Singleton Shire Healthy Environment Group
“SSHEG Clean Air NSW Consultation 2017”

Without prejudice

A community-based group looking to address Environmental issues affecting Singleton Shire residents

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We seek identification as to what is making our Children and Community Sick so they can be mitigated by OH&S Compliance Orders.

SSHEG Focus on Health

SSHEG is Not Anti Mining or Anti Power Stations

NSW Environment Protection Authority and Office of Environment and Heritage on behalf of the State of NSW
59 Goulburn Street, Sydney NSW 2000
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“Clean Air NSW Consultation Paper Jan 2017”

This SSHEG Submission focuses upon the role that NSW Health should play in guiding the Air Quality debate in Australia including NSW, and the pivotal role expected from NSW EPA.

At present NSW Health and Environmental Health has over the years been progressively sidelined in both Legislation and the scope of Government Acts and Ministerial Air Quality responsibilities, to the extent that SSHEG Air Quality concerns in the Singleton Shire in 2008 led to the forced inclusion of Environmental Health voices to be heard in NSW Government.

Today in 2017 while much has been achieved Internationally in the recognition of the associations between Air Quality and Human Diseases, Loss of Lifetime, Morbidity and Mortality by World Health Organisation (WHO) in Oct 2013, it remains that Residents perception in certain areas are that NSW Health remains the poor relative in the Air Quality improvement decision making processes in NSW.
Meanwhile since 2013 the World Health Organisation (WHO) in 2015 and 2016 has spelled out the pivotal role of “National Health Authorities need to play” during its deliberations on Air Quality and Human noncommunicable diseases – notably cardiovascular diseases, stroke, chronic obstructive pulmonary disease and lung cancer, including the increased risks for acute respiratory infections.

Delegates at the Sixty-eighth World Health Assembly in Geneva May 2015 adopted a resolution to address the Health Impacts of Air Pollution – the world’s largest single environmental health risk. (WHO Media release extract below).

The resolution highlights the key role national health authorities need to play in raising awareness about the potential to save lives and reduce health costs, if air pollution is addressed effectively. It also stresses the need for strong cooperation between different sectors and integration of health concerns into all national, regional and local air pollution-related policies. It urges Member States to develop air quality monitoring systems and health registries to improve surveillance for all illnesses related to air pollution; promote clean cooking, heating and lighting technologies and fuels; and strengthen international transfer of expertise, technologies and scientific data in the field of air pollution.

The resolution asks the WHO Secretariat to strengthen its technical capacities to support Member States in taking action on air pollution. This includes further building capacity to: implement the "WHO air quality guidelines" and "WHO indoor air quality guidelines; conduct cost-benefit assessment of mitigation measures; and advance research into air pollution’s health effects and effectiveness. At the Sixty-ninth World Health Assembly, WHO will propose a road map for an enhanced global response by the health sector that reduces the adverse health effects of air pollution.

Subsequently the Seventy-ninth World Health Assembly in 2016 Delegates welcomed “a new road map for responding to the adverse health effects of air pollution. The road map outlines actions to be taken between 2016 and 2019, and is organized into 4 categories. …..It sets out to expand the knowledge base, by building and disseminating global
evidence and knowledge of the impacts of air pollution on health and the effectiveness of interventions and policies to address it.

It focuses on leveraging health sector leadership and coordinated action at all levels – local, national, regional and global – to raise awareness of air pollution. Lastly, the road map will enhance the health sector’s capacity to address the adverse health effects from air pollution through training, guidelines and national action plans.”

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Health and the Environment: Addressing the health impact of air pollution

Draft resolution proposed by the delegations of Albania, Chile, Colombia, France, Germany, Monaco, Norway, Panama, Sweden, Switzerland, Ukraine, United States of America, Uruguay and Zambia

The Sixty-eighth World Health Assembly,

Having considered the report on Health and the environment: addressing the health impact of air pollution,

(PP9) Reaffirming our commitment to the outcome document of the Rio+20 Conference “The future we want”, in which all States Members of the United Nations committed to promoting sustainable development policies that support healthy air quality in the context of sustainable cities and human settlements, and recognized that reducing air pollution leads to positive effects on health;¹

(PP10) Noting with deep concern that indoor and outdoor air pollution are both among the leading avoidable causes of disease and death globally, and the world’s largest single environmental health risk;²

(PP2) Acknowledging that 4.3 million deaths occur each year from exposure to household (indoor) air pollution and that 3.7 million deaths each year are attributable to ambient (outdoor) air pollution, at a high cost to societies;³

(PP3) Aware that exposure to air pollutants, including fine particulate matter, is a leading risk factor for noncommunicable diseases in adults, including ischemic heart disease, stroke, chronic obstructive pulmonary disease, asthma and cancer, and poses a considerable health threat to current and future generations;

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¹ UNEA resolution 1/7, P9.
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NSW State Health Plan Towards 2021** “is committed to building partnerships and working across Government agencies to help keep people healthy and to improve our overall quality of life, support our economy and reduce the burden of chronic illness on the community”.

Clearly, NSW Health while supporting other Government agencies to address the Health effects from Air Pollution, their NSW State Health Plan Towards 2021 should rather deal with the Community Disease consequences of Resident’s exposure to Air Pollution emissions (ie Near Neighbours to Open Cut Coal Mines) by implementing the WHO research findings that directly focus upon “Minimising Air Pollution”; that is by improved Pollution Emission Mitigation guided by improved Health Registries of Air Pollution associated Diseases amongst those Resident’s most vulnerable to Air Pollution exposure in any particular Community.

SSHEG in this submission calls upon NSW Health to be seen as taking the initiative to progressively follow the Peer Reviewed Air Pollution WHO Research announcements and apply these findings in particular in the “Cockfighters Valley Precinct” and especially focus on better protection of School Children Health at Broke, Milbrodale and Jerrys Plains Schools. This means lower Compliance Limits settings for EPA!

Since 2015, the nature of NSW Health Investigations tends to be incorporated into the mix of Government Agencies, such as; EPA Expert Panel (Williamtown RAAF Groundwater) with NSW Chief Scientist and Engineer (Chair), EPA , OEH, DPI, P&C, NSW Health, Clinical Toxicologist, Hydrology, Director Environmental Health, Director Health Protection, and appropriate Specialists Services, Hunter Water, Food
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Authority, Equipment and Government funding.

