1. What happened?
2. What was the response?
3. What were the impacts?
4. What was learnt?
Here we will cover....

• The Fire – What Happened – the EPA Response
• Smoke Monitoring, Modelling and Forecasting
• Communications, the Inquiry and the Recovery
• Health Effects Issues – discuss, but leave to the health experts (still under investigation)
Second Night in - 10th February 2014

Photos Courtesy Chris Morley GDF Suez
Large Scale Impacts
A Sense of Scale

The Hazelwood mine site

Downtown Sydney
EPA’s Roles & Responsibilities

- Incident Response
- Air Quality Monitoring
- Comms/Engagement
- Media Public Government
- Post Emergency Clean Up
- Broader Risks
The EPA Victoria Role in Impacts

1. Monitoring
Measuring the contaminants in air, water, and soil

2. Evaluation
Assessing the health and environmental affects against relevant criteria

3. Forecasting and Information
Forecasting the smoke plume size and extent, and public advisory information on smoke
EPA People (136 staff, 100,000 hours)

- EPA staff working closely with fire officers
- EPA Field Officers servicing air filters
- EPA Team at the Incident Control Centre
- CEO John Merritt facing the media
Monitoring, Modelling and Forecasting
Main Air Monitoring Site

Mobile air quality station installed after fire started (could/should have gone in more quickly). Lesson learnt.

Morwell South.
Set up at the Bowling Club

Similar stations at Morwell East and Traralgon.
Plus smaller sites at Moe, Churchill and 4 mobile.
Other Monitoring

Small mobile particle monitors (DustTraks, ADRs)

Water quality – about 12 locations

Ash deposition – 6 locations

Soil quality – about 8 locations
What was Measured?

- Particulates - $\text{PM}_{10}$
- Particulates - $\text{PM}_{2.5}$
- Sulphur dioxide – $\text{SO}_2$
- Chemical compounds
- Visibility
- Dust deposition
- Carbon monoxide - $\text{CO}$
- Meteorology

PLUS....

- What’s in the ash
- Water contamination
- Soil contamination

- Sent back to lab and web site via 4G network
Air Monitoring Sites in Morwell
Hourly Air Quality in the Latrobe Valley

This bulletin is updated hourly with information calculated on data readings averaged over eight hours for carbon monoxide, 24 hours for PM$_{2.5}$ and one hour for PM$_{10}$.

EPA air quality hourly update: March 5, 2014 2.00 pm - 3.00 pm

Please note that current data may not be shown for some air quality monitoring stations. Measurements are made continuously at air monitoring stations, but there may be temporary technical issues with the collection and display of data.

<table>
<thead>
<tr>
<th>Station</th>
<th>Carbon Monoxide</th>
<th>Particles as PM$_{2.5}$</th>
<th>Particles as PM$_{10}$</th>
<th>Visibility Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units ppm</td>
<td>ug/m³</td>
<td>ug/m³</td>
<td></td>
</tr>
<tr>
<td>Morwell South</td>
<td>0.7</td>
<td>24.0</td>
<td></td>
<td>1.52</td>
</tr>
<tr>
<td>Morwell East</td>
<td>0.2</td>
<td>17.7</td>
<td></td>
<td>0.71</td>
</tr>
<tr>
<td>Traralgon</td>
<td>0.2</td>
<td>31.9</td>
<td></td>
<td>0.86</td>
</tr>
</tbody>
</table>

What do the ratings mean?

**Very good (blue):** Levels of pollution well below the air quality standard

**Good (green):** Below the air quality standard

**Fair (yellow):** Close to the air quality standard

**Poor (red):** Above air quality standard

**Very poor (black):** Significantly above the air quality standard

**Not sampled (grey):** There is no equipment within this station to monitor this particular pollutant

Disclaimer: The data used to compile EPA air quality bulletins come directly from EPA's air monitoring stations. This data may be adjusted at a later time through a standardised procedure to allow for instrument errors, power interruptions and the like.
Older Fires – Some Just as Big

Alpine Fires Jan 2003

Black Saturday Feb 2009

Smoke in Melbourne Dec 2006

Mt Feathertop Jan 2013
Most telling measure – PM$_{2.5}$ – reached 32 times the reporting standard (25 µg/m$^3$).
Reporting Concentrations

Information sent to the community and Dept. of Health included indicators.

