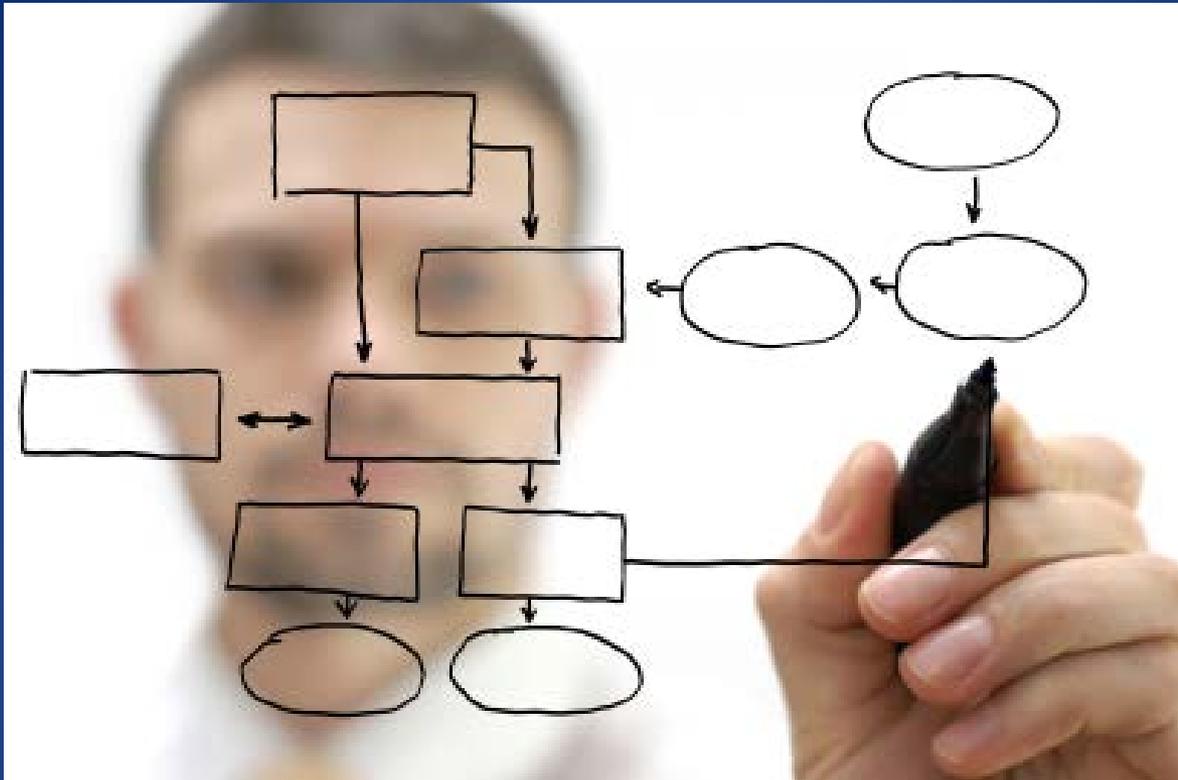




CARPA

California Air Response Planning Alliance

Monitoring & Sampling Plan Development Training



Use the monitoring plan to help you determine your monitoring objectives.

Case Study

San Bruno Gas Pipeline
Debris Removal Air
Monitoring

San Bruno Recovery IC Structure



Partner Agencies

Recovery IC: San Mateo County Environmental Health Director

Ops Chief: CalRecycle

HazMat Unit Leader: CalEPA

HazMat Unit: EPA START contractors, ARB, DTSC, NES (CalRecycle contractor)

Objectives First, Monitoring Second

- ✓ How long will we monitor?
- ✓ What compounds and concentrations are we looking for?
- ✓ What is worst-case? Background?
- ✓ How do the data influence operations?
- ✓ What's our communication plan?