Meanwhile the WHO focus on “Air Pollution, Particulate Matter – especially PM2.5, and Diesel Exhausts” both short and long term Exposure -Disease Associations are profound, and yet three years later the NSW EPA and OEH appear so far unable to regulate Coal Mining in the Hunter Valley to Monitor and use Mitigation PM2.5 Controls to protect “Near Neighbours who are Occupationallly Exposed to Drifting Mining Pollution Emissions”. Mine Blast Plumes (including colourless) from ANFO Diesel Explosions returning to ground outside Mine Leases is the greatest instantaneous Disease threat for “Near Neighbour Residents” as Mine Complaint records testify.

Typically, the recent NSW EPA “Load Based Licencing” recognises these Mining deficiency in such a way as to discourage its implementation, however if Health was elevated in Government to its rightful place and the extent that short term Residents Disease impacts occurred were formally recognised in Government with its “Polluter Pays Principle”; then Air
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Pollution Health costs now borne by the Federal and State Health systems and the individual Resident’s Health Costs would be expected to be curtailed and overall Community Productivity increased. Refer Extracts from SSHEG Submission “Load Based Licencing” Dec 2016 relating to the “Cockfighters Valley Precinct” Residents - Broke, Fordwick, Milbrodale, Bulga, Warkworth, Jerrys Plains, Maison Dieu, and Gouldville; while Residents in Camberwell Village remain sick with no sign of Government relief or support since 2005. (Extract below)

Cockfighters Valley Precinct  “Near Neighbour Pollution Disease Impacts”
Broke, Milbrodable & Jerrys Plains Schools; Bulga, Warkworth, Gouldsville, Long Point and Camberwell Residents.

This “Cockfighters Valley Precinct” forms a blind ended Valley in the Bulga-Broke area which for South Drifting Air Patterns would tend to “concentrate and stagnate” Mine Pollution trapped along the Bulga Mountain Escapement into a “Pollution Rich Pocket” formed by the Pokolbin Forest blockage just South of Broke Village. The distinct Odour of Mining often permeates the area particularly during early still mornings.
Part A  How then are NSW Health issues represented in the Air Quality and Disease Association Debate in NSW Government in 2017 ?

Five aspects are evident :-

1. NSW Health Web sites are a wealth of information with Environmental Health Fact Sheets, many of which are dated prior to the Oct 2013 WHO declarations on Air Pollution and Particulate Matter, and thus do not reflect the 2016 WHO position on Air Pollution and Resident Disease Impacts.
   Often “Residents web advice” are “Told or forced by Disease responses to breathing outdoor Drifting Air Pollution” to stay indoors as the Health guideline.

2. Human Health Provisions in EPA Acts generally only related to “Incident reporting and Health investigation by NSW Chief Health Officer, and cost recovery”.
   There is no clear Community understanding that Human Health is catered for by Governments in the way EPA Acts covers Healthy Environments (ie Clean Air, Water, Food, Habitat etc). Many think the EPA act includes protection of both Environmental Health and Human Health safeguards, when it only superficially does by Policing Government established Compliance limits.
   Perhaps the NSW EPA should cover both.

   The fact that the EPA limits of compliance are now out of step and Limits too high compared to the latest WHO Disease Impact understanding of Air and Particulate Matter Pollution, thus EPA Policy shows no sign of influencing Pollution Minimisation. Residents Diseases attest to the Pollution Impact with mines saying “we are below out limits”.

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In the meantime, the reconstituted EPA in Feb 2012 is clearly chartered to protect, restore and enhance Healthy ecosystems as the foundation on which healthy communities and healthy economies thrive. “Healthy Environment, Healthy Community, Healthy Business.”

With NSW EPA focused on their Risk based approach, their charter is limited to operate within the limits of Compliance set by Governing bodies, such as NEPM Standards that are progressively reducing. Here the 90% rule apparently still applies with only 90% of the population protected 90% of the time; a legacy of pre Oct 2013 WHO announcements before No Pollution Disease Threshold became evident.

2.2 Risk-based regulation  #\# NSW EPA Compliance Policy 2015

The EPA applies a responsive and risk-based approach to its regulatory functions.

In an environmental context, risk is measured in terms of the likelihood of an event occurring and the risk of harm to human health and the environment.

Applying a risk-based approach helps the EPA make informed regulatory decisions that ensure its compliance and enforcement activities focus on the biggest risks to the environment and health and target those businesses and people least likely to comply. This approach is consistent with the Australian/New Zealand Joint Standard on Risk Management (AS/NZ ISO 31000:2009) and internal risk management policies and procedures.

The EPA considers the following factors when it assesses environmental risk:

- the environmental media involved (air, odour, water and noise emissions, chemicals and waste)
- the processes and operations that may have an impact on the environment and the controls in place to mitigate them
- the sensitivity of the local environment, such as the proximity to residential premises or waterways, or the impacts on air quality
- the compliance history of the business or person being regulated.

Figure 2: The EPA’s environmental risk matrix
3. **Pollution Crisis Health Investigations and Announcements** often related to a Community outcry with a Government Cabinet response; such as West Connect Ventilation, Stockton Orica leakage, Backburning Poor Air Quality, while Mine Blasting went wrong in Hunter Valley is in Newspapers – NSW Health action in Government is missing and Zero Release Blast Hole Stemming should be mandated by both NSW Health and EPA?

The NSW Government continues to undertake a comprehensive range of actions involving input from a number of Government Departments in order to address the key areas of concern. The NSW EPA Williamstown RAAF Groundwater Fire systems Contamination involved **NSW EPA Expert Panel** with NSW Health Directors - Environmental Health and Expert advice from NSW Chief Health Officers Environmental Health Expert Advisory Panel,
4. NSW Chief Health Officer “Air Pollution Expert Advisory Committee (APEAC)” was originally established in March 2010 in response to SSHEG Government submission and Singleton Shire Medical fraternity outrage regarding Open Cut Mining and Power Station Air Pollution Disease impact and especially on Children.

APEAC operated four years until Dec 2013 with investigations and reports detailed on NSW Health, and Environmental Health Web site.

