U.S. Environmental Protection Agency
Region 2

Quality Assurance Project Plan Guidance
for
Initial Incident Monitoring

October 2009

QUALITY ASSURANCE PROJECT PLAN GUIDANCE
Initial Incident Monitoring

Introduction

EPA initial responders to time-critical emergencies or incidents often do not have sufficient time or adequate information to develop an appropriate Quality Assurance Project Plan (QAPP) prior to collecting environmental data or information necessary for assessment and mitigation of threats to human health or the environment. QAPPs for Initial Incident Monitoring (IIM) should be specific to the incident or emergency, appropriate for the type of environmental data collection activities performed as well as the decisions being made with the data (graded approach), and produced through a streamlined process that utilizes a combination of pre-incident and post-collection QA documentation. QAPPs for environmental data collection activities associated with environmental incidents in Region 2 are divided into three categories based upon the time-critical nature of the incident, immediacy of threat to human health and the environment, and the stage of the incident (initial response, follow up monitoring, long term monitoring),

This IIM QAPP guidance has been prepared for documenting activities used for assuring the quality of data collected during the initial response to a chemical incident or emergency. Data collected during this phase are primarily used to:

- assess immediate threats to human health and the environment (evacuation of the public, level of response worker protection, establishing incident perimeter)
- provide fundamental assessment of the situation and identify priority concerns
- provide sufficient information to support decisions on additional initial incident monitoring needs
- define required resources to implement necessary additional data collection
- support IMT decision on moving beyond IIM to transitional/follow-up monitoring or long term monitoring stages.

During the initial incident, there will likely be several IIM QAPPs to address the various types of environmental data collection activities that will be going on. This type of planning is based on the crisis situation and should be considered as short term, with the duration **not defined chronologically but categorically**. However, in an incident of national significance, IIM may need to be implemented for several weeks as the situation dictates.

IIM may also be needed later, during either transitional/follow-up or long term monitoring if additional emergency or unexpected short term monitoring needs arise.

The EPA *Region 2 Generic QAPP for Chemical Measurements*, October 2009, should be consulted when developing a site specific IIM QAPP.

Initial Incident Monitoring QAPP Worksheet #1
Title and Approval

Site Name/Project Name: Chemical Exercise

Lead Organization:

Preparer's Name and Organizational Affiliation:
(Name, Environmental Unit Leader, Organization)

Preparer's Telephone Number and E-mail Address:

Preparation Date (Day/Month/Year):

Approval Signatures:_
(e.g. EU Leader,
Ops Leader, IC)

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Other Approval Signatures: _____
Signature

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Printed Name/Title/Date

Initial Incident Monitoring QAPP Worksheet #2

Clearly define the problem and the environmental questions that should be answered for the response/emergency and develop the project decision. The four questions **(in bold)** below are intended to lead the thought process from the physical situation (explosion, train derailment, etc.) down to the actual type of information needed to answer the environmental question (extent of soil contamination, air quality issues etc). The prompts *(in italics)* are meant to help the project team define the problem. They are not comprehensive.

Problem Definition

The problem to be addressed by the project: *(Short description of the nature of response/emergency)* **Assist in determining type/quantity of Chemical contamination of the environment due to a release**
The environmental questions being asked: (*Developing monitoring objectives.)* **1. Nature/extent of release (what has been released/area impacted)** **2. Assess contamination to provide appropriate level of protection for response workers** **3. Assess areas for appropriate protective actions to the public---perimeter sampling** **4. Determine impact to the environment**
The possible classes of contaminants and the affected matrices: **VOC, SVOC, metals-Pb, PCBs, dioxin/furan, asbestos in soil/sediment, air**
Information concerning various environmental indicators: (*Observations from reports, conditions of the environment)* **Meteorological data, population data, local hydrology/topography, etc….**

Initial Incident Monitoring QAPP Worksheet #3

Use this worksheet to develop project quality objectives (PQOs) in terms of type, quantity, and quality of data determined using a systematic planning process. These questions and example answers are neither inclusive nor appropriate for all projects.