San Bruno Monitoring Objectives

Identify air monitoring needs
from Incident Command

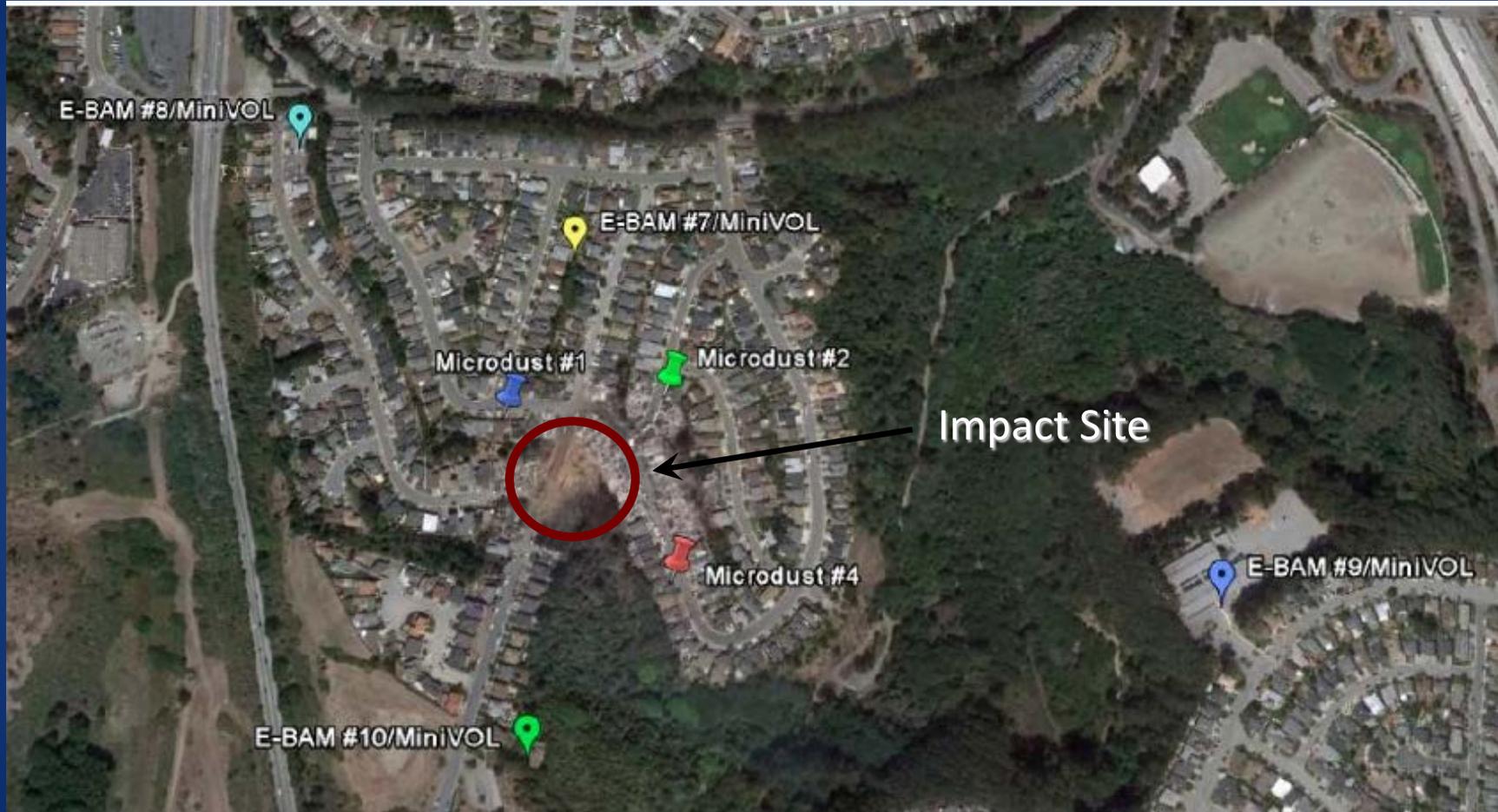
Community-based sampling
during removal operations

Real-time and near real-time
particulate measurement;
Lab analysis for asbestos

Feedback to Ops Chief & IC;
Inform public, stakeholders,
and media



Sampling & Monitoring Plan, *cont*



Sampling & Monitoring Plan

Operational Period	
9/30/10 1200	10/7/10 2400
Date/Time	to Date/Time

California Environmental Protection Agency
Air Resources Board
Office of Emergency Response

Prepared by: CPearson
Approved by: GVlasek

Air Emergency Response Sampling Plan

State Responsibility Area
 Federal Responsibility Area

Incident: Glenview Incident

Counties/District Affected: San Mateo / City of San Bruno / Bay Area AQMD

CalEMA Mission Task No. 2010-CST-7013 Description Community Air Monitoring

ICP/EOC Location(s): DROC Location: 900 Cherry Ave (3rd Floor), San Bruno, CA

Situation Summary CalEMA FEMA Other

On 09/09/2010 at approximately 1811 hours, a gas explosion resulting in a large fire occurred in the area of San Bruno Avenue and Skyline Blvd. in San Bruno due to a ruptured PG&E natural gas line. Thirty-seven (37) homes were destroyed and many others have varying degrees of damage. All power and gas services have been fully restored for every residence that has been re-occupied. The focus of the incident is now on debris removal and recovery efforts. Recovery efforts under the jurisdiction of NESHAP.

Suggested PPE Site specific health & safety plan attached

CalRecycle contractor is drafting SSHASP and community safety plan. Safety briefings conducted at 0730 each morning of operations.

Field Staff Deployed			
Name	Contact Info	Agency	Assignment
Greg Vlasek	(916)838-0872	CARB	CARB/OER Chief
Neil Adler	(916) 323-3231	CARB	Field Surveillance Unit
Mark Cople	(530)306-0226	CARB	Field Surveillance Unit
Charles Pearson	(916)206-3899	CARB	Field Surveillance Unit
Steve Rider	(916)718-2488	CARB	Field Surveillance Unit

Continued back page

Responding Agencies		
Representative	Agency	Contact Information
Greg Vlasek	CARB OER	(916)838-0872/ gvlasek@arb.ca.gov
Dean Peterson	SMEH	(860)372-6222/ dpeterson@co.sanmateo.ca.us
Todd Thalhamer	CalRecycle	(916)798-5464/ todd.thalhamer@calrecycl
Pete Guria	CalEPA	(415)505-1858/ pguria@calepa.ca.gov

Area of Impact and any Specific Targets of Concern:
City of San Bruno, Next to Crestmoor Canyon open space, impacted homes located on Glenview Dr, Earl Ave, Claremont Dr, Fairmont Dr. and Concord Way. Residents outside of the perimeter of debris removal operations and Crestmoor School.