**Morwell - 24-hour rolling average** PM$_{2.5}$ (fine particle) levels

- **Department of Health PM$_{2.5}$ ranges**
  - <- High (extreme)
  - <- High (hazardous)
  - <- High (very unhealthy all)
  - <- High (unhealthy all)
  - <- Low (unhealthy sensitive)

*Rolling 24-hour average PM$_{2.5}$ (micrograms per cubic metre)*

*InformaEon sent to the community and Dept. of Health included indicators.*
### Daily Maximum CO levels (8hr average) from Feb 9

<table>
<thead>
<tr>
<th>Date</th>
<th>Morwell East</th>
<th>Morwell South</th>
<th>Alphington</th>
<th>Traralgon</th>
<th>Science Museum (1 Jun - 18 Jul 1982)</th>
<th>Advisory Reporting Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-Feb-2014</td>
<td></td>
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<tr>
<td>12-Feb-2014</td>
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<td>15-Feb-2014</td>
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<td>24-Feb-2014</td>
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<tr>
<td>27-Feb-2014</td>
<td></td>
<td></td>
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<tr>
<td>02-Mar-2014</td>
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<td>05-Mar-2014</td>
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<td>14-Mar-2014</td>
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<td>17-Mar-2014</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>20-Mar-2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23-Mar-2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>26-Mar-2014</td>
<td></td>
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</tr>
</tbody>
</table>

- **Values in Melbourne in 1982**
- **Highest 8-hour average CO level ever recorded by EPA VIC**
## Toxics

Monitored for just about everything possible (along with CSIRO).

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Unit</th>
<th>Morwell South 0.25 km</th>
<th>Maryvale Centre 1.5 km</th>
<th>Morwell East 4.5 km</th>
<th>Guideline</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>26 or 27 Feb</td>
<td>26 or 27 Feb</td>
<td>26 or 27 Feb</td>
<td>24 hour</td>
<td>Peak %</td>
</tr>
<tr>
<td>Benzene</td>
<td>ppb</td>
<td>14</td>
<td>9.2</td>
<td>2.1</td>
<td>9.0</td>
<td>156%</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>ppb</td>
<td>1.6</td>
<td>&lt;0.1</td>
<td>&lt;0.1</td>
<td>4.3</td>
<td>37%</td>
</tr>
<tr>
<td>Propene</td>
<td>ppb</td>
<td>42</td>
<td>24</td>
<td>5.7</td>
<td>232</td>
<td>18%</td>
</tr>
<tr>
<td>Chloromethane</td>
<td>ppb</td>
<td>2.0</td>
<td>2.5</td>
<td>1.5</td>
<td>155</td>
<td>1.3%</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>ppb</td>
<td>2.5</td>
<td>1.6</td>
<td>&lt;0.1</td>
<td>145</td>
<td>1.7%</td>
</tr>
<tr>
<td>Acetone</td>
<td>ppb</td>
<td>7.0</td>
<td>6.2</td>
<td>2.2</td>
<td>497</td>
<td>1.4%</td>
</tr>
<tr>
<td>Hexane</td>
<td>ppb</td>
<td>4.2</td>
<td>0.77</td>
<td>&lt;0.1</td>
<td>284</td>
<td>0.4%</td>
</tr>
<tr>
<td>Toluene</td>
<td>ppb</td>
<td>4.7</td>
<td>3.0</td>
<td>0.92</td>
<td>531</td>
<td>0.9%</td>
</tr>
<tr>
<td>All other organics</td>
<td>µg/m³</td>
<td>various</td>
<td>various</td>
<td>various</td>
<td>various</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Mercury</td>
<td>µg/m³</td>
<td>&lt;0.01</td>
<td>Na</td>
<td>Na</td>
<td>0.5</td>
<td>&lt;0.1%</td>
</tr>
<tr>
<td>Magnesium</td>
<td>µg/m³</td>
<td>9.95</td>
<td>Na</td>
<td>Na</td>
<td>96</td>
<td>10%</td>
</tr>
<tr>
<td>Calcium</td>
<td>µg/m³</td>
<td>18.3</td>
<td>Na</td>
<td>Na</td>
<td>96</td>
<td>19%</td>
</tr>
<tr>
<td>Sodium</td>
<td>µg/m³</td>
<td>6.55</td>
<td>Na</td>
<td>Na</td>
<td>19</td>
<td>34%</td>
</tr>
<tr>
<td>All other metals</td>
<td>µg/m³</td>
<td>various</td>
<td>Na</td>
<td>Na</td>
<td>various</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>PAH (BAP eq)</td>
<td>ng/m³</td>
<td>12.0</td>
<td>Na</td>
<td>Na</td>
<td>9.5</td>
<td>na</td>
</tr>
<tr>
<td>Dioxin (TEQ)</td>
<td>pg/m³</td>
<td>0.041</td>
<td>Na</td>
<td>Na</td>
<td>0.020</td>
<td>na</td>
</tr>
</tbody>
</table>