Project Quality Objectives/Systematic Planning Process Statements

Who will use the data? **Incident Commander/other members, EPA, ATSDR, NYDEC, State Health Department, local emergency teams, etc….**
What will the data be used for? (*Think about possible actions that will be made based on the data/results generated*) **Decision making for evacuation, site worker health and safety, determination of subsequent Work Plan activities, etc**.
What types of data are needed? *(Think about target media, target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques)* **On-site field screening and off-site lab analyses for--** **Air: VOC, PCBs, asbestos** **Water: VOC, SVOC, metals-Lead, PCBs** **Soil/Sediment: VOC, SVOC, metals-Lead, PCBs, asbestos**
How much data are needed? **Number of samples for each analytical group, matrix, and concentration; duration of continuous monitoring with number of monitoring stations**
Where, when, and how should the data be collected/generated? (*Think about sampling locations, sampling techniques)* **Site Maps w/ locations, access agreements, time frames/schedule, Sampling/Analytical SOPs**

Who will collect and generate the data? **EPA RSC, RST 2 contractor, ERT, REAC, partners (States)**
How will the data be reported? **1. Documentation of Field Analytical results (air monitoring logs)** **2. Verbal Preliminary data from off-site lab(s), electronic copy of validated results (for Scribe), followed by hardcopy data package** **3. Provide data to EU Leader and IMT**
What is the expected or needed turnaround time for the data? **<u>On-site analyses (mobile lab)</u>: approx. 0-2 hours** **<u>Off-site analyses</u>:** **Verbal Preliminary data turnaround time is expected to be 24 hours** **Full data deliverables in 7 days**

Initial Incident Monitoring QAPP Worksheet #4

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the project-required action limits for the target analytes/contaminants of concern. Next, determine the quantitation limits (QLs) that must be met to achieve the project quality objectives. Finally, list the achievable detection and quantitation/reporting limits for each analyte. Note that the worksheet can be modified for use with real time monitoring and field screening instrumentation.

Reference Limits and Evaluation Table

The following are two example tables: first is an example for using field instruments to make field decisions (health and safety related) with the associated action limits and the second is an example for using a fixed laboratory with the associated action limit that will be used to make a project decision.

SCREENING DATA EXAMPLE

Insert H&S information for chemicals below

Parameter	Instrument*	Action Limits (applicable units)
O_2 in atmosphere	MultiRae	<19.5% O_2 (oxygen deficient) >22.5% O_2 (oxygen enriched)
LEL (combustible gas)	MultiRae	> 10% LEL
Gross VOC	MultiRae	> 25 ppm
CO	MultiRae	TWA 35 ppm (40mg/m^3)
H_2S	MultiRae	NIOSH REL: C 10ppm (15mg/m^3) [10min]

*See Generic QAPP for Chemical Measurements, 11/09, Worksheets #21, 22, and 25 for assistance.

DEFINITIVE DATA EXAMPLE

Matrix: ***Soil/Sediment***
Analytical Group/Method: **VOC, Metals-Pb, PCBs, Asbestos**
Concentration Level: ***high concentration expected***

Analyte	NYSDEC 6NYCRR Part 375 Regulatory Limit (applicable units)	Project QL (units)	Analytical Method Quantitation Limit or Reporting Limit	Achievable Laboratory Limits[1]	
				Minimum Detection Limit (units)	QL/RLs (units)
VOCs: BTEX	Benzene=0.06 ppm Toluene=0.7ppm Ethylbenzene=1.0ppm Xylene-total=0.26ppm		0.005ppm(low) or 0.25ppm (medium) for each	tbd tbd tbd tbd	0.005ppm-low or 0.25ppm-med for each
Lead	63 ppm		1 ppm	tbd	1 ppm
PCB Aroclors	0.1ppm each aroclor		0.033ppm each	tbd	0.033ppm each
Polarized Light Microscopy (PLM); Phase Contrast microscopy (PCM); Transmission Electron Microscopy (TEM)			> 1um in diameter, dl=1%asbestos in bulk; >5um in length,0.25um in diameter ; <0.01um in diameter		

1-MDLs and Quantitation/Reporting Limits are laboratory dependent. For soil/sediment: sample size, matrix interferences, dilutions affect the RL. Thus, the actual Reporting Limit for each sample will be different from those listed based on each of these variables.

See Generic QAPP for Chemical Measurements, 11/09, Worksheet# 15

Initial Incident Monitoring QAPP Worksheet #5

List all site locations that will be sampled and include sample ID number. Specify matrix and, if applicable, depth at which samples will be taken. Only a short reference for the sampling location rationale is necessary for the table. The narrative provided in QAPP Worksheet #3 should clearly identify the detailed rationale associated with each reference. Complete all required information, using additional worksheets if necessary. Note that the worksheet can be modified (add/delete columns, change headings) as necessary to meet the project needs.

