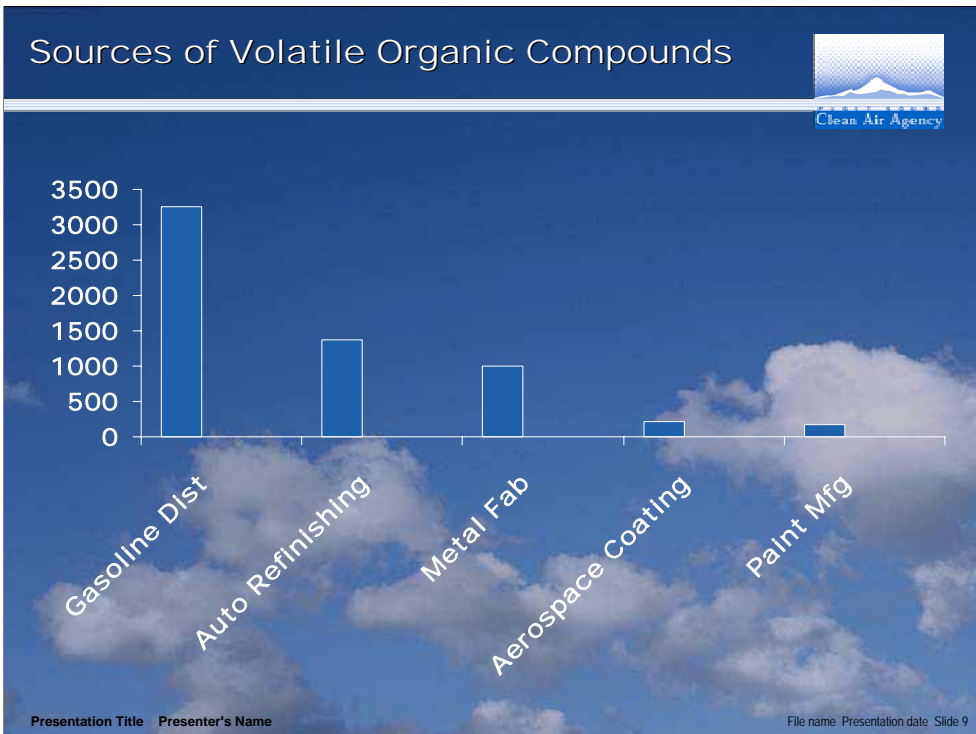
- VOC (Ecology studies have shown our area is VOC dependent for ozone formation)
- Nitrogen Oxides (NO_x)

Gasoline Emissions



Gasoline Emissions

- Volatile Organic Compounds (VOCs)
 - Cause smog and ozone formation
- Benzene
 - known to cause cancer



Maintenance Plan



*Emissions and
Equipment Collection
Efficiency*

Maintenance Plan	85% Efficiency	8 Tons/day
Actual Estimated	60% Efficiency	13 tons/day

Maintenance Plan



If all gas stations are in compliance the
summer emissions of VOC are

8 tons/day

Gas Station Vapor Recovery
Kim Shockley



**What Is Stage I And Stage 2 Vapor
Recovery At Gas Stations**

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Stage 1 Systems



Vapor recovery at the station storage tanks.

- **Dual point**
 - Fill port and vapor recovery port
- **Coaxial**
 - One port for delivery of fuel and recovery of vapor.