Only other substance exceeding standards was benzene – and just slightly on just 2 days, in quite a restricted area.
If you were living in Morwell (or some nearby towns) – it was pretty bad!

- 13,500 residents
- 45+ days (not all impacting towns)
- 500m from fire to houses
- Schools and business closed

But Victoria (and NSW and other States) have a lot of fires. Instructive to have a look at previous events – just from the ‘science’ angle.
Visibility Reduction – as Indicator

Why This?
This has been used at all major fires since 2000 – very good indicator of “smoke intensity”.

Victoria Definition
The air quality standard is a minimum visual distance of 20km

Visibility Reduction is not a health based parameter, but the correlation between it and PM$_{2.5}$ is quite good ($R^2 \sim 0.8$)
Data from Other Fires

Days with at least 1 hour more than 5 times in excess of the visibility reduction standard

<table>
<thead>
<tr>
<th>Events</th>
<th>Duration</th>
<th>Mooroolbark</th>
<th>Moe</th>
<th>Morwell East</th>
<th>Morwell South</th>
<th>Traralgon</th>
<th>Wangaratta</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03 Bushfires</td>
<td>33 days</td>
<td>3</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2006-07 Bushfires</td>
<td>48 days</td>
<td>9</td>
<td>12</td>
<td></td>
<td></td>
<td>13</td>
<td>13 (from 39 days)</td>
</tr>
<tr>
<td>2008 Planned burns</td>
<td>19 days</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2009 Black Saturday</td>
<td>21 days</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2013 Planned burns</td>
<td>50 days</td>
<td>0</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014 Hazelwood mine fire and other bushfires</td>
<td>48 days</td>
<td>1</td>
<td></td>
<td>3 (from 43 days)</td>
<td>12 (from 37 days)</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
# Data from Other Fires

**Peak hourly visibility reduction during the event**

<table>
<thead>
<tr>
<th>Events</th>
<th>Duration</th>
<th>Mooroolbark</th>
<th>Moe</th>
<th>Morwell East</th>
<th>Morwell South</th>
<th>Traralgon</th>
<th>Wangaratta</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03 Bushfires</td>
<td>33 days</td>
<td>12.63</td>
<td>9.55</td>
<td></td>
<td></td>
<td>8.12</td>
<td></td>
</tr>
<tr>
<td>2006-07 Bushfires</td>
<td>48 days</td>
<td>40.38</td>
<td>98.81</td>
<td></td>
<td></td>
<td>94.35</td>
<td><strong>121.45</strong> (from 39 days)</td>
</tr>
<tr>
<td>2008 Planned burns</td>
<td>19 days</td>
<td>13.53</td>
<td>22.40</td>
<td></td>
<td></td>
<td>13.46</td>
<td></td>
</tr>
<tr>
<td>2009 Black Saturday</td>
<td>21 days</td>
<td>19.37</td>
<td>10.43</td>
<td></td>
<td></td>
<td>7.97</td>
<td></td>
</tr>
<tr>
<td>2013 Planned burns</td>
<td>50 days</td>
<td>2.62</td>
<td>30.34</td>
<td></td>
<td></td>
<td>36.01</td>
<td></td>
</tr>
<tr>
<td>2014 Hazelwood mine fire and other bushfires</td>
<td>48 days</td>
<td>17.68</td>
<td></td>
<td>16.50</td>
<td>42.47 (from 37 days)</td>
<td>21.24</td>
<td></td>
</tr>
</tbody>
</table>
## Event Comparisons

