KEY ISSUES AND FINDINGS

Queensland's air quality meets national air quality standards with only infrequent exceptions at certain times and places. The potential for air pollution in the State is limited by a low and scattered population and the existence of few major industrialised centres. The south-east Queensland airshed contains Australia's fastest growing region, supporting about 1.9 million people, or 57 percent of the State's population.

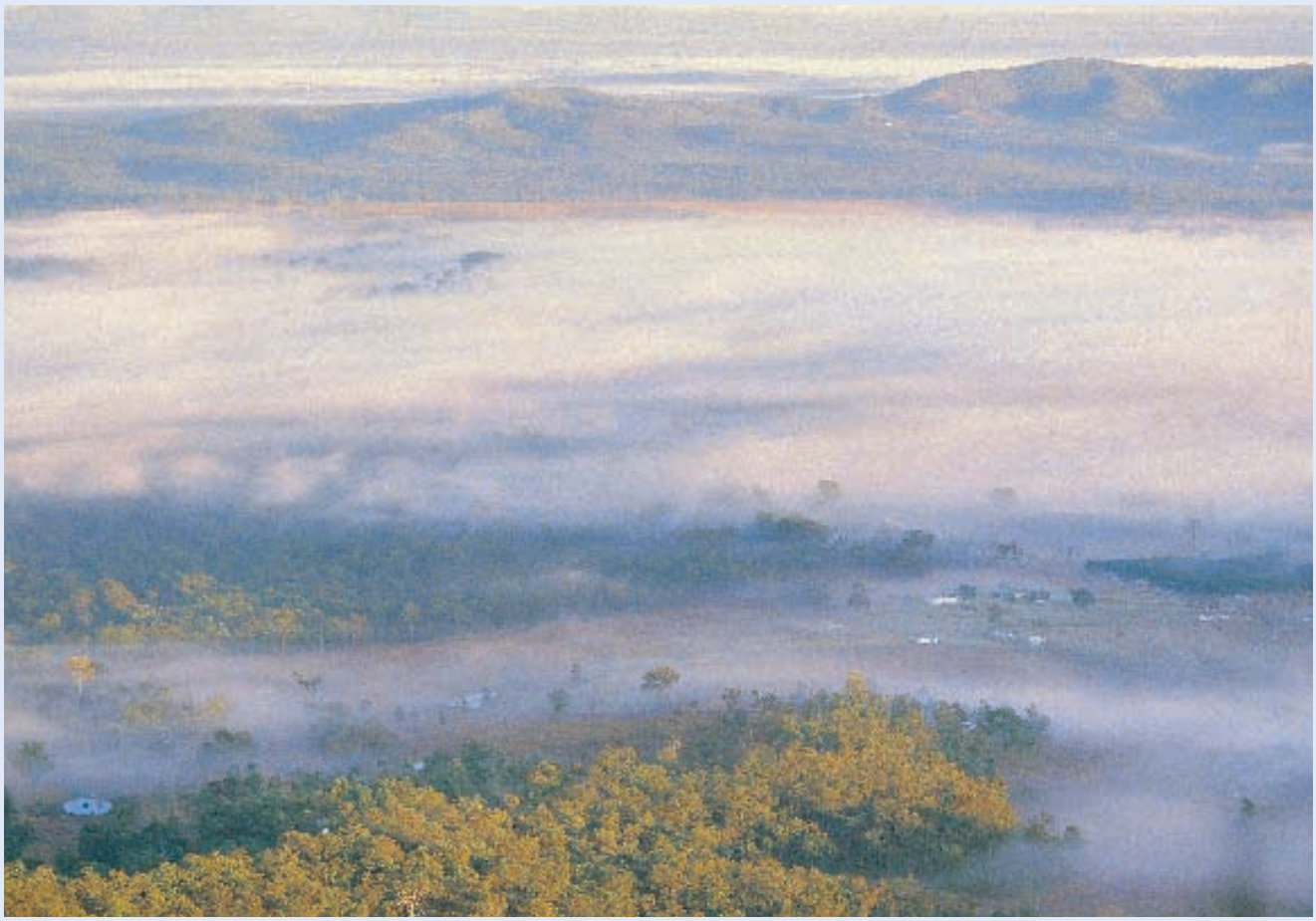
Major air pollutants affecting tropospheric air quality are suspended particles, nitrogen oxides, volatile organic compounds (VOCs), sulfur dioxide and carbon monoxide. The major sources of these air pollutants are motor vehicles and power stations, with the Brisbane and Gladstone airsheds being the most affected. Continued population growth and even greater reliance on motor vehicles in urban areas threaten tropospheric air quality.

Queensland's climate is subject to the influence of the greenhouse effect and global warming, with discernible changes now being detected in the temperature and rainfall monitoring record.