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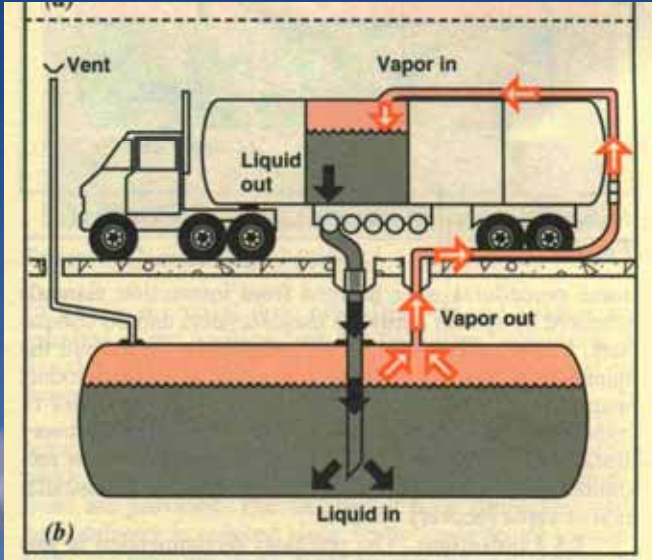
More Stage I Equipment Photos



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Stage 1 Systems



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Stage 2 Systems

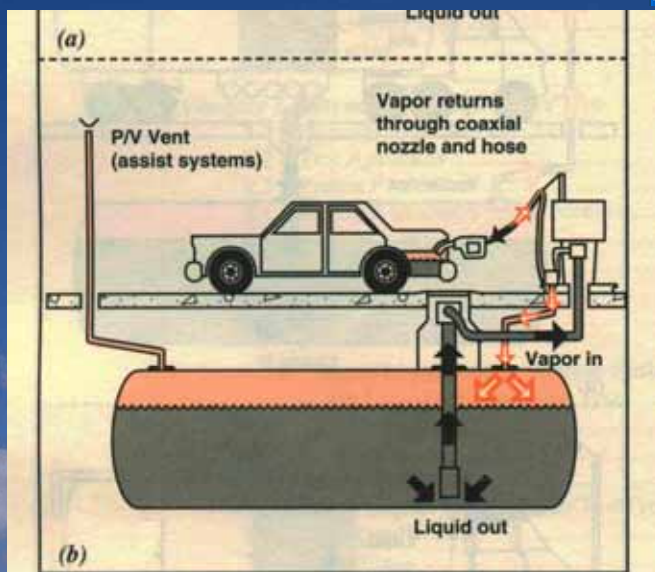


Vapor recovery at the fuel dispensing area.

- **Vacuum Assist**
 - Vacuum pump in dispenser creating negative pressure pulls vapors back to storage tank to be recovered by fuel tanker truck at next delivery.
- **Vapor Balance**
 - Vapors recovered through simple displacement of vapors in vehicle fuel tank.



Stage 2 Systems



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Figure 3. Uncontrolled (a) and Controlled (b) Stage II

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More Photos of Stage II Equipment



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Enhanced Vapor Recovery



- ***Enhanced Vapor Recovery (EVR) California Air Resources Board (CARB)***

- Requirements for new equipment
 - More rigorous certification requirements
 - Able to withstand more abuse
 - Old equipment (95% Collection Efficiency)
 - New Equipment (98% Collection Efficiency)

Compliance History

Peggy Franzen



● **Quest for Compliance**

● **1993 to 2000**

● **Educational approach**

- Full time inspectors
- Notice of Violations
- No penalties
- O&M Manual

● **Results:**

- Difficult to find a complying gas station
- Owner appeared to wait for inspectors before correcting problems
- Amount of effort did not equate to compliance



Compliance History



- **2000 and 2003 (Blitz years)**
- **From April to September**
 - All inspectors inspected total of 400 gas stations
 - Sent letters to station owners advising them of pending inspections
- **Results:**
 - About 50% non compliance



Measure of Compliance



- **Inspection Blitz**



Year	Number of stations Inspected	% of stations in compliance	% stations out of compliance	Civil Penalties assessed
2001	400	43%	57%	\$614,716.00
2002	408	56%	44%	\$227,708.00

History



Conclusion:

▲ Something wrong with our compliance approach



History



2001 through 2002 (Independent Audit Phase)

- Three Major Oil Companies conducted audits every six months
- Audits included tests, equipment inspections and repair
- **Result:**
 - 60%+ non-compliance on first audits
 - 40 to 50% non-compliance on second audits