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Peak</td>
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<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Frequency of big peaks</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Victoria has its share of bad fires. The Hazelwood incident was bad – but by some measures not the worst. Although its proximity to people in Morwell gave it a high profile.
Other Science Activities

Direct monitoring was the main activity, but also..

1. Mobile particle monitors – very useful
2. Satellite imagery – great way to track smoke plume (provided it wasn’t cloudy!)
3. Plume dispersion modelling – several types, good graphics, problems with knowing what the fire was doing
4. Trajectories – longer range smoke impacts – reaching Melbourne on several occasions.
5. High level of science interactions with the fire services – huge amounts of data.
Plume Mapping

Particle measurements with the “TravelBlanket” (courtesy Tasmania EPA)
Modelling

Started doing modelling outputs later in the incident, should have right from the start.

Forecasts for 9am and 3pm on 3 March 2014.

*Courtesy State Control Centre and Bureau of Meteorology*
EPA Trajectory Model tracking smoke towards Melbourne
Forecasting

- Forecasting for smoke impacts was a large and important part of the response.
- People used it for all sorts of purposes.
- We were 15 minutes late one Sunday morning, and the CEO rang up “Where is it!”

One of the main things we want to improve on for next time.
Forecasting

First the situation summary

Then a brief forecast

**Forecast for the next 24 hours (Latrobe Valley)**

- **Morwell South:** Periods of severe smoke expected.
- **Morwell East:** Periods of severe smoke expected.
- **Moe:** No significant smoke expected.
- **Traralgon:** Periods of significant smoke expected.

*Smoke intensity (visibility reduction) in Latrobe Valley, 24 hours to 7am on 26 Feb*

- **Morwell East**
- **Morwell South**
- **Traralgon**

Air quality objective (values above this line represent 'Poor' air quality)
Forecasting

Issued twice daily for 5 weeks – very popular

Outlook for Thursday and Friday

Winds from the south and west sectors are forecast throughout Thursday, indicating the risk of extended periods of severe smoke in Morwell on Thursday, and significant impacts on Traralgon.

There is also the risk of significant smoke in Morwell on Friday morning during light winds. On Friday afternoon, moderate strength easterly winds are likely to see the smoke clear in Morwell but there is the risk of extended periods of significant smoke in Moe on Friday.

Then more detail

<table>
<thead>
<tr>
<th>Time</th>
<th>FORECAST Wind Direction next 24 hours [from Bureau of Meteorology METEYE system]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday (11am)</td>
<td>WNW</td>
</tr>
<tr>
<td>Wednesday (2am)</td>
<td>SSW</td>
</tr>
<tr>
<td>Wednesday (5am)</td>
<td>SW</td>
</tr>
<tr>
<td>Wednesday (8pm)</td>
<td>SW</td>
</tr>
<tr>
<td>Wednesday (11pm)</td>
<td>WSW</td>
</tr>
<tr>
<td>Thursday (2am)</td>
<td>W</td>
</tr>
<tr>
<td>Thursday (5am)</td>
<td>W</td>
</tr>
<tr>
<td>Thursday (8am)</td>
<td>WSW</td>
</tr>
</tbody>
</table>

Weather Forecast starting 0400 hours Saturday 1 March 2014

A thunderstorm with lines of heavy rain is Likely to occur in the area, with a severe storm threat through to early evening. Significant fires in the catchment areas of the 1700m AGL areas, strong easterly winds will continue to move in from the south and west.