An enhanced Particle Characterisation Study and Air Study in Lower Hunter (NSW EPA Web Site) completed in April 2015 was be repeated in the Upper Hunter Mining Precincts and is now long overdue to investigate the Disease associations reported by residents in Camberwell, Singleton Heights, Maison Dieu and “Cockfighters Valley Precinct which includes Broke, Bulga and Jerrys Plains”.

However no further Health investigations to address ongoing Singleton Shire Air Pollution Health Concerns has occurred, since 2013 with a new “Environmental Health Expert Advisory Panel (EHEAP) formed by August 2015 and considering the Health implications of “Canberra’s Mr Fluffy”, Westconnex Ventilation and EIS Air, Noise and Social Impacts.

5. NSW Health undertakes Health Research on Air Quality and contributes expert scientific knowledge and advice on health aspects of state and national government decisions that affect air quality.

Under a memorandum of understanding, the EPA, OEH and NSW Health work with Centre for Air quality & Health Research and Evaluation (CAR) to initiate new research on the health impacts, risks and costs of air pollution in New South Wales.
Following is an outline of the Williamstown RAAF Contamination Study by the NSW Health Chief Health Officer’s Environmental Health Expert Advisory Panel (EHEAP) which serves to illustrate the way in which specific Community Health matters are evaluated and considered as professional advice in this case to NSW EPA Expert Panel with NSW Chief Scientist and Engineer (Chair) or other Government agencies.

A special meeting of the EHEAP in July 2016 Dr Kathryn Taylor from Hunter New England Health provided an overview of PFAS contamination at Williamtown RAAF Base leading to the Off-Site Human Health Risk Assessment (HHRA) Stage 2B Environmental Investigation undertaken by the Department of Defence.

Environmental Risk Sciences presented a summary of the Draft HHRA provided for comment by the Department of Defence. Key areas of her presentation included: • Exposure pathways • Human health risk calculations • Data used in assessment.

Environmental Health Branch draft response to the HHRA is a comprehensive snapshot of the potential risks to the community and surrounding area. Members acknowledged the variability of the preliminary data presented in the HHRA across the area of investigation, as well as potentially over time, and supported a precautionary approach in messaging to reduce exposure, and the need for ongoing investigation to inform future management actions.

ACTION:

In consultation with the Chief Health Officer, Health Protection NSW (HP NSW) to draft advice to EPA to include in a response to the draft HHRA based on the above discussion.
6. Focus on Health - Summary

- Seventy-ninth World Health Assembly in 2016 Delegates welcomed “a new road map for responding to the adverse health effects of air pollution. The road map outlines actions to be taken between 2016 and 2019, and is organized into 4 categories. ….It sets out to expand the knowledge base, by building and disseminating global evidence and knowledge of the impacts of air pollution on health and the effectiveness of interventions and policies to address it.

- SSHEG in this submission calls upon NSW Health to be seen as taking the initiative to progressively follow the Peer Reviewed Air Pollution WHO Research announcements and apply these findings in particular in the “Cockfighters Valley Precinct” and especially focus on better protection of School Children Health at Broke, Milbrodale and Jerrys Plains Schools. This means lower Compliance Limits settings for EPA!

- NSW EPA and OEH appear so far unable to regulate Coal Mining in the Hunter Valley to Monitor and use Mitigation PM2.5 Controls to protect “Near Neighbours who are Occupationally Exposed to Drifting Mining Pollution Emissions”

- The fact that the EPA limits of compliance are now out of step and Limits too high compared to the latest WHO Disease Impact understanding of Air and Particulate Matter Pollution, thus EPA Policy shows no sign of influencing Pollution Minimisation. Residents Diseases attest to the Pollution Impact with mines saying “we are below out limits”.

- ..
• SSHEG “Focus on Health” endorses NSW EPA Charter
Part B  Why has NSW Heath and NSW EPA been unable to utilise the Minimisation provision of Government Air Pollution Acts, and what guidelines could be used to facilitate their use to “Clean Air in the Hunter Valley”?

Firstly a lead by NSW Health and NSW Environmental Health is needed to set Compliance standards for “Hunter Valley Open Cut Coal Mines Precincts” separate to other Jurisdictions and based on three factors not catered for by existing National Standards. Developments in better targeted Short Term Air Pollution Disease associations Research and progressive World Health initiatives since 2014 provide an ongoing basis for these changes.

I. Mines without Buffer Zones with Residents forced to Coexist beside Open Cut Black Coal Mines.

II. Resident Disease Impact criteria from PM2.5 and PM1.0 (Mine Diesel use), Black Carbon Air Pollution.

III. Demography of “Near Neighbour Residents in terms of Air Pollution Disease Susceptibility. Eg Schools, Elderly, etc

IV. Disease latency from repeated 15 Minute Air Pollution Exposure spikes related to concentrated Mine Pollution Air Drifting patterns in addition to the local Environments Cumulative Air Pollution levels at the time.

V. Quantitative Analysis to Exposure the fallacy that Indoor Air Quality is not related to Outdoor Air Pollution levels, thus how should farmers be protected?
Secondly, recognition by NSW EPA and NSW Health that “Near Neighbours to Open Cut Coal Mines in the Hunter Valley are Occupationally Exposed Persons” would pave the way to better targeted Disease Statistics gathering by location which would then flow on to a solid base for targeted Monitoring by NSW EPA and NSW OEH systems.

The NSW EPA Strategic Plan 2016-19 apparently would support this approach as does their Vision Statement.

Environment Protection Authority Strategic Plan 2016–19

Our vision:
Healthy Environment, Healthy Community, Healthy Business

The six key result areas that deliver on the EPA’s vision, foundational statements, and priorities for 2016-19 are:
- Improved environmental and human health protection
- Innovative waste management
- Effective management of environmental incidents
- Sound strategic and planning advice
- Effective communication and stakeholder engagement
- Exemplary and innovative organisation.

New South Wales is facing significant challenges from population growth and the associated demand for infrastructure, water and energy, increased waste generation and more intensive agriculture. In this context our aim is to maintain and enhance the liveability of New South Wales by preventing harm to the environment and human health.