Compliance History



Summary of a 461 Gas station Audit

Description	Percent	Count
Administrative Deficiencies	4%	12
Emission related deficiencies	56%	184
Admin and Emission deficiencies	23%	77
No Violations	18%	58
Total Stations Audited	100%	331

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Search for Compliance



2002 and 2003 (What are other Agencies Doing)

- One Engineer and three inspectors travel to SCAQMD
- Purpose:
 - Determine what is working and what can PS Clean Air Agency Can do



Result:

- Help us understand their program and non-compliance problems

Compliance History



STAPPA/ALAPCO Compliance Survey

- Air Pollution Agency in USA Surveyed for Gas Station Compliance
- California Agency's indicated significant non-compliance
- Others claimed there stations were in total compliance
(was not based in reality)

Compliance History/Conclusion



Findings Conclusion:

- 60% + non-compliance is not acceptable when other source categories are 90%+ compliance rates



Compliance History



A Stakeholder group was convened to help find a solution. The following participants were involved:

- Gas Station Associations
- Gas station Installers
- Gas station Testers
- Gasoline Transporters
- Equipment manufactures

Stakeholder Process
Frank Holmes



The Stakeholder Process
By
Frank Holmes
Western States Petroleum Association

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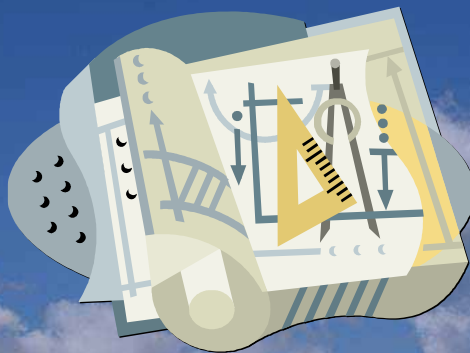
The Rule (Regulation II Section 2.07)
Nina Birnbaum



A New Gas Station Rule

March 25, 2004 the rule was Adopted

- Effective Date October 1, 2004
- Six Months of Education and Outreach
- Yearly Agency Inspections



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The Rule (Regulation II Section 2.07)



- **Accountability**

- Owner
- Installer
- Tester



Equipment Requirements



- Existing stations not required to upgrade to EVR equipment

 - No ISD requirement

- Existing stations need to install swivel adapters on fill and vapor adapters by June 2005



Gas Station Owner



● **Self Inspection Requirements**

- Inspect stage 1 between fuel deliveries or daily
- Correct stage 1 deficiencies before next fuel delivery
- Inspect stage 2 equipment daily
- Correct Stage 2 deficiencies immediately or tag-out



Gas Station Owner



- **Maintain Inspection Logs**
- **Train every employee that conducts inspections**
- **Maintain training logs**
- **Contract for annual tests and audit/training**
- **Maintain audit and test reports on site**



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Outreach Program
Mike Schultz



Agency Reflections on Stakeholder Process

- Importance of Buy-in
- Only one War to Fight
- Lots of Time
- Coordination
- Communication
- Collaboration
- Huge Payback



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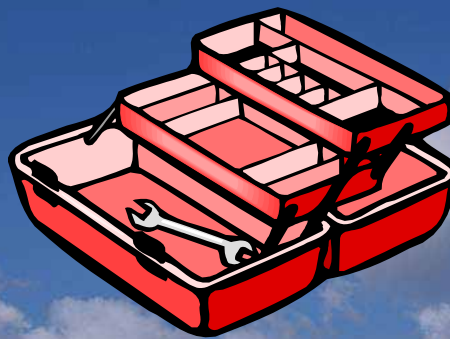
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Outreach Program



Outreach Materials and Activities

- Compliance Tool Kits
- Web Sites
- Publications
- Presentations
- Success? –
Inspectors will tell the
story



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Case Study in Collaborative Rule Development



The End



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