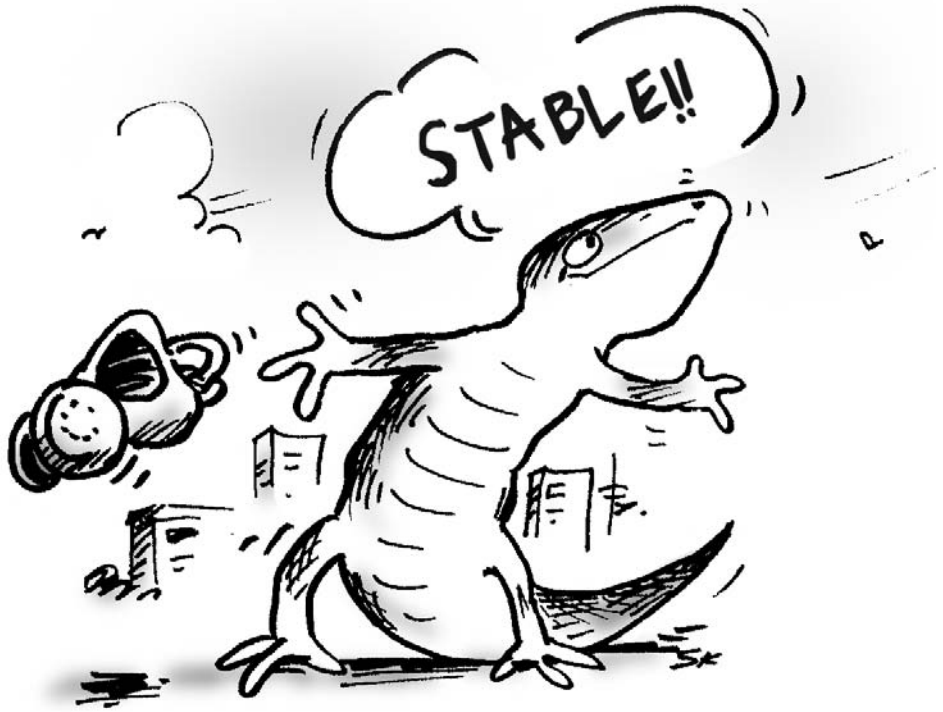
Fact Sheet

1 Air Quality

Atmosphere



Air Quality Issues

Air quality relates to pollution levels in our air. Some of the things we do, such as driving cars, can lead to an increase in the concentration of gases and particles released into the air. These can be harmful to humans and the environment. Motor vehicles are the biggest cause of air pollution in South Australia, yet we are becoming more and more dependent on these vehicles. Industry, business and activities at home, such as burning wood for heat, are other major causes of air pollution.

The Environment Protection Authority (EPA) monitors air quality in many parts of Adelaide and the rural areas of Mount Gambier, Whyalla, Port Augusta and Port Pirie. This means we can check how our air quality compares with the national standards which have been developed to improve the quality of the air that we breathe.

The South Australian Air Quality Management Plan is currently being developed and will be completed in 2009. This plan will help to guide the monitoring and management of air quality in South Australia within the community, industry and government agencies.

> "The potential for increase in air pollutants is currently of greatest concern in Adelaide."

Trends

Ambient air quality data must be long-term and comparable to determine accurate trends. Current monitoring programs have not been in place long enough to determine such trends in all cases.

Air Quality

What is the Current Air Quality Situation?

The National Environment Protection Measure for Air Quality (NEPM) has set health protection standards and goals to be achieved to improve air quality. The NEPM standards are the indicators used to assess air quality in South Australia, and the table below gives us a picture of air quality in our state. The NEPM is currently undergoing a review and new standards and goals will be released in 2008.

Pollutant	Current Situation
Lead	There has been a decline in lead levels in Adelaide. These levels are now well below the NEPM standard and the EPA stopped monitoring for lead in the Adelaide region in June 2003. Lead levels have decreased due to the forced introduction of unleaded petrol in 1986, and then the reduction in the lead content of petrol followed by a phase-out of its supply. Petrol containing lead has not been sold since 2000. Lead is the principal environmental concern for the Port Pirie community and the NEPM standards have been exceeded in several of the last five years.
Particulate matter	Particulate matter is airborne dust or solids. Some industrial processes can create dust, or it can come from dust storms or bush fires. Particulate matter is often categorised by the size of the particles. PM_{10} refers to particles that are less than 10 micrometres (one thousandth of a millimetre) in diameter, while $PM_{2.5}$ refers to particles smaller than 2.5 micrometres. Particulate matter is monitored in Adelaide, Whyalla and Port Pirie. In metropolitan Adelaide, PM_{10} levels exceeded the NEPM goal level at one site in four of the last five years. $PM_{2.5}$ has also been found to be a problem in metropolitan Adelaide. In Port Pirie continuous monitoring of air quality has shown an increasing number of days where the NEPM PM_{10} Air Standards are exceeded. A similar trend is seen in Whyalla where airborne dust (PM_{10}) is also a problem.
Carbon monoxide	Carbon monoxide comes from older cars that do not have a catalytic converter. Over the past five years, carbon monoxide levels have always been below the NEPM standard, however the levels are currently monitored at Elizabeth and an additional monitoring site has been selected in the Adelaide CBD. Monitoring at the new site is planned for 2008.
Sulphur dioxide	High levels of sulphur dioxide (SO_2) in the air can cause acid rain. SO_2 levels have not exceeded the NEPM standards in Adelaide since monitoring began in 2002. In Port Pirie, the levels of SO_2 have been higher than the NEPM standard at least 29 times a year since 2004.
Ground level ozone	When ozone is on the ground (rather than in the ozone layer) it is an air pollutant and contributes to smog over large cities. On only one occasion has the level of ozone been greater than the NEPM standard in Adelaide - this occurred on the 25th of January 2006 and is thought to be caused by emissions from bushfires in Victoria which travelled in to the air above Adelaide.
Nitrogen dioxide	No levels greater than the NEPM standard have been recorded since 1990.