It does not help however when local issues that local Residents are exposed to, are the subject of NSW EPA Enforcement action that only other areas are considered worthy of the any benefit.

NSW EPA Enforcement undertaking Guidelines?

Enforceable undertakings case studies

Coal & Allied Operations Pty Ltd

In September 2015, Coal & Allied Operations Pty Ltd entered into an enforceable undertaking with the EPA in relation to a water pollution incident near three of its open-cut coal mines near Singleton: Mt Thorley, Warkworth and Hunter Valley Operations. The incident involved the discharge of mine water from a section of pipe used to transfer mine water from underground mine workings.

Coal & Allied agreed to undertake a number of corrective actions and pay $130,000 for regeneration, revegetation and weed management of 10 hectares at the Hunter Wetlands Centre Australia site at Shortland.
Thirdly, SSHEG has consistently outlined that the averaging of Air Monitoring data, as rolling averages, annual and daily averages is a current Industry EPA compliance approach, but that Averaging removes the data intelligence necessary for Mitigation Controls, This is affecting the UHAQMN Alert notification system timing, has affected the UH Characterisation Study, and directly influences the Air Pollution Drifting patterns and the NSW OEH interpretation of PM2.5 being uniform, across the valley. It just as important to recognise the day, afternoon and night time Maximum, minimum, average and standard deviation based on 1-5 minute Air Pollutio
Monitoring Data to understand the actual exposure that Residents are exposed to. Obviously WHO has established needs to based upon PM2.5.

This rolling average PM10 appears suppressed in the presence of PM2.5 as seen in Upper Hunter Particle characterisation study, although an allowance has to be made for this rolling average effect.

![Graph](image)

**Figure 49.** Time series (smoothed with 31-day running window) of the contribution of each factor to the total PM$_{2.5}$ in Muswellbrook

A similar anomaly appears from time to time in the UHAQMN one Hourly average values posted such as illustrated. A better understanding is needed including the Zero Accuracy of these PM10 and PM2.5 at any point in time.
Refer SSHEG Submission “Load Based Licencing: Dec 2016
Extracts below for further detailing regarding Air Monitoring.
While the NSW OEH focus on NE SW Air Drifting Pattern is a move in the right direct to limit the Air Pollution Exposure to Singleton Residents it does nothing to recognise the issues faced in the outlying Rural Communities that have to endure Open Cut Coal Mines as their neighbours.

Thus, it is more appropriate that the spirit of the Recommendation 6 be fleshed out and an open debate of proposed changes and their Healthy Community outcome Measures be sold to the Hunter Valley Community before the Mines commit even more resources with little Health benefit. To date having heard the sketchy Optimisation Plan at CCC the meeting and with no follow up detailing or actual plans sighted, there is little confidence they will succeed.

**Recommendation 6**

That the NSW Environment Protection Authority consult with the new Chief Scientist and Engineer to review the air quality monitoring strategy in the Upper and Lower Hunter, including a survey of international data and policy responses to the issue, and request recommendations to devise a monitoring network that will assist with any knowledge gaps and strengthen the confidence of the community. The response from the NSW Environment Protection Authority should include its advice on the method of funding this monitoring network.

- **Response to recommendation 6:**
  Supported. Significant work has already been undertaken on this issue by both the NSW Government and the private sector. The EPA and the Office of Environment and Heritage (OEH) have also committed to a review of the principles and requirements of air quality monitoring in New South Wales.

- The first stage of the review will focus on the NSW Government’s ambient air quality network, operated by OEH, and the industry funded, government operated air quality monitoring networks in the Upper Hunter and Newcastle local areas. The EPA levies industries which hold an environment protection licence, and that have an impact on Hunter Valley air quality, to pay for the operation of the Upper Hunter and Newcastle networks.

  The EPA and OEH will ask representatives from external stakeholder organisations to be part of an advisory panel to provide input and review key deliverables. This panel will include representatives from each of the following disciplines: air quality research; environmental health research; the community and an air quality monitoring practitioner from another jurisdiction. The Chief Scientist and Engineer has nominated Dr Chris Armstrong, from her office for inclusion on the stakeholder advisory panel.
6. Industry Air Quality Monitoring Optimisation – project update

Mr Bennett explained, for the benefit of new Committee members, the reasons for the EPA's collaborative review of air quality monitoring sites operated by mines.

Before the establishment of the 14-station air quality monitoring network in 2012, mines in the Upper Hunter measured atmospheric particulate matter at 417 air quality monitoring sites. Monitoring methods included 275 dust gauges, 74 high volume samplers that sampled for 24 hours once in every six days, and 47 Tapered Element Oscillating Microbalance (TEOM) monitors that sampled continuously. Analysis and interpretation of monitoring results presented a complex task.

The establishment of the Network provided on-line continuous monitoring of air quality, using TEOMs strategically located in larger and smaller population centres, as well as at diagnostic locations closer to mining activity and background locations north and south of the main mining area.

The EPA is proposing that mines replace their older technology dust gauges and high volume samplers with on-line continuous monitors, such as TEOMs, located upwind and downwind of the main dust generating activities, and in alignment with the general northwest-southeast wind flows along the valley.

Over the last six months, the EPA has progressed discussions with individual mines to find an optimum monitoring program for each mine. While some mines currently operate TEOMs or can adapt easily, other mine sites present challenges for accessibility and power supply.

The monitoring optimisation program aims to combine the monitoring for the mine’s air quality management plan, required by the Department of Planning and Environment as part of the conditions of consent, with the monitoring required by the EPA's dust stop program.