Contaminant(s) and Health Action Levels:
Contaminants: Fire ash and debris, including ash particulate (PM10 and PM2.5) and potentially asbestos.
Health Action Levels:
For PM10: 1-3 hr and 8 hr and 24hr AQI or concentration values from 2008 Wildfire Smoke Guide.

Weather forecast (12-24 hrs):

- General Sampling Objectives**
- Gather reference sampling data within area of concern to for historical/background pollutant levels
 - Establish real-time sampling within affected population center to determine contamination levels
 - Establish monitoring in evacuation area for pending re-entry
 - Establish air sampling to determine contaminant gradients or boundaries
 - Conduct personal air sampling of on-site ERT personnel
 - Site-specific sampling for targeted location (i.e., evacuation center, hospital, fire camp, etc)
 - Complaint investigation; Location: _____
 - Other objective: _____

Deployed Field Sampling Equipment	
<p>Reference (network sites):</p> <p>Particulate Matter</p> <p><input type="checkbox"/> BAM 10</p> <p><input type="checkbox"/> BAM 2.5</p> <p><input type="checkbox"/> Gravimetric Filter: <input type="checkbox"/> PM10 <input type="checkbox"/> PM2.5</p> <p>Meteorology</p> <p><input checked="" type="checkbox"/> station met</p> <p>Toxics</p> <p><input type="checkbox"/> VOC canisters (910)</p> <p><input type="checkbox"/> Metals filters (924)</p>	<p>Portable (day-week):</p> <p>Particulate Matter</p> <p><input type="checkbox"/> EBAM 2.5 <input checked="" type="checkbox"/> EBAM 10</p> <p>Meteorology</p> <p><input type="checkbox"/> WEATHERPAK</p> <p><input type="checkbox"/> iMet</p> <p>Toxics</p> <p><input type="checkbox"/> VOC canisters (910)</p> <p><input type="checkbox"/> Metals filters (BGI)</p> <p><input type="checkbox"/> Asbestos (HighVol/MiniVol)</p>
<p>Mobile (hour-day):</p> <p>Particulate Matter</p> <p><input type="checkbox"/> MicroDust</p> <p>Toxics</p> <p><input type="checkbox"/> areaRAE (PID)</p> <p><input type="checkbox"/> Canister (critical orifice)</p>	<p>Survey/Confirmation (min-hour):</p> <p>Toxics</p> <p><input type="checkbox"/> Miran (field IR)</p> <p><input type="checkbox"/> ppbRAE (PID)</p> <p><input type="checkbox"/> Colorimetric tubes</p> <p><input type="checkbox"/> Sorbent tubes</p> <p><input type="checkbox"/> Canister (grab sample)</p> <p><input type="checkbox"/> areaRAE (PID)</p>

Operational Period-is a period-of-time scheduled for the execution of a given set of operational

Situation Summaries-current information

Safety-protective equipment designed to protect the wearer's body from injury.

Operational Period	
12/7/10 0600	12/10/10 1800
Date/Time	to Date/Time

California Environmental Protection Agency
Air Resources Board
Office of Emergency Response

Prepared by:	C.Pearson
Approved by:	G.Vlasek

Air Emergency Response Sampling Plan

- State Responsibility Area
- Federal Responsibility Area

Incident: San Diego County Explosives Stockpile

Counties/District Affected: San Diego County

CalEMA Mission Task No. 2010-SOU-6059 Description Chemical Fire

ICP/EOC Location(s): ICP at Escondido Fire Station 3 (1808 Nutmeg Street, Escondido)

Situation Summary CalEMA FEMA Other

* On November 18, a massive stockpile of highly explosive materials was discovered at a residential structure located at 1954 Via Scott, in an unincorporated area of San Diego County, near Escondido. On Tuesday, November 30, San Diego County submitted a Proclamation of Local Emergency for the incident and subsequently requested Governor Schwarzenegger to proclaim a State of Emergency. On Wednesday, the Governor proclaimed a State of Emergency for the County. * A Multi Agency Coordination Group conference call took place

Suggested PPE Site specific health & safety plan attached

Because staff will be working downwind of the incident, it's possible that there may be brief, moderate exposure to air toxics and particles. Staff are required to have with them at all times an air purifying respirator with dual VOC/HEPA filters. Field work also requires steel-toed boots, long pants, and high visibility vests. We also require a

Field Staff Deployed			
Name	Contact Info	Agency	Assignment
Greg Vlasek	(916)838-0872	CARB	OER Chief
Mark Copple	(530)306-0226	CARB	Field Surveillance Unit
Charles Pearson	(916)206-3899	CARB	Field Surveillance Unit
Shelley DuTeaux	(916)206-1771	CARB	Field Surveillance Unit
Neil Adler	(916) 837-3410	CARB	Field Surveillance Unit

