EPA Data Analysis and Monitoring Strategy
LATROBE VALLEY COAL MINE FIRES
Version No. 2
Date: 23 February 2014

Table of Contents

1. INTRODUCTION

Purpose

The EPA Environmental Monitoring Programme is designed to acquire environmental quality data to understand the environmental consequences of the Hazelwood Mine Fire. In particular air quality data is provided to the Department of Health to allow them to undertake Health Risk Assessments and subsequently provide advice to the community. Air Quality Forecasting is also undertaken to assist with health risk assessment work. Ash, soil, surface water and fire water sampling is also undertaken to report on the state of the Latrobe Valley environment to key audiences and for operational decision making.

End State

A monitoring regime and data analysis regime that is integrated into the operational decision making structure, resourced to operate sustainably, and sufficiently flexible to respond quickly to changing operational needs.

2. INCIDENT OVERVIEW – MONITORING REQUIREMENTS

Situation Summary

The Hazelwood mine fire and the resultant smoke impact on the Morwell community have presented a unique set of circumstances for operational decision making. Historical and existing EPA monitoring capability for fire situations has largely focused on particulate measurements to inform operational decisions. EPA has been required to provide sufficient data, in a timely manner, to Department of Health personnel to make decisions in relation to messaging and actions to protect human health impacts. This includes the need to work in with other agency monitoring equipment, and to integrate into the EPA dataset. Additionally, EPA is relied upon for other related data and activities to cover the rest of the state, as well as ad hoc and tactical activities to response to the changing circumstances.

While the original focus was on Carbon Monoxide monitoring more recent evidence has demonstrated that while above average, Carbon Monoxide levels are not reaching hazardous levels. The focus has shifted to forecasting and measurement of smoke impacts on the community primarily in the form of $PM_{2.5}$ (particles smaller than 2.5 microns).

3. EPA OPERATIONAL PRIORITIES

Strategic operational priorities for EPA are to:

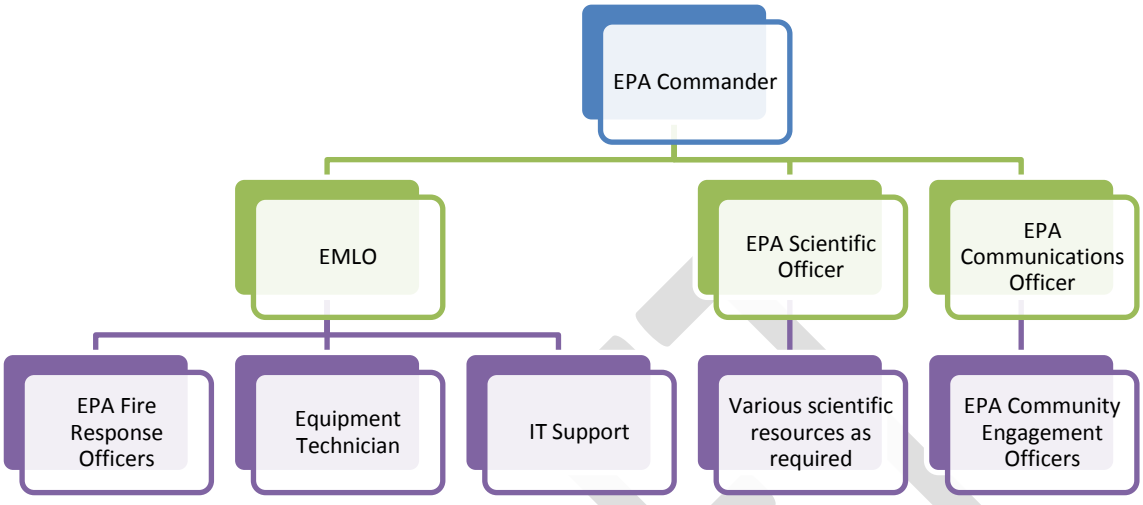
- Maximise the information value of available assets;
- Maximise the automation/real time availability of the data/information;
- Match product with the needs of the stakeholders – but balance granularity of data with value for better decisions;
- Support a streamlined and clearly understood decision making process with other agencies;
- Continuously re-evaluate against stakeholder needs and upgrade/amend if necessary.