- Net greenhouse gas emissions for Australia in 1996 were estimated at 419 million tonnes of carbon dioxide equivalent. Australia's rate of emissions growth is one of the highest in the world, with emissions projected to increase by 28 percent over 1990 levels by the Kyoto target date of 2008. Queensland emissions in 1995 were 83.5 Mt CO_2 equivalent, approximately 21 percent of the national total; emissions have increased by 19 percent since 1990 (land use change excepted). Emissions associated with stationary energy (primarily electricity generation) and transport collectively accounted for 66 percent of total emissions.
- Total stratospheric ozone for winter and summer at middle and high latitudes in both hemispheres showed significant declines between 1978 and 1991. No trends of significance have been observed in the tropics. Stratospheric ozone over Queensland appears relatively stable but normal levels might not return until bans on ozone-depleting substances take full effect.
- Queensland has one of the highest naturally occurring UV-B surface exposures in the world. The relative UV trend for Queensland increased by 3.2 percent per decade between 1979 and 1992. For tropical Queensland the increase was 3.8 percent, suggesting increasing exposure to potentially harmful UV rays.
- Severe rainfall deficits occurred in eastern Queensland during the 1990s. In central and north-east Queensland, rainfall for 1991–95 was the lowest on record.
- The Brisbane air quality index between February 1993 and August 1996 showed that 2 percent of days had a high pollution level and 9 percent had a medium pollution level. At high levels the maximum acceptable pollution concentration has been exceeded. Light-scattering particles are major contributors to unacceptable air quality in Brisbane.
- The frequency of low-visibility days in Brisbane has decreased since 1986; the decrease coincides with the closure of metropolitan coal-fired power stations and the ban on domestic open fires and backyard incinerators in 1987. Increases in 1993–96 are attributable to bushfires and hazard-reduction burning.
- Ozone concentrations in urban centres in excess of specified levels showed considerable variation but no clear trends in south-east Queensland between 1978 and 1997. This is despite increases in traffic volume.
- Brisbane is believed to have the greatest potential for photochemical smog of any major Australian city due to a combination of topographical, geographical and meteorological factors.
- Total suspended particle emissions resulting from human activities in south-east Queensland in 1993 were estimated at 22 000 tonnes. Sixty-five percent came from industrial sources, primarily coalmining, and 18 percent from motor vehicle emissions. The number of days for which the 24-hour average PM_{10} exceeded specified levels has been decreasing in south-east Queensland in recent years. Concentrations of inhalable particles (diameter <10 micrometres) exceeded specified levels in Brisbane on fewer than 5 days in 1997.
- An estimated 70 percent of emissions of nitrogen oxides (NO_x) in south-east Queensland are from motor vehicles. Levels of nitrogen dioxide in south-east Queensland have not exceeded the NHMRC goal since 1978. No discernible trend exists, despite increases in traffic volume, suggesting that emission controls for motor vehicles are matching increases in vehicle numbers.
- New sources of VOCs are estimated at 84 000 tonnes a year in south-east Queensland (52 percent from motor vehicles, 21 percent from commercial sources and 16 percent from industrial sources) based on 1993 data. Biogenic emissions accounted for about 148 000 tonnes.
- Sulfur dioxide concentrations are very low in urban areas throughout Australia, including south-east Queensland, due to the use of low-sulfur fuels and the siting of coal-fired power stations away from urban areas. About one-third of Australia's emissions of sulfur dioxide originate from the combined emissions from the copper and lead smelters of Mount Isa, which are among the largest point sources of sulfur dioxide in the world. Operating at full capacity, their combined sulfur dioxide output is estimated at 975 000 tonnes a year. Mount Isa recorded some days above the NHMRC and ANZECC guidelines between 1980 and 1995. Despite Gladstone's extensive industrial operations, levels of sulfur dioxide rarely exceed 0.04 ppm, 20 percent of the NHMRC goal.
- In 1993 carbon monoxide (CO) emissions from motor vehicles were estimated to be 33 000 tonnes, about 20 percent of Queensland's total CO emissions for that year. In urban airsheds motor vehicle emissions contribute about 83 percent of total carbon monoxide levels.
- Motor vehicle emissions account for 90 percent of atmospheric lead in urban areas, except for those near mineral

smelting operations. Since the introduction of more stringent vehicle emission limits and compulsory use of unleaded petrol (under Australian design rule ADR37) in 1986, the use of leaded petrol has been declining. Lead emissions decreased from about 2200 tonnes in 1985–86 to 400 tonnes in 1995–96.

- The introduction of unleaded petrol in 1986 and reductions in the lead content of leaded fuel produced a strongly decreasing trend in lead levels monitored at several Brisbane sites. Airborne lead levels in south-east Queensland are now consistently below the current NEPM goal of 0.5 µg/m³.
- The National Greenhouse Response Strategy 1998 aims to limit net greenhouse gas emissions to meet international commitments. It makes provision for the States and Territories to develop implementation plans. These plans will articulate how implementation will be achieved in the respective jurisdictions. The Queensland Government is currently preparing a Queensland Greenhouse Response Strategy to reduce greenhouse gas emissions.
- The Australian Greenhouse Office is the Commonwealth lead agency overseeing the development and implementation of national greenhouse policy and actions. The Greenhouse Challenge program is a cooperative effort of Australian industry and the Commonwealth Government to reduce greenhouse emissions through voluntary industry action.
- A range of Queensland Government initiatives is responding to air quality issues. The South East Queensland Regional Air Quality Strategy (SEQRAQS) is intended to deal with those aspects of air quality in south-east Queensland which have regionally significant effects on the environmental values of human health and wellbeing, ecological sustainability and amenity, including visibility. The focus of this strategy is on those pollutants which contribute to regional pollution levels.
- The Integrated Regional Transport Plan (IRTP) seeks a transport system in south-east Queensland which moves passengers and freight efficiently, supports economic development, and reduces car dependency. The IRTP has targets and associated actions to counter undesirable trends in transport activity.



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Fog can form in sheltered valleys on cool winter mornings.