Continued back page

Responding Agencies		
Representative	Agency	Contact Information
Robert Kard	San Diego Co APCD	Robert.Kard@sdcounty.ca.gov/
Nick Vent; HazMat Group Ldr	San Diego Co Env Health	nick.vent@sdcounty.ca.gov/(619) 778-9500
Bill Brick	San Diego Co APCD	Bill.Brick@sdcounty.ca.gov/(858) 586-2770
Mahmood Hossain	San Diego Co APCD	Mahmood.Hossain@sdcounty.ca.gov/Need Cell #
Brad Long	San Diego Co Env Health	Brad.Long@sdcounty.ca.gov/(619) 778-4917

Field Staff Deployed-roster indicating deployed staff, contact information, duty assignment.

Responding Agency identifying staff not directly involved in the field deployment.

Contaminant of Concern-Primary contaminant(s) which cause adverse health affects.

Weather Forecast- predictions about how the weather is expected to develop.

required activities such

Sampling Objectives- The reason or purpose of the monitoring.

Area of Impact and any Specific Targets of Concern:
 Rincon Elementary & Middle School, Calvin Christian Preschool, Sundance Mobile Home Park

Contaminant(s) and Health Action Levels:
 Citric acid (conc): TEEL-1 = 35.0 mg/m3 (4.45 ppm); Pentaerythrite tetranitrate (PETN): TEEL-1 = 0.05 mg/m3
 Nitric Acid (fuming): ERPG-1 = 1 ppm; note odor threshold ~ 1ppm
 Hydrogen peroxide (>35% aq sol): ERPG-1 = 10 ppm; Sulfuric acid (conc): ERPG-1 = 2.0 mg/m3 (0.5 ppm)
 Hydrogen chloride, Hydrochloric acid: 8 hr AEGL-1 = 1.8 ppm; Benzene AEGL-1 8 hr = 9 ppm
 Hexamethylene tetramine (HMTD): TEEL-1 = 30.0 mg/m3 (5.23 ppm); Vinyl chloride AEGL-1 8 hr = 70 ppm

Weather forecast (12-24 hrs):
 TBD; Forecast coming from SDC AQMD and ARB Met/Modeling on Monday, Dec 6, 2010

General Sampling Objectives

- Gather reference sampling data within area of concern to for historical/background pollutant levels
- Establish real-time sampling within affected population center to determine contamination levels
- Establish monitoring in evacuation area for pending re-entry
- Establish air sampling to determine contaminant gradients or boundaries
- Conduct personal air sampling of on-site ERT personnel
- Site-specific sampling for targeted location (i.e., evacuation center, hospital, fire camp, etc)
- Complaint investigation; Location: _____
- Other objective: Summa Canister analysis to support real time measurements.

Deployed Field Sampling Equipment

<p>Reference (network sites):</p> <p>Particulate Matter</p> <p><input type="checkbox"/> BAM 10</p> <p><input checked="" type="checkbox"/> BAM 2.5</p> <p><input checked="" type="checkbox"/> Gravimetric Filter: <input checked="" type="checkbox"/> PM10 <input checked="" type="checkbox"/> PM2.5</p> <p>Meteorology</p> <p><input checked="" type="checkbox"/> station met</p> <p>Toxics</p> <p><input type="checkbox"/> VOC canisters (910)</p> <p><input type="checkbox"/> Metals filters (924)</p>	<p>Portable (day-week):</p> <p>Particulate Matter</p> <p><input checked="" type="checkbox"/> EBAM 2.5 <input type="checkbox"/> EBAM 10</p> <p>Meteorology</p> <p><input checked="" type="checkbox"/> WEATHERPAK</p> <p><input type="checkbox"/> iMet</p> <p>Toxics</p> <p><input type="checkbox"/> VOC canisters (910)</p> <p><input type="checkbox"/> Metals filters (BGI)</p> <p><input type="checkbox"/> Asbestos (HighVol/MiniVol)</p>
<p>Mobile (hour-day):</p> <p>Particulate Matter</p> <p><input checked="" type="checkbox"/> MicroDust</p> <p>Toxics</p> <p><input type="checkbox"/> areaRAE (PID)</p> <p><input type="checkbox"/> Canister (critical orifice)</p>	<p>Survey/Confirmation (min-hour):</p> <p>Toxics</p> <p><input checked="" type="checkbox"/> Miran (field IR)</p> <p><input type="checkbox"/> ppbRAE (PID)</p> <p><input checked="" type="checkbox"/> Colorimetric tubes</p> <p><input type="checkbox"/> Sorbent tubes</p> <p><input checked="" type="checkbox"/> Canister (grab sample)</p> <p><input type="checkbox"/> areaRAE (PID)</p>