In response to questions, Mr Bennett noted the following key points:

- Monitoring results from mine operated sites are reported on the mines' websites,
- Currently, elevated particle levels at mine-operated monitors on private property cannot be attributed to emissions from any particular mine. Moving monitors onto land within the mining lease and closer to mining activity aims to ensure that mines are more accountable for their particle emissions.
- The EPA will regularly update the Committee on the progress of the optimisation program.
9. EPA update on Dust Stop program and optimising mine operated air quality monitoring

The EPA Dust Stop program required Hunter Valley coal mines to undertake a series of pollution reduction programs (PRPs) to reduce fugitive dust emissions from mining activity. ● PRP 1 required mines operations to achieve 80% control of wheel generated dust ● PRP 2 required mines to modify operations in adverse weather, that is, conditions most likely to increase dust ● PRP 3 required mines to investigate dust reduction when handling overburden, that is the rock material overlying the coal seams ● PRP 4 required mines to estimate their surface areas exposed to wind erosion. The EPA is investigating ways of standardising the triggers for recognising adverse weather and the mines’ responses. The EPA has engaged the OEH to identify the key weather parameters on days that generate adverse dust levels. Following the establishment of the Upper Hunter Air Quality Monitoring Network (UHAQMN), which provided continuous data on air quality experienced in smaller communities and larger population centres, the EPA and the Department of Planning committed to a review of existing air monitoring by mines. The review presented an opportunity to update monitoring techniques and move the focus of mine-operated monitoring, away from monitoring of particle levels near receiver populations, towards monitoring the changes in particle levels upwind and downwind of mining activity. Continuous monitoring of PM10 to the northwest and southeast of each mine, aligned with the dominant wind directions in the valley, would allow quantification of the mine’s individual contributions to particle levels. The EPA intends to use the information to guide regulatory action to reduce levels during adverse weather conditions. The EPA has send draft notices to the licensees for the mines, proposing the change to monitoring conditions on environment protections licences, to require monitoring of upwind and downwind PM10 levels. The EPA will attend the mine’s community consultative committees to discuss the detail of the changes. Mr Tate commended the cooperative approach demonstrated by the EPA, the Department of Planning and the mines to improving air quality.

7. EPA update on progress toward optimising coal mine operated air quality monitoring for better dust management

Mr Bennett noted that the wind roses in the Air Quality in the Upper Hunter: Autumn 2015 showed the predominant northwest - southwest direction of prevailing air flows along the valley. The EPA is working with mines to locate mine-operated air quality monitoring instruments in a northwest - southwest alignment, upwind and down with of mining activity, to monitor the contribution of the mining activity to dust levels. Mining sites with steep terrain or lack of power supply may present problems for locating monitors. ….In 2016, the EPA will update the mines’ environment protection licences to record the new monitoring locations. The EPA is investigating how to reduce the number of days in Singleton with particle levels over the criterion of 50 µg/m³. The EPA’s analysis of network data for Singleton suggested that days with levels above 50 µg/m³ occurred during adverse weather conditions, usually with temperatures above 27 °C. Dust may also be transported into the valley from outside the region. The EPA is investigating methods to predict dust levels in Singleton, with a view to requiring mines to modify operations to reduce dust on days predicted to have elevated particle levels. For example, mines may be required to demonstrate consideration of temperature and wind direction when planning daily mining activities. The Chair thanked Mr Bennett and commended the cooperation between the EPA and the mines.
UPPER HUNTER AIR QUALITY ADVISORY COMMITTEE (UHAQAC) MEETING MINUTES – Meeting 21
Date: 28 July 2016

CCC only brief info and no actual planned locations or types

10. EPA update on Dust Stop program and optimising mine operated air quality monitoring
Mr Bennett reminded the Committee of the stages in the EPA’s Dust Stop program, which commenced five years ago, to minimise mine dust emissions across NSW.
Mr Bennett reminded the Committee of the principles driving the EPA’s plans to optimise mine site air quality monitoring and the benefits for air quality management. The establishment of the industryfunded, government-operated UHAQMN, provided monitoring in receiving areas. The mine monitoring optimisation program aims to move mine-operated monitors nearer to mines, to monitor emissions from mining activity. Replacing older monitoring instruments with continuous PM10 monitors, aligned with the dominant wind direction, will allow measurement of the mine’s individual contributions to PM10 levels. The difference in ambient PM10 levels, upwind and downwind of the mine site and the comparison between sites, will assist the EPA’s regulation of dust in the Upper Hunter.

The EPA issued draft notices to 17 mines, proposing the relevant changes to monitoring conditions on their environment protection licences. Mr Bennett noted that five of the mines’ community consultative committees (CCCs) had discussed the proposed optimisation. Feedback from CCCs expressed cautious acceptance and acknowledged the benefits of mine-specific monitoring. The EPA recently finalised the new licence variations with mines at Bulga and Angola. He reminded the Committee that the DPE and the EPA signed a Memorandum of Understanding with the mines to negotiate down-sizing of mine-operated monitoring, following the commissioning of the UHAQMN. Mr Knight advised that the DPE encouraged mines to submit modifications, seeking to retain a limited number of DDGs, such as at residential properties, to address community concerns.

UPPER HUNTER AIR QUALITY ADVISORY COMMITTEE (UHAQAC) MEETING MINUTES – Meeting 20
Date: 28 April 2016

DECCW files for SSHEG objections to 14 UHAQMN, especially PM2.5 being Homologous throughout the Valley
Mr Bennett explained that the original design of the network focused on PM10 levels, which varied over shorter distances than PM2.5 levels. The smaller PM2.5 particles stayed suspended longer than PM10 particles, travelled further and became well mixed in the air. Therefore, PM2.5 monitoring was considered to require a less dense network of monitors. More recently, the Upper Hunter Valley Particle Characterisation Study provided new evidence that local particle sources, such as wood heaters, contributed to elevated PM2.5 levels in winter. In response, the EPA was working with local councils and communities to reduce wood smoke in the Upper Hunter. If wood heaters were used widely in small communities, then the most appropriate action for governments was to promote more efficient wood heating. Mr Krey thanked Mr Bennett and advised that he could not accept the EPA’s reasoning as an adequate explanation to justify why small communities could not have PM2.5 monitors. Mr Bennett advised that the EPA was required by legislation to review the effectiveness of the network in 2017. As part of the review, the EPA would offer the Committee the opportunity to advise on changes to the network. The EPA would consider the need and cost effectiveness of any recommendations for improvement……..The EPA also would negotiate with the mines to replace older monitoring instruments with continuous PM10 monitors, aligned with the dominant wind direction. This approach would allow quantification of the mine’s individual contributions to PM10 levels.
Part C  General response to Clean Air Consultative Paper

♦ Industry

➢ Gas fired Power Stations in Hunter Valley
➢ Convert Small Industries to Electrical Power away from Gas
➢ Mine Precincts with separate Standards

♦ Transport

➢ Heavy Vehicles – Engine efficiency & Pollution Suppression
➢ Small and Light Trucks to Gas or Gasoline-Electric Hybrid
➢ Cars as Gas-Electric Hybrids or Electric, phase out Diesel engines.