Assumptions and uncertainties associated with the forecast

- The site is in the open, and forecasts are based on 10m AGL near the open.<br>- The site is in the open, and forecasts are based on 10m AGL near the open<br>- The site is in the open, and forecasts are based on 10m AGL near the open. Wind direction could be light, particularly overnight, as strong heights drop—wind direction could be modified by the watchhouse.

- Strong easterly winds are forecast to increase from around 5-10 km/h to over 20-30 km/h at times. Wind direction could be modified by the watchhouse.
Data Tables

For some people, the graphs and values in the forecasts and updates weren’t enough.

They wanted tables too!

**Carbon Monoxide (levels in parts per million - ppm)**

Reported as an 8 hour rolling average (e.g. the hour 07 is the 8 hour average between 11pm yesterday and 7am today)

8hr air quality objective is 9 ppm

<table>
<thead>
<tr>
<th></th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
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<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
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</thead>
<tbody>
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<td>Morwell East</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.0</td>
<td>0.9</td>
<td>0.8</td>
<td>0.6</td>
<td>0.5</td>
<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Morwell South</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8</td>
<td>0.6</td>
<td>1.4</td>
<td>2.7</td>
<td>4.2</td>
<td>5.8</td>
<td>7.4</td>
<td>8.8</td>
<td>10.3</td>
<td>11.7</td>
<td>11.9</td>
<td>11.5</td>
<td>10.6</td>
<td>9.2</td>
<td>7.6</td>
<td>6.2</td>
<td>5.4</td>
<td>3.5</td>
<td>2.6</td>
<td>2.3</td>
<td>2.0</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Reported as a 24 hour rolling average (e.g. hour 07 is the 24 hour average between 7am yesterday and 7am today)

Daily (24hr average) national advisory air quality standard is 25 µg/m³

|          | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Morwell East | 38.3 | 38.3 | 38.3 | 38.5 | 38.5 | 40.1 | 41.0 | 40.4 | 39.7 | 39.3 | 35.7 | 34.3 | 33.0 | 27.7 | 25.8 | 25.7 | 25.6 | 25.5 | 24.1 | 24.2 | 24.5 | 25.5 | 26.1 |
| Morwell South | 445.4 | 426.7 | 426.5 | 428.9 | 437.5 | 463.2 | 485.5 | 501.1 | 499.3 | 485.9 | 464.9 | 453.9 | 440.6 | 424.7 | 414.9 | 405.3 | 393.6 | 387.6 | 386.3 | 377.1 | 376.4 | 384.3 | 392.0 | 394.3 |

Very Good

Good

Fair

Poor

Very Poor
Who Received These?

Forecast/Update email (mailing list grew to 100’s of people)

- Country Fire Authority
- Various Control Centre’s
  * Incident Control Centre
  * Regional Control Centre
  * State Control Centre
- Department of Education and Early Childhood Development
- Department of Health
- Department of Human Services
- Department of Premier and Cabinet
- Victoria Police

Plus all senior EPA managers, and EPA Website
Most Popular Output?

High visual – easy to understand relationship between smoke effects and winds
Forecasting Statistics

How many smoke advisories did we recommend?

First advisory issued on the morning of Feb 11
Last advisory issued on the morning of Mar 18

The following numbers of smoke level advisories were recommended:

High – 23
Low – 32
Nil – 26
Total - 81 forecasts

(The number of ‘Nil’ advisories was inflated during the last 2 weeks of forecasting)
EPA Expert Advisory Panel

Early into the Response we had extensive formal peer reviews conducted of our science program. This was a “good move” and stood the EPA well during the Inquiry. This provided excellent independent evidence that we did the right thing.