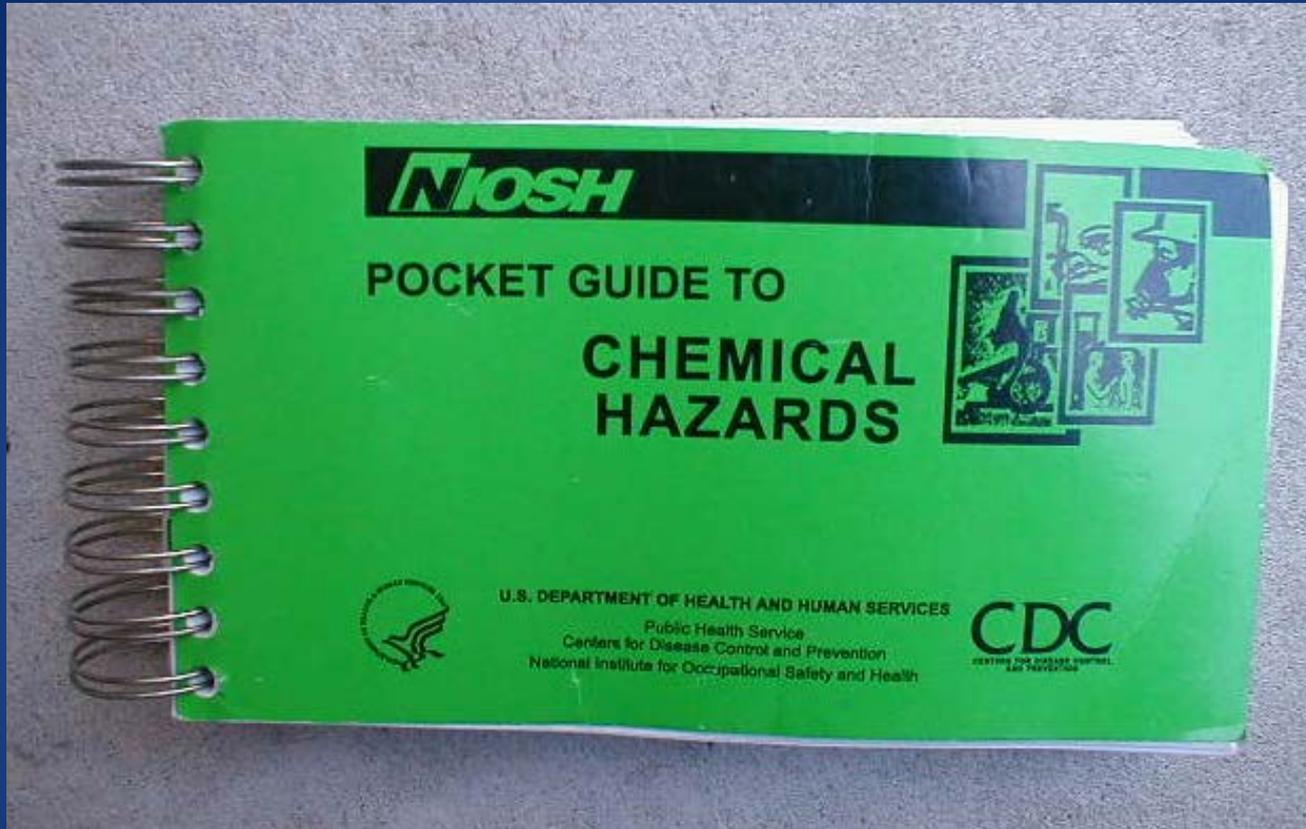
Area of Impact: The area in which the incident has affected.

Targets of Concern: Population of individuals that may have increased health risks associated with

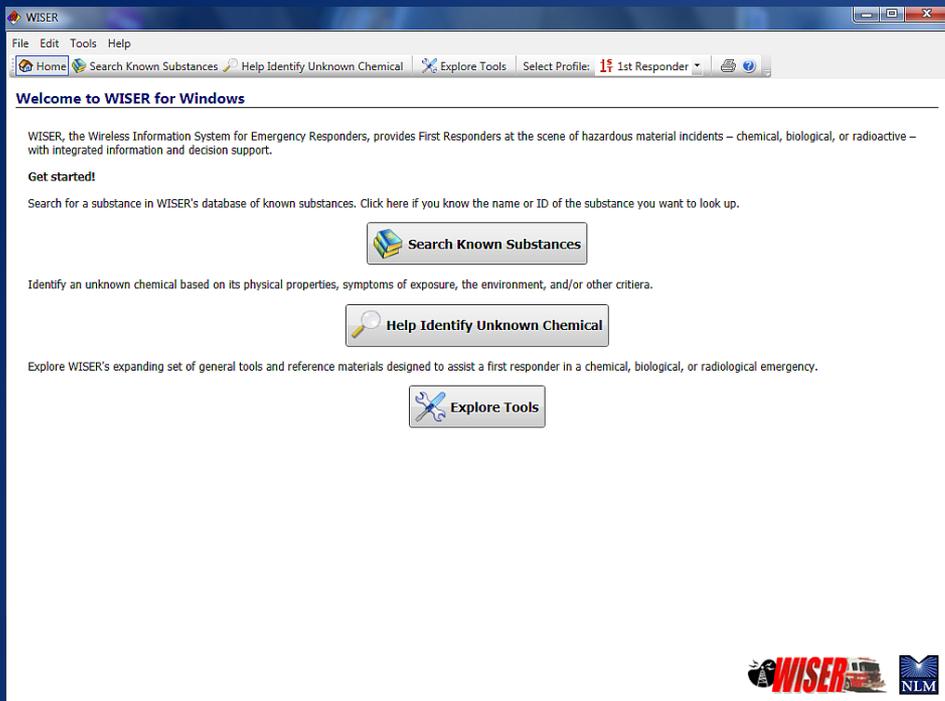
Deployed Field Sampling Equipment Matrix- Matrix identifying models and types of available resources.