♦ Household

➢ Preferable Solar Water, Gas Water Heaters for Units
➢ Split Reverse Cycle Electric Room Heater & Cooling
➢ Phase out Room Gas Heaters, and Fuel burners
➢ Solar Electricity with Energy Storage
➢ Incorporate Climate Science Energy Saver Household items such as Bathroom Heat Lamps for elderly.

♦ Managing Exposure and Impacts

➢ Consider Animal buffer zones to thin foliage in neighbouring bush to urban fire risk areas.
➢ Develop Fire retardant trees as both Noise & Air Pollution Mitigation Shields.
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- **NSW Air Quality Monitoring Network**

  - Focus on Real Time (15 Minute) Screen Visualisation of Zones.
  - Classify Air Quality Zones, such as City, Urban Fringe – Western Sydney, Industrial – Newcastle, Illawarra, Urban Rural Wagga, Rural Mining Precincts - Hunter Valley, Lithgow, Rural Cotton, etc
  - Zone mix to determine Air Monitoring Metrics, ie City urban – European guide, Rural Vegetation based pollens, spores calendar, fires, chemical sprays.
  - Zone Air Quality Gases, Scents, Vapours, Primary and Secondary Particulates Characterisation and Human Disease propensity determines the Air Monitoring metrics.
  - Rural Mine Precinct Zones, Hunter Valley Inversion and Temperature rise smog impact, ground Ozone, Power Station Dioxin VOC,s and Fly Ash entrained in drifting Stack Plumes SOx, NOx, COx, PM2.5 with Mine Diesel PM1.0 and Black Carbon.
  - Air entrained Pollution Particle Characterisation Studies, Chemical Transport Modelling, Characterisation of Dust Deposition and Energy Dispersion X Ray Spectrum of Elements identification.
  - Specifically, Black Carbon Monitoring is added to the list of Key Pollutants below that appears in the Hunter Valley from the large quantities of Diesel fuel used in Open Cut Coal Mining. It also precipitates out at night on tin roofs and will add to the contamination of Rainwater Tanks used throughout the Hunter Valley for Drinking, cooking and personal washing.
### KEY AIR POLLUTANTS, NATIONAL STANDARDS AND HEALTH EFFECTS

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<thead>
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<th>Pollutant and Highest Concentrations Standards Allow</th>
<th>Does NSW Meet Standards? Health Effects Linked to Pollutant</th>
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<tr>
<td><strong>Particles as PM&lt;sub&gt;2.5&lt;/sub&gt;</strong></td>
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<td>• 50 µg/m³ (micrograms per cubic metre) averaged over 24 hours</td>
<td>Effects related to short-term exposure</td>
</tr>
<tr>
<td>• 25 µg/m³ averaged over one year</td>
<td>• Increased hospitalisations</td>
</tr>
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<td></td>
<td>• Increased mortality</td>
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<tr>
<td><strong>Particles as PM&lt;sub&gt;10&lt;/sub&gt;</strong></td>
<td></td>
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<tr>
<td>• 25 µg/m³ averaged over 24 hours (target 20 µg/m³ from 2022)</td>
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<tr>
<td>• 8 µg/m³ over one year (target 7 µg/m³ from 2015)</td>
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| **Ozone**                                            |                                                          |
| • 0.10 ppm (parts per million) averaged over one hour | Effects related to short-term exposure                  |
| • 0.05 ppm averaged over four hours                  | • Increased hospitalisations                            |
|                                                    | • Increased mortality                                   |

| **Nitrogen Dioxide**                                 |                                                          |
| • 0.12 ppm averaged over one hour                    | Effects related to short-term exposure                  |
| • 0.03 ppm averaged over one year                    | • Effects on lung function, especially in asthmatics    |
|                                                    | • Increased hospitalisations                            |
|                                                    | • Increased mortality                                   |

| **Sulfur Dioxide**                                   |                                                          |
| • 0.20 ppm averaged over one hour                    | Effects related to short-term exposure                  |
| • 0.08 ppm averaged over 24 hours                    | • Effects on lung function, especially in asthmatics    |
| • 0.02 ppm averaged over one year                    | • Increased hospitalisations                            |
|                                                    | • Increased mortality                                   |

| **Carbon Monoxide**                                  |                                                          |
| • 9.0 ppm averaged over eight hours                  | Met throughout NSW                                      |

| **Lead**                                             |                                                          |
| • 0.50 µg/m³ averaged over one year                  | Met throughout NSW                                      |

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**Chairman, VMO, 2001; Morgan et al., 2013.**
Extracts from SSHEG Submission “Load Based Licencing” Dec 2016 relating to the “Cockfighters Valley Precinct” Residents.

The Singleton Shire Healthy Environment Group involvement in the Hunter Valley Coexistence Debate is squarely focused on re-establishing the balance between Employment and Community Healthy Living. The Imbalance has resulted from the over-zealous expansion of Open Cut Mining since 2007 in an otherwise Rural Environment.

SSHEG has been working since 2009 with NSW Government Authorities (particularly NSW Environmental Health) and the Hunter Valley Mining Dialogue to better target and refine the Pollution – Human Disease Short Term (15 Minute) Exposure understanding with a view to further enhance Pollution Emission Mitigation Controls in the Hunter Valley.

The fact that Open Cut Mines have been approved to operate as Neighbours to Rural Villages (some with Primary Schools) and farming enterprises and their families is Fundamental to this understanding; this forces Residents to sell until the situation reaches the point such as in the Bulga Village in 2012 where Government Authorities proposed the moving of the entire Heritage Village to establish Buffer zones that should have been established in the first place.

SSHEG considers “Near Neighbours to Open Cut Coal Mining as Occupationally Exposed persons to Mining; and one such farmer is confirmed with Dusting on the Lungs, while Miners pride themselves that this Disease has been overcome in the Mining Industry.