4. MANAGEMENT ARRANGEMENTS

Resourcing

Traralgon RCC – EPA Commander, EMLO and Scientific Officer roster, Field Officers Communications Officer, and Engagement Staff.

Roles:



EPA Commander (Agency Liaison)

To provide strategic advice and commit EPA resources in support of Deputy Regional Controller and to coordinate EPAs effort in the RCC, and act as key liaison between emergency services and EPA. The commander provides oversight of other EPA staff in the RCC.

Emergency Management Liaison Officer (EMLO)

To provide advice and deploy EPA resources in support of COMMANDER

Scientific Officer

To provide technical advice and deploy data assets, construct a sustainable integrated data service, collate and analyse information, and provide information to Department of Health in support of human health decisions in accordance with RCC protocol

Field Officers

To provide on ground activities in support of operational plans and ad hoc requests under direction of EPA EMLO, staffed by Environment Protection Officers (Authorised Officers)

Communications Officer

To provide coherent messaging to community in support of the RCC Communications Team

Engagement Staff

To support communications plan in conjunction with other agencies including community engagement.

Macleod Centre for Environmental Science - **Forecasting and data analysis officer**

To collate data and analyse to produce regular air quality forecast reports and ad hoc analysis and information services under direction of EMLO or Agency Liaison

Melbourne/Traralgon – Equipment Technician and IT

Equipment technician – To provide commissioning, installation and servicing requirements for all EPA data assets under the direction of EMLO or Agency Liaison

IT Support – To provide data integration and hardware/software support services under the direction of EMLO

5. MONITORING

5.1 AIR

5.1.1 Air Monitoring Stations

- There are three fixed air monitoring stations in the region at Morwell South & Morwell East (CO, PM2.5, SO2 and visibility) and Traralgon (PM10, SO2 and visibility). They continuously measure and transmit readings of specific pollutants to EPA data systems and the EPA Web Page. They provide real time information and are the key platform in assessing and responding to air quality events.

5.1.2 Fixed PM2.5 Monitoring

- Five PM2.5 particle monitors are placed in a broader area of Morwell to supplement Air Monitoring Station Data. Information from these monitors is used to track particle trends and provide a complete picture of plume behaviour. These stations may be redeployed depending upon data needs.

5.1.3 Portable CO monitoring

- Monitoring sweep carried out three times a day (8am, 12 and 4pm) at nine predetermined locations in Morwell, Morwell East and Traralgon West.

5.1.4 Smoke Blanket mobile monitoring

- EPA Tasmania (Smoke Trackers) have been assisting EPA Victoria (FRO) to gather PM2.5 concentrations across the region utilising a vehicle mounted monitor (Travel Blanket). This information is graphically represented utilising Google Earth. Officers are working to correlate this data with handheld CO readings taken at regular intervals in the monitoring sweep.

- The Travel Blanket can be rapidly deployed to get a better picture of plume location relating to prevailing wind conditions and verify forecast conditions.

5.1.5 Air Toxics Sampling

- EPA will deploy six air toxics canisters for event based monitoring of short term (24 hours) VOC and formaldehyde concentrations. These will be deployed at three locations, two heavily impacted locations in Morwell South and one generally representative residential location in Morwell East.

- EPA will also deploy six passive sampling tubes for VOCS to determine medium term (1 week) concentrations. These will be deployed in the same locations as the air toxics canisters.

- EPA will also be deploying a high volume sampler for particle bound Polyaromatic hydrocarbons (PAH), dioxins and furans. Sampling will be collected over a 24 hour event.

- EPA will deploy a Partisol sequential sampler to collect for atmospheric metals for analysis.

- CSIRO will be undertaking puff high volume sampling for dioxins, furans and Persistent Organic Pollutants (POPs); obtain atmospheric samples of mercury and undertaking cascading filter sampling for metals and particle size.

5.1.6 Indoor air quality monitoring

- There is an indoor CO monitor installed at the Morwell Bowls Club to provide indicative data regarding the cumulative levels of CO indoors in Morwell.

5.2 ASH and SOIL

5.2.1 Fall-out plates

- Fall out plates are located in four locations within the Morwell area to collect ash and will be analysed for deposition levels of metals and PAH to provide information regarding potential impacts.