Sensitive Receptors





NIOSH Pocket Guide



WISER

CAMEO
Chemicals

CAMEO Chemicals

Database of Hazardous Materials

-  [Search](#)
Find response information for thousands of hazardous materials, including fire and explosion hazards, health hazards, firefighting techniques, cleanup procedures, protective clothing, and chemical properties.
-  [MyChemicals](#)
Build a list of chemicals. For example, substances involved in an incident response (such as a train derailment) or chemicals stored in your community.
-  [Reactivity](#)
See what hazards might occur if chemicals in your MyChemicals collection are mixed together.

Get started by finding a substance of interest with a [search](#).

Learn more by checking the [help](#) for background information, a glossary of terms, and guidance on using this database.

[About](#) | [Privacy Policy](#) | [Contact Us](#)

Web site owner: [Office of Response and Restoration](#), [NOAA's Ocean Service](#), [National Oceanic and Atmospheric Administration](#), [USA.gov](#).
CAMEO Chemicals version 2.1 revision 1.



A. Reference (network) Sampling

Site-specific objectives: Collect data from network samplers, switch established run times and days for filter instruments.

Category of Sampler

Description of Objectives

Instrument	Pollutant	Location	Date	Sampling				Complete (initials)
				Frequency	Duration	Interval	Change*	
SA1200	PM10	Loc: 600 E Valley Parkway, + GPS: 33.127751, -117.075212	12/8/10	<input type="checkbox"/> daily <input type="checkbox"/> hourly <input checked="" type="checkbox"/> other	<input type="checkbox"/> 1hr <input checked="" type="checkbox"/> 24hr			David Shina
MetOne BAM 1020	PM2.5	Loc: 600 E Valley Parkway, + GPS: 33.127751, -117.075212	12/7/10 thru 12/9/10	<input type="checkbox"/> daily <input checked="" type="checkbox"/> hourly <input type="checkbox"/> other	<input checked="" type="checkbox"/> 1hr <input type="checkbox"/> 24hr			David Shina
Anderson RAAS2.5-300 Seq	PM2.5	Loc: 600 E Valley Parkway, + GPS: 33.127751, -117.075212	12/8/10	<input type="checkbox"/> daily <input type="checkbox"/> hourly <input checked="" type="checkbox"/> other	<input type="checkbox"/> 1hr <input checked="" type="checkbox"/> 24hr			David Shina
Xontech 910A	Toxic Gases	Loc: 600 E Valley Parkway, + GPS: 33.127751, -117.075212	12/8/10	<input type="checkbox"/> daily <input type="checkbox"/> hourly <input checked="" type="checkbox"/> other	<input type="checkbox"/> 1hr <input type="checkbox"/> 24hr			David Shina
Met One	MET	Loc: 600 E Valley Parkway, + GPS: 33.127751, -117.075212	12/7/10 thru 12/9/10	<input type="checkbox"/> daily <input checked="" type="checkbox"/> hourly <input type="checkbox"/> other	<input type="checkbox"/> 1hr <input type="checkbox"/> 24hr			David Shina
		Loc: GPS:		<input type="checkbox"/> daily <input type="checkbox"/> hourly <input type="checkbox"/> other	<input type="checkbox"/> 1hr <input type="checkbox"/> 24hr			
		Loc: GPS:		<input type="checkbox"/> daily <input type="checkbox"/> hourly <input type="checkbox"/> other	<input type="checkbox"/> 1hr <input type="checkbox"/> 24hr			
		Loc: GPS:		<input type="checkbox"/> daily <input type="checkbox"/> hourly <input type="checkbox"/> other	<input type="checkbox"/> 1hr <input type="checkbox"/> 24hr			
		Loc: GPS:		<input type="checkbox"/> daily <input type="checkbox"/> hourly <input type="checkbox"/> other	<input type="checkbox"/> 1hr <input type="checkbox"/> 24hr			

* Include any scheduled changes; Specify any dates.

Comments: Can pull filter from gravimetric for metals analysis later.

B. Portable (day to week) Sampling

Site-specific objectives: Monitor particulate outside of perimeter prior to and during incineration operations.