Australia
- Dr Martin Cope, Victoria, CSIRO, modelling and atmosphere expert
- Dr Ian Galbally, Victoria, CSIRO, toxics expert
- Dr Fay Johnstone, Tasmania, MD, health effects expert, Centre for Air Quality & Health Effects
- Prof Howard Bridgman, NSW, air quality expert and CASANZ President

International
- Dr Johan Goldammer, Germany, expert on fire
- Prof Ross Anderson, UK, expert epidemiologist, consults to WHO and EU
- Prof Jo Barnes, UK, air quality expert
- Prof Ian McKendry, Canada, air quality and weather expert
- Dr Carol Stewart, NZ, ash expert
- Prof Simon Kingham, NZ, air quality and monitoring expert
Communications, The Inquiry and the Recovery Phase
Communications

Headline news throughout the State for weeks

What happens when a coal mine catches fire: The smoky disaster which is choking an entire town - and which could last for months

- Coalmine in Aussie town has been on fire for almost three weeks after an arsonist lit bushfire that spread
- Morwell has been engulfed in smoke and authorities say the fire could take months to extinguish
- 13,000 residents are worried about the long-term health risks from smoke exposure
- Police say the arsonist has 'local knowledge' and they are worried the perpetrator could strike again
- Local business owners and residents are gathering evidence considering class action against mine's owners
Communications - Print

Local, State and National newspapers extensive coverage – and demand for feed! EPA Communications overwhelmed with requests.
Communications Channels

Incident Control Centre operated 24/7 – permanent media section.

News updates on EPA site in great demand
Communications – Face to face

Respite Centre

In the street

Door Knocking

Public Meetings
Web Site

Special web site set up – very popular

News updates given twice daily with substantial detail
During the Hazelwood fire incident these increased dramatically – and the total web site hits peaked at 84,000 on Feb 24th, the most ever on a single day, about 80% on ‘air quality’.

During the two-month period 1 Feb to 31 Mar there were 580,000 visits to air quality pages (mainly the bulletins), with about 52,000 from Traralgon, 47,000 from Morwell and 15,000 from Moe.
Hazelwood Board of Inquiry

• On 11 March 2014, the Premier of Victoria Denis Napthine, announced an independent inquiry into the circumstances of the Hazelwood mine fire, including the emergency response and the support provided to Morwell residents and other affected communities.

• The Board of Inquiry was led by Justice Bernard Teague AO. He was joined by Professor Emeritus John Catford and Ms Sonia Petering.

• The Inquiry public hearings were held between 26 May 2014 and 18 June 2014.

• The Board submitted its final report and recommendations to the Victorian Government in September 2014.

hazelwoodinquiry.vic.gov.au
Findings of the Inquiry

• EPA played a key support role in the emergency response to the Hazelwood Mine Fire.

• EPA’s role was to provide high quality data and expert advice to operational services, and information to the community.

• The speed of deployment of monitoring equipment, and its public communication of complex science were both areas for improvement.
Inquiry Outcomes

18 Recommendations for the Victorian Government

Actions to be led by:-
- Emergency Management Victoria
- EPA
- Department of Health
- Fire Authorities
- Mine Company

EPA contributes to:-
- Better rapid response monitoring capability
- Lead in new PM$_{2.5}$ standard
- New CO response Protocol
- New State Smoke Guide
- Health study (20 years)
- Community engagement plan
Recovery Phase

Significant on-going program funded by the Commonwealth as a Recovery Program.

- Monitoring
- Community Science Communications Officer
- Citizen Science Program
- Health Effects Studies (now contracted to Monash University)
- EPA system upgrades – especially data and communications
- Improved emergency response capabilities
Some questions to consider

In a major emergency event

- Are you equipped to engage and communicate with a distressed community?
- Do you know who the trusted networks are in high risk areas?
- Do you have enough people trained in Emergency response practice and AIIMS?
- What monitoring equipment do you have that can be deployed quickly and easily?
- Do we have a shared understanding of what each jurisdiction can offer in support of an incident?
- Are you hooked into other agencies systems and do you understand their processes?
- Are you set up to work collaboratively with other government agencies and organisations for a one-stop shop response?
Some questions to consider 2

In a major emergency event

• What are your processes and systems to respond to major incidents as well as keep the business running?
• Do you have robust systems to manage fatigue and work overload both for incident and business as usual work?
• Will your internal communication processes cope?
• Does everyone have a clear understanding of EPA’s role in emergency management?
• Are you capturing the corporate memory around emergency management?
• Do you employment terms and conditions allow you to respond effectively? Does it cover rostering, overtime allowances etc.