5.2.2 Soil sampling

- Manual soil sampling is being undertaken on a weekly basis as part of the soil, water and ash monitoring program. These are used for two purposes; to determine an atmospheric deposition reference value (pre fire) and to assess if current ash fall out levels are impacting on soil quality.

5.2.3 Dust Fall Gauges

- There are four dust fall gauges at various locations across Morwell for weekly ash deposition rates and potential analysis.

5.2.4 Ash & soil samples

- Ash samples are being collected from within the environment as part of the weekly soil, water and ash monitoring program. These samples are then being analysed for pH, organic carbon, carbonates, metals, dioxins& furans and PAHs.

5.3 WATER

5.3.1 Fire water

- EPA is conducting sampling of dams on the Hazelwood Mine Site every 48 hours at the request of the CFA. This sampling is primarily to address potential OHS concerns regarding the quality of water being used to fight the fire.

5.3.2 Creeks and Streams.

- Samples from freshwater bodies are being analysed for metals, and Polycyclic Aromatic Hydrocarbons (PAH) to provide an understanding of impacts on waterways in Morwell and surrounds.

5.3.3 Rain Water Tanks

- EPA is sampling from rain water tanks in response to community concerns. This information is then being feed to Department of Health for assessment.

6. Other Data Sources

6.1 Area Rae CO data collection

- Data captured by MFB/CFA Hazmat personnel and provided to EPA Scientific Officer, this provides supplementary information as to the extent of CO levels in Morwell.

6.2 Spot Fire Weather Forecast for Morwell

- Received from BOM at approx. 5 AM and 5 PM each day. The detailed forecast from BOM is used to predict location and extent of plumes.

6.3 Smoke dispersion guidance

- Received from the fire behaviour scientist for CFA (ICC-Hazelwood (Planning Section) icchaz.plan@icc.vic.gov.au)

7. Analysis, Forecasting and Reporting

7.1 Analysis

7.1.1 Air

- **CO, PM2.5, PM10, SO2 and Visibility**

Air quality monitoring data is assessed against levels set by the State Environment Protection Policy (Ambient Air Quality) and the Ambient Air Quality National Environment Protection Measure (AAQ NEPM) air quality standard.

- **Air Toxics**

The data obtained from the air toxic canisters and passive sampling tubes will be compared against the National Environment Protection (Air Toxics) Measure 2004 & other international standards by EPA & DoH..

7.1.2 Water

- **Fresh water bodies**

EPA will analyse data from freshwater bodies across the region to determine if the ongoing situation is have impacts on water quality. This data will be assessed against the requirements of the State Environment Protection Policy (Waters of Victoria) 2003 and the Australian Water Quality Guidelines for Fresh and Marine Waters **(**ANZECC) 2000.

- **Onsite dams (Hazelwood)**

EPA will provide the analysis results from the onsite water bodies to an Occupational Hygienist engaged by fires services for analysis against relevant occupational exposure limits.

- **Rain water tanks**

Data from analysis of water samples from rain water tanks will be supplied to the Department of Health for analysis against the Australian Drinking Water Guidelines (2011).

7.1.3 Ash

Data analysis of ash and reference soil is being passed to Department of Health.

7.2 Forecasts

- EPA will issue daily Air Quality Forecasts at 8:30 and 17:30.

7.3 Reporting

- EPA issues 12 hourly Air Quality Monitoring Reports every day at 8:30 and 17:30.
- Data from the fixed monitoring locations at Morwell South, Morwell East and Traralgon is updated hourly at http://www.epa.vic.gov.au/aq-latrobe-valley-mine-fire/current-air-quality with information calculated on data readings averaged over eight hours for carbon monoxide, 24 hours for $PM_{2.5}$ and one hour for PM_{10}.

8. PERFORMANCE MEASURES

8.1 Reports and Forecasts

Timely provision of reports and forecasts twice per day to DOH and others.

8.2 Data Availability (to EPA Science Officers)

Availability of data (95 %)

Response to equipment failure – Variable, 3-4 hours during business hours, next business day other times.

8.3 Data Availability (to Public)

90 % of hourly air quality updates available to the public in real time on the EPA web site.

Appendix 1- Air Monitoring Locations

Appendix 2- Water, Ash and Soil Monitoring Locations

Appendix 3- Maps

Appendix 4- Standards