Chevron Richmond Fire

August 6, 2012

- Catastrophic pipe failure
- High-temperature flammable fluid released and partially vaporized into a large cloud
- Vapor cloud engulfed 19 employees
- Vapor cloud ignites
- All 19 employees narrowly avoided serious injury or death
Public Exposure

15,000 people in the surrounding communities sought medical attention
Richmond Monitoring Stations

- **Richmond Station**
  - SO2
  - H2S
  - Toxics

- **San Pablo Station**
  - O3
  - CO
  - NOx
  - PM10
  - SO2
  - Toxics

- **Point Richmond Station**
  - H2S

- **Point San Pablo Met**

**Chevron Richmond Process Units**

Map credits: Google Earth
Monitoring Results - Disconnect

County: VOCs, H₂S, SO₂, Grab

Normal Readings

Air District: Fixed Sites, Grab

15,000 Sought Help

CWS

Hospitals

PIO

Help?
Response Roles

THEY TOLD ME I COULD BE ANYTHING...

..SO I BECAME A DOBERMAN
Coordination with Air Districts

SLO County APCD

San Joaquin Valley Air Pollution Control District

CAPCOA

South Coast Air Quality Management District

Bay Area Air Quality Management District
ExxonMobil Refinery Explosion

February 18, 2015

- Torrance refinery electrostatic precipitator at catalytic cracking unit explodes due to overpressure
- Spent catalyst, fiberglass, and glass wool rain down into surrounding neighborhoods
- Four contractors injured
- CalOSHA shuts down the affected unit
ExxonMobil Refinery Explosion

- South Coast AQMD deployed various instruments to sample ambient air and collect fallout samples for analysis.
- SCAQMD sampling conducted independent of sampling by the Unified Command.
- Some sampling sites not located downwind from incident site.

 Weird ash like substance falling in Torrance! What's up??
Refinery Incidents

Lessons Learned:

- Improvement in fixed and response air monitoring needed
- Air district role needed in emergency planning
- Better coordination needed between air districts and responders
Scope of the Issue

- 17 refineries in four districts
  SCAQMD(8) BAAQMD (5) SJVAPCD (3) SLOAPCD (1)

- Fire, Hazmat, Public health responses are critical

- State regulation vs. local control
Refinery Assessment Plan

- Inventory: Completed
- Assessment: Draft Report
- Guidance
- Coordination, training, and preparedness program
Monitoring Gaps and Best Practices
Technology Evaluations

Spectral Flux

SCAQMD AQ SPEC
Coordination Gaps and Best Practices

Prevention and Preparedness

Communications

Refinery systems are operating as designed and there are no irregular conditions to report. Thank you for visiting our website.
Layered Air Monitoring Strategy

- Air Monitoring Stations
- Personal and Handheld Monitors
- Hazmat Vehicles and Mobile Labs
- Process Unit Monitors
- Community Monitors
- Fenceline Monitors
**Time, Distance, and Accuracy**

**Sensors at Source**
- Timely Notification
- Higher Concentrations
- Tighter Spatial Resolution

**Sensors in Community**
- Modeling not required
- Measures actual impact
- More sensors needed
Industry Open Path Monitoring
Industry Community Monitoring
Nexus - Refinery Project to PQAOs

- Real-time monitoring
- Expanded network of monitors (air toxics, PM, community handheld and portable)
- Additional fixed monitoring potentially impacting AQS
  - Non-regulatory
  - More data for comparative research
  - More questions on appropriate siting & technologies
Routine Data Analysis

- Application of monitoring technology
  - Target compounds
  - Health effects
- Siting considerations
  - Public access to data
  - Analysis of data
  - Cloud data storage
Future Monitoring Platforms

Advantages:
- Lower Cost
- Portable
- Real-time
- Widespread distribution
- Increased spatial resolution

Challenges:
- Accuracy/precision
- Calibration
- Interferences
- Interpretation
- Output of data
- Amount of data
- Use of data
Next Steps

- Issue report/public workshops
- Convene Refinery Monitoring Work Group
- Assist local agencies with securing resources
- Facilitate ongoing interagency collaboration
Online Clearinghouse

- Provides access to refinery related air monitoring information:
  www.arb.ca.gov/fuels/carefinery/crseam/crseam.htm

- Or web search:
  ARB Refinery
Further Information

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