This submission identifies the Community view of the Polluters as they impact on the Health of the Singleton Shire Community, prioritised in four regions from the most significant to the lesser, where air Drifting Patterns mix Pollutants between these regions.
The four regions are:-

1. Coexistence with Villages, Primary Schools, Farmers, Retirees and Mines in Broke – Bulga Microvalley (Figure 1). **RED**

2. Concentrated Mining and Power Stations Region between Muswellbrook and Singleton now devoid of Ravensworth Village and only remnants of Camberwell Village residents, some with enduring diseases. **BLUE**

3. Major Population centres, Muswellbrook, Singleton impacted by coal train and Highway Diesel Exhausts. **GREEN**

4. Overall Hunter Valley Air Pollution Cocktail impacted by inversion layers and Power Station Pollution. **YELLOW**

**Cockfighters Valley Precinct**  “Near Neighbour Pollution Disease Impacts”

Broke, Milbrodale & Jerrys Plains Schools; Bulga, Warkworth, Gouldsville, Long Point and Camberwell Residents.
“The Cockfighter Creek” flows north between the Pokolbin and Wollomi Forests along the Bulge Mountain into the Hunter River through a picturesque Rural Valley with the Villages of Broke, Fordwich, Milbrodale and Bulga, with Vineyards and Horse Studs. (Figure 1)

Figure 1 “Cockfighter Creek Micro Valley” RED
Showing the Resident Community exposed to Mine Dust and Noise Pollution
These Hunter Valley South Drifting Air Patterns shown on Figure 2 first pick up Pollution from Coal Mines and two Power Stations near Muswellbrook on their way to the “Cockfighter Micro Valley” and this enriched Polluted Air then passes over a line of orientation of five Open Cut Coal Mines and two Underground Coal Mines within this Micro Valley, where Broke School Children would be particularly vulnerable to this cumulative Pollution impact.

Figure 2    Hunter Valley South Drifting Air pollution Patterns

The Micro Valley scenario of concern relates to Meteorological conditions where this South Drifting Air is drawn along and towards the Escapement aided by the natural tendency to be drawn firstly to the south west up the Milbrodale Brook Valley and then near Broke Village drawn also up the Wollombi Brook Valley between the Pokolbin and Targo State Forest Escapements as indicated on Figure 1. Thus the tendency especially under light wind conditions is for Airborne Mine Pollution to also drift West while nominally South Drifting Air, making Broke Villagers particularly vulnerable.
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Below is an example of the Air Pollution drifting Patterns related to Bulga Mines near Broke Village at the southern end of the Cockfighters Valley Precinct showing Seasonal Meteorological Station Data. Although the Wind Direction is Averaged over a three monthly period (Seasonal) there remains sufficient indication of Mine Air Pollution Drifting Patterns passing over Residents along the Valley.

The “Cumulative Pollution Scenario of Concern” is theorised for South Drifting Air entering the Hunter Valley over the Great Dividing Range to the West at around PM10.5ug/m3, which rises to 15ug/m3 on leaving Muswellbrook Pollution, where it moves over Hunter Valley Operations Open Cut Mines perhaps rising to 25ug/m3 as it enters the more concentrated Mining Zone in the Bulga-Broke Micro Valley; - firstly the Wambo Open Cut and Underground Mines, Bulga Open Cut and Underground Mines, Warkworth Open Cut Mine, Mt Thorley Open Cut Mine, Bulga Open Cut and Underground Mine, where PM10 in the Broke Village with School would tend to fluctuate as a result from 50 to 75ug/m3 or above. A similar scenario exists for cumulative PM2.5 Air Pollution Drifting Patterns.

In recent years, in addition to the continuing threat of Drifting Mine Blasting Plumes, the implementation of Underground Mine “Methane” drainage, Ventilation Conversion, Flaring, and Power Generation all now along with Coal Seam Gas Flaring activities in the past in the area introduces the added Health Risk from Products of Combustion. The Explosive Risk in Buildings, Wells etc needs also to be considered.

Figure 1: UHAQMN monitor locations relative to the Bulga Complex

Bulga Mine AEMR 2015
SSHEG therefore identifies that additional Real Time Air Pollution Monitoring (TSP, PM10 and PM2.5) with Gases and Particulates Matter Sampling and Analysis located in the Broke School Environs is overdue for inclusion specifically as Bulga Compliance Licence Conditions to be used for Real Time Pollution Mitigation Controls at both the Bulga Open Cut and Bulga Underground Mine Operations.

The extent of the World Health Organisation deliberations of the Global Burden of Non Communicable Diseases placed Air Pollution and Particulate Matter carcinogenicity findings on the same Priority Health Page as the 2008 Singleton Shire Community associations of Air Pollution and Residents Diseases. More importantly, since the WHO Carcinogenicity declaration in Oct 2013, the WHO by May 2015 focused on Minimisation with its “Roadmap to Answers to the very Diseases identified in 2008 in the Hunter Valley by Singleton Residents and children particularly for Near Neighbours Families to Open Cut Mining”.

While the NSW EPA LBL Objectives as outlined in Box 1-1 above suggest incentives to reduce the load of Pollutants emitted in Hunter Valley Mines, currently the Mines consider its their right to operate as long as they Comply with their Annual and Daily Average PM10 levels.

With respect to the more appropriate Community Disease associated Particulate Matter PM2.5, NSW EPA has not been able to come to terms in the Hunter Valley with this change in International Pollution Monitoring Practices and the Chemical Speciation, Particulate Sampling and Microscopy Analysis that defines modern Air Quality and Community Health understanding. NSW EPA LBL Monitoring and Mitigation initiatives of PM2.5 is needed.

The Hunter Valley Atmosphere is a mixture of Air constituent Gases - O2 - N2 – Ar – water vapour - trace gases; Pollutants - Gases , Ozone, Dioxin – Vapours - liquid droplets – Composite Particulates – Fly Ash, VOC’s - aerosols, Pollens, Spores, Fungi, and other Biological materials and Organisms.