Instrument	Instr No.	Pollutant	Location	Sampling				Complete (initials)
				Frequency	Duration	Start (Day/Time)	Stop (Day/Time)	
E-BAM	SD#1	PM2.5	Loc: Escondido Union High School GPS: 33.147529,-117.092227	Hourly	Continuous	12/7/10	12/9/10	TBD
E-BAM	SD#2	PM2.5	Loc: Rincon Middle School GPS: 33.157217,-117.081365	Hourly	Continuous	12/7/10	12/9/10	TBD
E-BAM	ARB#1	PM2.5	Loc: Calvin Christian Preschool GPS: 33.154809, -117.090061	Hourly	Continuous	12/7/10	12/9/10	Neil Adler
E-BAM	ARB#2	PM2.5	Loc: Sundance Mobile Home Park GPS: 33.159875,-117.09182	Hourly	Continuous	12/7/10	12/9/10	Neil Adler
E-BAM	ARB#4 (ICP)	PM2.5	Loc: 1808 Nutmeg Street, Escondido GPS: 33.149486,-117.1057	Hourly	Continuous	12/7/10	12/9/10	Neil Adler
E-BAM	ARB#5	PM2.5	Loc: 1001 W Country Club Ln Escondido GPS: 33.155915,-117.10705	Hourly	Continuous	12/7/10	12/9/10	Neil Adler
Coastal Weatherpak	ARB#1	MET	Loc: TBD - With SD County GPS:					
Coastal Weatherpak	ARB#2	MET	Loc: TBD - With SD County GPS:					
			Loc: GPS:					
			Loc: GPS:					

Description of Equipment- Instrument type, SN, pollutant, location, etc

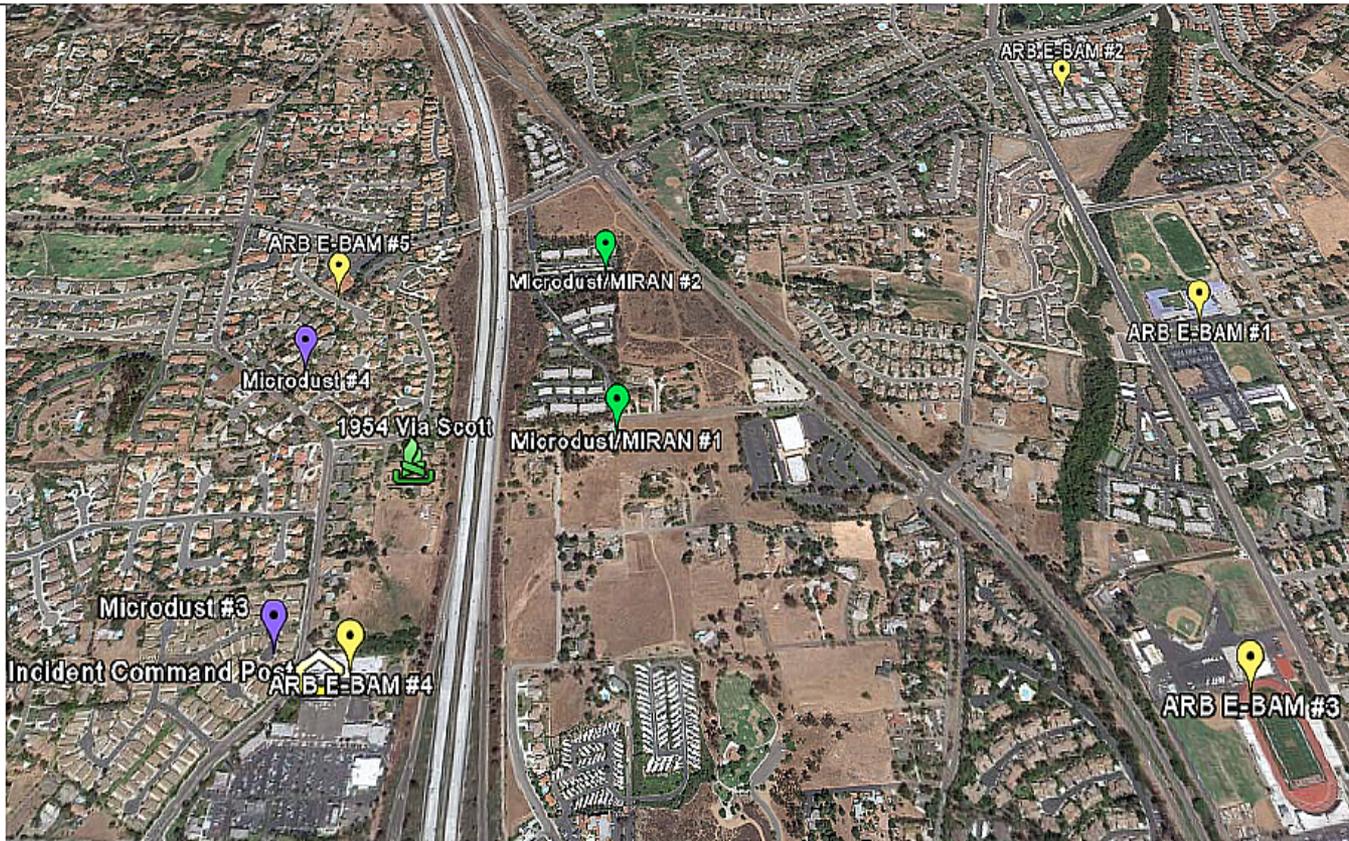
Sampling Information-Run times, frequency, duration & staff assignment.