Sampling Locations, Methods/SOP Requirements Table

Matrix	Sampling Location(s)	Units	Analytical Group(s)	Concentration Level	No. of Samples (identify field duplicates)	Sampling SOP Reference	Rationale for Sampling Location
Gas		ug/m^3	VOCs	Low - Scan	e.g., 15	SOP#1704	
			Asbestos			SOP#2015	
Soil		mg/kg	SVOCs	Low	e.g., 12	SOP#2012	
		um	Asbestos**			CO state guidance	
		mg/kg	VOC			SOP#2012	
		mg/kg	PCB-Aroclors			SOP#2012	
		mg/kg	Metals-PB			SOP#2012	
Groundwater		ug/L	VOCs	Trace	e.g., 12	SOP#2007	
		ug/L	Metals-Pb	ICP/AES	e.g., 12	SOP#2007	
		ug/L	Metals-Pb	ICP/MS	e.g., 19	SOP#2007	

See Generic QAPP for Chem. Measurements, 11/09, Worksheet #22 for information regarding the Quickstart Guides for Field Equipment.

Note: The website for EPA-ERT SOPs is: www.ert.org/mainContent.asp?section=Products&subsection=List

****The website for Colorado DPHE Asbestos in Soil guidance is: http://www.cdphe.state.co.us/hm/asbestosinsoil.pdf**

Initial Incident Monitoring QAPP Worksheet #6

Summarize by matrix and analytical group the number of field samples and the relevant QC samples that will be collected and sent to the laboratory. The Table can be modified to accommodate any QC samples that will be collected for field screening instruments, in-situ instruments, etc. *Examples are provided in italics.*

Field and Quality Control Samples Summary Table[1]

Matrix	Analyte Group	Analytical Method[2]	Concen-tration Level	No. of Samples	No. of Field Duplicate Pairs	No. of MS/MSD samples	No. of Field/ Equipment Blanks	No. of PT Samples	Total No. of Samples to Lab[3]
Soil	*VOC: BTEX*	*SOMO1.2*		*25*	*1*	*1MS/1MSD*	*One/equip. type*	*1*	*28*
Soil	*SVOC*	*SOMO1.2*		*25*	*1*	*1MS/1MSD*	*One/equip. type*	*1*	*28*
Soil	*PCB-Aroclors*	*SOMO1.2*		*25*	*1*	*1MS/1MSD*	*One/equip. type*	*1*	*28*
Soil	*Lead*	*ILMO5.4*		*25*	*1*	*1MS/MD*	*One/equip. type*	*1*	*28*
Soil	*Asbestos*	*PLM[3]*		*25*	-	-	-	*	

[1]-Individual methods should be consulted for the type and number of QC required.

[2]-See Generic QAPP for Chemical Measurements 1109, Worksheet #19, 20 for assistance in completing the analytical method and sample volume requirements. In addition, the generic worksheet should be use as a reference for the analytical method preservation and holding time requirements.

[3]-PLM=polarized light microscopy. Method primarily used as screening soil samples of a large area to determine presence and extent of contamination. Not suitable for risk assessment.

*PLM labs should participate in a PT program such as the AIHA-NIOSH bulk asbestos proficiency analytical testing program (qualitative and semi-quantitative).

Initial Incident Monitoring QAPP Worksheet #7

List all SOPs associated with project sampling including, but not limited to, sample collection, sample preservation, equipment cleaning and decontamination, equipment testing, inspection and maintenance, supply inspection and acceptance, and sample handling and custody. Include copies of the SOPs as attachments or reference all in the QAPP. *Examples are provided in italics.*

Project Sampling SOP References Table*

SOP Reference Number[1]	Title, Revision Date and/or Number	Originating Organization	Equipment Type
SOP #1704	Summa Canister Sampling	*EPA/OSWER/ERT*	*Summa canister*
SOP #2012	Soil Sampling	*EPA/OSWER/ERT*	*Auger, tube, split spoon*
SOP#2007	Groundwater Well Sampling	*EPA/OSWER/ERT*	*Various pumps, bailer*
SOP #2017	Waste Pile Sampling	*EPA/OSWER/ERT*	*Scoop, Shovel, Bucket Auger, other*
SOP #2009	Drum Sampling	*EPA/OSWER/ERT*	*Drum Thief or Coliwasa*
SOP #2015	Asbestos Sampling	*EPA/OSWER/ERT*	*Sampling Pumps, Canisters*

* Sources of SOPs could be either EPA, contractor generated or other appropriate entity.