The Time of Day Measurement variations of each component part of the Air is the mixture the Community breaths; PM40, PM10, PM2.5, PM1 & PM0.1, and it is not unreasonable to expect the above constituent Measurements would form the level of detail knowledge needed to establish a definitive Air Composition and Speciation Analysis, from which the Health Risk considerations may be evaluated, leading to better targeted Pollution Mitigation Controls to safeguard the Health of the Community.
Finally, an enhanced Particle Characterisation Study and Air Study in Lower Hunter (NSW EPA Web Site) completed in April 2015 was be repeated in the Upper Hunter Mining Precincts and is now long overdue to investigate the Disease associations reported by residents in Camberwell, Singleton Heights, Maison Dieu and “Cockfighters Valley Precinct which includes Broke, Bulga and Jerrys Plains”.

Thanking you in anticipation of your acknowledgement

Dr Neville Hodkinson PhD
Singleton Shire Healthy Environment Group
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Simple steps to protect your health

In Australia, state and federal governments are working closely together to keep the air as clean as possible. There are also steps individuals can take to reduce air pollution in the community such as choosing ‘cleaner’ domestic heaters and reducing the number of trips in the car.

In order to limit your exposure to air pollution, there are a number of simple steps you can take such as:

- Check your local air quality index (AQI) to find information on current air pollution levels in your area
- Know when and where air pollution may be bad
  - Ozone is often worst on hot summer days, especially in the afternoon and early evenings
  - Particle pollution can be bad any time of year. It can be especially bad when the weather is calm, allowing air pollution to build up. Particle levels can be high near busy roads, during rush hour, and when there is smoke in the air from wood heaters, hazard reduction activities or during bush fires. Dust storms will also generate high levels of particle pollution.
- Avoid exercising near busy roads and industrial areas. If you experience symptoms, or tend to be susceptible to air pollution consider the following:
  - Substitute your exercise with a less intense activity (e.g. walk instead of jog)
  - Reduce the time you are exercising outdoors
  - In summer, plan your most vigorous activities for the morning
  - See your doctor if symptoms are severe or do not settle after reducing exposure
- Reduce your air pollution inside your home
  - Don’t smoke indoors
  - Regularly ventilate your home to remove indoor pollutants and build up of moisture. Turn on exhaust fans, particularly when bathing, showering, cooking, doing laundry and drying clothes.
  - Don’t use wood-fired stoves and wood-burning heaters (fireplaces) in your home if possible. If you do use a wood-burning heater, follow the recommendations on our fact sheet on wood-burning heaters to minimise air pollution.
  - Don’t use unvented gas heaters if possible. If you do use an unvented gas heater, follow the recommendations on our fact sheet on unvented gas heaters
  - Install a kitchen exhaust fan above your gas cook top if possible
  - Consider limiting burning candles and incense
  - Don’t use ozone generators for managing indoor air pollution or odour problems. Read our fact sheet on ozone generators.
- If you suffer from asthma, other respiratory conditions such as chronic bronchitis (also called chronic obstructive pulmonary disease or COPD), or cardiovascular disease, make sure you have your reliever medicine handy. For more information please see the section ‘Who is affected by air pollution?’

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Page Updated: Tuesday 30 April 2013
Page Owner: Environmental Health
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Who is affected by air pollution?

Everyone can be affected by air pollution especially when exposed over prolonged periods of time. However, some groups of people may be more susceptible than others to exposure to air pollution. Different pollutants may affect these groups differently. For example, several of the pollutants may trigger symptoms in people with asthma, whereas people with heart disease are most likely to be affected by particle pollution.

The following people are more likely to be affected:

- People with asthma: exposure to air pollution might worsen your symptoms or trigger asthma attacks. Use your reliever medication and check you have an up to date asthma action plan.

- People with lung disease, such as chronic bronchitis (also called chronic obstructive pulmonary disease or COPD): exposure to air pollution might worsen your symptoms. Use your reliever medication and see your doctor if symptoms don’t resolve.

- People with cardiovascular (heart) disease: exposure to air pollution might induce symptoms such as palpitations, chest pain or shortness of breath. If your symptoms persist or are severe, you should seek urgent medical advice from your doctor or nearest Emergency Department.

People can be more sensitive to some type of air pollution in certain life stages:

- Unborn babies (pregnant women): exposure to high levels of air pollution over longer time periods (a weeks to months) may be linked to adverse pregnancy outcomes such as reduced birth weight or preterm birth.

- Children are likely to be more vulnerable to exposure to air pollution compared to adults for the following reasons:
  - Their lungs are still growing and developing
  - Their immune and metabolic systems are still developing
  - They suffer from frequent respiratory infections
  - They are more active outdoors than adults and therefore breathe in higher doses of outdoor pollutants.

- However, most evidence suggests that this is more likely in situations when concentrations are elevated over long periods of time and not just over a few days. There is so far no evidence that short-term increases in air pollution have permanent effects on the developing lung.

Some children are especially vulnerable. This includes children with underlying chronic lung conditions such as asthma and cystic fibrosis.

- Older adults: Older people are more likely to be affected by air pollution, perhaps due to generally weaker immune systems, or undiagnosed respiratory or cardiovascular health conditions. As people age, their bodies are less able to compensate for the effects of environmental hazards. Air pollution can aggravate heart disease and stroke, lung diseases such as chronic bronchitis (also called chronic obstructive pulmonary disease or COPD) and asthma.
World Health Assembly closes, passing resolutions on air pollution and epilepsy

New release

26 MAY 2015 | GENEVA - The World Health Assembly closed today, with Director-General Dr Margaret Chan noting that it had passed several “landmark resolutions and decisions”. Three new resolutions were passed today: one on air pollution, one on epilepsy and one laying out the next steps in finalizing a framework of engagement with non-State actors.

Air pollution

Delegates at the World Health Assembly adopted a resolution to address the health impacts of air pollution – the world’s largest single environmental health risk. Every year 4.3 million deaths occur from exposure to indoor air pollution and 3.7 million deaths are attributable to outdoor air pollution. This was the first time the Health Assembly had debated the topic.

The resolution highlights the key role national health authorities need to play in raising awareness about the potential to save lives and reduce health costs, if air pollution is addressed effectively. It also stresses the need for strong cooperation between different sectors and integration of health concerns into all national, regional and local air pollution-related policies. It urges Member States to develop air quality monitoring systems and health registries to improve surveillance for all illnesses related to air pollution; promote clean cooking, heating and lighting technologies and fuels; and strengthen international transfer of expertise, technologies and scientific data in the field of air pollution.