Comments: Coastal Weatherpak are available for use by SDC Env Health. See last page for potential E-BAM location contact info.



When identifying potential locations to set up portable monitors consider power for the equipment and site security.

Sketch/Compose map of site and any areas of concern. (Indicate major landmarks and sampling)



Incident and Monitoring Map: should include the source of the response, monitoring or sampling locations

Legend:

Google Map Link=

<<http://maps.google.com/maps/ms?hl=en&ie=UTF8&hq=&hnear=Sacramento,+California&msa=0&msid=104284236844156191006.00049673dc5d3f7488527&ll=33.153182,-117.101598&spn=0.016276,0.027595&t=h&z=15>>

Notes:

Please note on map that EBAM #1 and 2 is ARB's; EBAM 3 are #4 (east of map above) are AQMDs. We will update map on Monday 12/6.



Google Map Available Online

[Click Here](#)



Data Disposition						
	Reference	Portable	Mobile	Survey/ Confirm	Data Location	
PM	BAM 10, BAM 2.5				A, AQI	
		EBAM 2.5			AN, AQI	
				MicroDust		I
Met	Station met				A	
		WEATHERPAK			I	
		iMet			M	
Metals and Gases	VOC canisters (910)				A	
	Metals filters (924)	VOC canisters (910)			I	
		Metals filters (BG1)				
			areaRAE (PID)		I	
			Canister (critical orifice)			
				Miran (field IR)		
				ppBRAE (PID)		
			Colorimetric tubes		I	
			Sorbent tubes			
			Canister (grab sample)			

Data Disposition Matrix: This matrix identifies the location where the collected data is stored.

Code:
 (M) MesoWest, <http://www.met.utah.edu/mesowest/>
 (A) AQMIS, <http://www.arb.ca.gov/aqm2/paqselect.php>
 (AN) AirNOW Tech, <http://www.airnowtech.org/> [password needed]
 (AQI) Air Quality Index, <http://airnow.gov/index.cfm?action=airnow.fcsummary>
 (I) InsideERT [Contact ARB Emergency Response Coordinator]

Glossary:
 Mobile – equipment installed to run for a period of days to weeks
 Pollutant – contaminant of concern, including toxic gases, particulates
 Portable – field equipment for sampling durations of hours to days
 Reference – networked monitors (permanent) used for ambient air quality measurements; may be during emergencies to determine background or "reference" concentrations of toxics, metals, and PM
 Sampling duration – sample averaging time or run time per sample (in min, hrs, or days per sample)
 Sampling frequency – no. of samples per unit time
 Sampling interval – elapsed time between samples
 Survey & Confirm – field equipment, usually handheld, for instantaneous readings or grab samples

Continued from Page 1

Field Staff Deployed			
Name	Contact Info	Agency	Assignment
Jan Caldwell	858-974-2259	SD County	Incident PIO / SD County Sheriff Public Affairs Director Jan.caldwell@sdsheriff.org



If possible try to review your plan prior to field deployment so staff understand their positions and duties.

Monitoring Plan Templates

California Environmental Protection Agency
Air Resources Board

Monday, March 5, 2012

UP LINKS

- ARB Homepage
- Outreach Programs
- California Air Response Planning Alliance (CARPA)

PROGRAM LINKS

- Background and Mission
- Charter
- Fire Information Page
- Newsletter
- Steering Committee (login required)
- Subcommittees
- Tool Kit
- Data
- Data to Message
- Message to Audience
- Emergency Response
- Trainings / Meetings

RESOURCES

- Contact Us
- Join the CARPA Email List
- RSS / Newsfeed

CARPA
California Air Response Planning Alliance

This page last reviewed February 27, 2012

EMERGENCY CONTACTS

In the event of a major air release or for assistance with emergency air monitoring, contact:

CA State Warning Center	(800) 852-7550
US EPA Region 9 Duty Officer	(800) 300-2193
CDC/ATSDR 24-Hour Emergency Response Center	(770) 488-7100

Current Emergencies

For information on current emergencies, visit:

- California Emergency Management Agency
- CalFire Current Incidents page
- Federal Interagency Smoke Management Site
- Interagency Incident Information System, Inciweb

Current Information

California Environmental Protection Agency
Air Resources Board

Monday, March 5, 2012

CARPA Toolkit - Data

This page last reviewed February 29, 2012

Operational Tools and Guidance for Emergency Air Monitoring, Sampling, Modeling, Meteorology, and Data Management



Particulate Monitoring

- ARB Air Monitoring SOPs
- ARB E-Bam Evaluation (pdf)
- EBAM Guidance for Particulate Monitoring in Emergencies (pdf)
- EBAM Telemetry (pdf)
- USFS Smoke Particulate Monitor Comparison (2006)

Sampling Plans and Data Management

- CTEH Sampling Plan from the BP Oil Spill (pdf)
- OER Monitoring & Sampling Plan (pdf)
- CARPA Monitoring & Sampling Plan (docx)
- Use of AirNow during Emergencies (pdf)

<http://www.arb.ca.gov/carpa>