[1] The EPA-ERT SOPs are located at: www.ert.org/mainContent.asp?section=Products&subsection=List

See Generic QAPP for Chemical Measurements, 11/09, Worksheet #22 for information regarding the Quickstart Guides for Field Equipment.

Initial Incident Monitoring QAPP Worksheet #8

Identify all laboratories or organizations that will provide analytical services for the project, including on-site screening, mobile laboratory, and off-site laboratory analytical work. Group by matrix, analytical group, and sample location or ID number.

Analytical Services Table

Matrix	Analytical Group	Analytical SOP	Sample Volume	Data Package Turnaround Time	Laboratory/Organization (Name and Address, Contact Person and Telephone Number)
Soil Gas	TO-15 Scan VOCs	TO-15	6L Summa Canister	Verbal 24 hrs/ Electronic 7days	EPA Non-RAS Air Program
Indoor Air Gas	TO-15 SIM VOCs	TO-15	6L Summa Canister	Verbal 24 hrs/ Electronic 7days	EPA Non-RAS Air Program
Aqueous	Low Conc. VOCs	SOM01.2	(3) 40ml VOC vials	Verbal 24 hrs/ Electronic 7days	EPA CLP RAS or non-RAS Laboratory
	SVOCs	SOM01.2	1000 ml	Verbal 24 hrs/ Electronic 7days	
	PCBs	SOM01.2	1000 ml	Verbal 24 hrs/ Electronic 7days	
	TAL Metals and Cyanide	ILM05.4	250 ml	Verbal 24 hrs/ Electronic 7days	
Soil	TCL VOCs	SOM01.2	(3) 5g Encores (15g total)	Verbal 24 hrs/ Electronic 7days	EPA CLP RAS or non-RAS Laboratory
	TCL SVOCs	SOM01.2	100 g	Verbal 24 hrs/ Electronic 7days	
	TCL PCBs	SOM01.2	100 g	Verbal 24 hrs/ Electronic 7days	
	TAL Total Metals	ILM05.4	250 g	Verbal 24 hrs/ Electronic 7days	
	Asbestos	PLM/TEM	**		Sub-contracted lab

* For an event of national significance, the laboratories most likely will be part of the Emergency Laboratory Network
**Consult with individual laboratory

Initial Incident Monitoring QAPP Worksheet #9
Describe procedures that will be used to assess the quality of the monitoring/sampling data. (Will the laboratory data be validated? Will the field monitoring instruments be calibrated?)

Verification/Validation Process Table

Verification Input	Description	Internal/ External	Responsible for Verification (Name, Organization)
Field Monitoring Instrument Calibration	Check field instrument log book to ensure that the required calibration is being performed and that the calibration criteria are met	Internal	Ops Unit-Field Team Leader EPA Region 2
Chain of Custody	Check that the samples in each cooler match the chain of custody record	Internal	Ops Unit-Field Team Leader EPA Region 2
On-site Screening Data	Data assessment for compliance to Health and Safety Requirements	Internal	Technical Specialist*, Data Assessment and Reporting Coordinator/Interpreter
Definitive Data-Laboratory QC	Laboratory is responsible for performing internal data review to ensure that all the laboratory and analytical method QC and contractual requirements are met.	Internal	Lab QA Officer/Project Manager
Definitive Data-Laboratory QC	Data assessment for compliance to technical criteria specified in analytical method and QAPP.	External to lab	Technical Specialist, Data Assessment and Reporting Coordinator/Interpreter

*Use the appropriate Technical Specialist for specialty tasks (asbestos, explosives, other)

Initial Incident Monitoring QAPP Worksheet #10

Describe the procedures/methods/activities that will be used to determine whether data are of the right type, quality, and quantity to support environmental decision-making for the project. Describe how data quality issues will be addressed and how limitations on the use of the data will be handled. Who is responsible for ensuring that field SOPs are followed and that the sampling /monitoring strategies meet the data needs based on the current situation and known information?

Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps that will be used. In addition, the documentation that will be generated should also be presented.

Example:

As part of the data usability assessment:

-the results will be reviewed against the action levels,

-the laboratory RLs and results meeting/exceeding the established field/lab QC criteria will be reviewed,

-field logs/documentation will be reviewed for any modifications made to approved procedures to determine if there is an impact on the data quality.

The data will then be used as part of the evaluation (pathway analysis, etc.) to determine of the water/soil/drums pose any threat or if additional samples are required. This assessment, performed by the Site Team, EU Leader, and Technical Specialists, will be provided in a situation report, data assessment report, pollution report or similar documentation.