Air Quality

Emerging Air Quality Issues

Air toxics

Air toxics are a group of air pollutants present in the air in low concentrations, but toxic enough to be a risk to human health and the environment.

Fine particles

Particles less than 2.5 micrometres in diameter are called fine particles ($PM_{2.5}$). These fine particles can be inhaled deeper into the lungs than larger particles and can cause ill health.

Odour

Odours (or smells) are a problem in some areas, particularly places close to industrial facilities, intensive animal farming or composting facilities.

> "The use of firewood for home heating is cause for concern"

Firewood

The use of firewood for home heating is cause for concern. Wood smoke contains $PM_{2.5}$ and toxic chemicals similar to those in cigarette smoke and is thought to lead to lung disease and cancer.

Indoor air quality

Indoor air quality is also an important issue with emissions from products such as tobacco, solvents, disinfectants, paint strippers, glues and air fresheners.

Responding to Air Quality Issues

Air quality in metropolitan Adelaide, Port Augusta and Port Pirie has been maintained over the last five years, but has not improved. Further measures are needed to achieve the goal of improving air quality in the Adelaide airshed and regional centres of South Australia. In Port Pirie, lead and sulphur dioxide levels are of concern, while in Whyalla, the OneSteel factory has created high particulate (airborne dust) levels.

To address these concerns, the government has:

- worked with lead smelter NyrStar's owners in Port Pirie to reduce smelter emissions and lead exposure to the community. A new 'tenby10' project was launched to address children's exposure to lead, and
- implemented 'SmokeWatch' with the aim of reducing the amount of wood smoke from household wood-heaters, and promoting efficient wood-heating practices.

Information about emissions of the most important air pollutants is kept on an internet database called the **National Pollutant Inventory (NPI)**. This database provides information about which places and areas these pollutants are coming from and how much is being emitted, as well as changes over time. The NPI can be accessed at **www.npi.gov.au.**

Changes in vehicle numbers and fuel consumption are likely to have a significant impact on air quality, as motor vehicles are one of the largest sources of air emissions. An increase in the number of people using motor vehicles is likely if the population target for South Australia is to be met in the future. Introducing biofuels, such as biodiesel and ethanol blended petrol, could decrease some emissions, but others may increase. The full impact of biofuels on air quality is not yet known.

Taking Action for Air Quality

See if you can reduce the amount of air pollution you release by:

- riding in a car less or sharing your car trip with others (car pooling),
- walking or catching a bus instead of using the car,
- putting on more warm clothing before using a heater,
- switching off lights when you leave the room, and
- taking the SmokeWatch challenge!

http://www.epa.sa.gov.au/smokewatch.html

Impacts of

Poor Air Quality

Biodiversity

Some pollutants in the air can also be deposited in soil or water and degrade terrestrial, marine and aquatic environments.

Economic

Air quality impacts on health costs, workforce productivity and tourism. It can also damage monuments, buildings and cars. A study on the impact of particulate matter on health costs is currently underway in South Australia. It is anticipated that the health cost will reach hundreds of millions of dollars.

Health

Poor air quality can limit the ability of people to go outside and enjoy their environment. Too much carbon dioxide can make it difficult to absorb oxygen into our bodies. Nitrogen dioxide, sulphur dioxide, ozone and fine particulate matter can lead to respiratory problems and possibly higher death rates.

Air Quality

Attention!!

The NyrStar lead smelter in Port Pirie is the world's largest lead smelter and refinery. The NyrStar smelter is the source of the biggest air quality issue in South Australia, and by far the most important environmental problem for the Port Pirie community. Lead and sulphur dioxide levels in Port Pirie have exceeded the NEPM standards on many occasions.

In 2006, a new program 'tenby10' was initiated. Its goal is to have at least 95% of children under four years of age in Port Pirie with blood lead levels less than those recommended. The National Health and Medical Council Guideline has set a recommended level of 10 micrograms of lead per 100 millilitres of blood. At the end of June 2007 it was estimated that 48% of young children had blood lead levels higher than recommended compared to 53% reported in 2003.

> "The NyrStar lead smelter in Port Pirie is the world's largest lead smelter and refinery."

Research Ideas
about Air Quality

1 What is meant by 'air quality'?

2 How does air quality affect some ecosystems?

3 How can reduced air quality affect our health?

4 What impact do you have on air quality?

5 What can we do to reduce our impact on air quality?

6 What does the State of the Environment report tell us about air quality in South Australia?

7 What might happen in the future if things continue as they are?

8 What are government, business and industry doing to address air quality issues?

Resources

For more detailed information on the issue and actions you can take see the State of the Environment report for South Australia 2008.

This is available at:
www.epa.sa.gov.au/soe

This fact sheet is part of a set of 20 fact sheets about the key environmental issues identified in the State of the Environment report 2008, produced for the Environment Reporting Education Resource. You can access the fact sheets and learn more about taking action for the environment at the Education Resource website: www.epa.sa.gov.au/soe.
For more information call the Environmental Education Unit of the Department for Environment and Heritage (08) 8463 3911.

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