

Air Quality, Transport & Health

Introduction

The survival of society has always depended on safeguarding the equilibrium between the variables of population, resources and the environment. Our cities are driving into an environmental crisis. The motor car is responsible for approximately 70% of urban air pollution in our cities and Australians are among the worlds highest pollutant emitters per capita. (2)

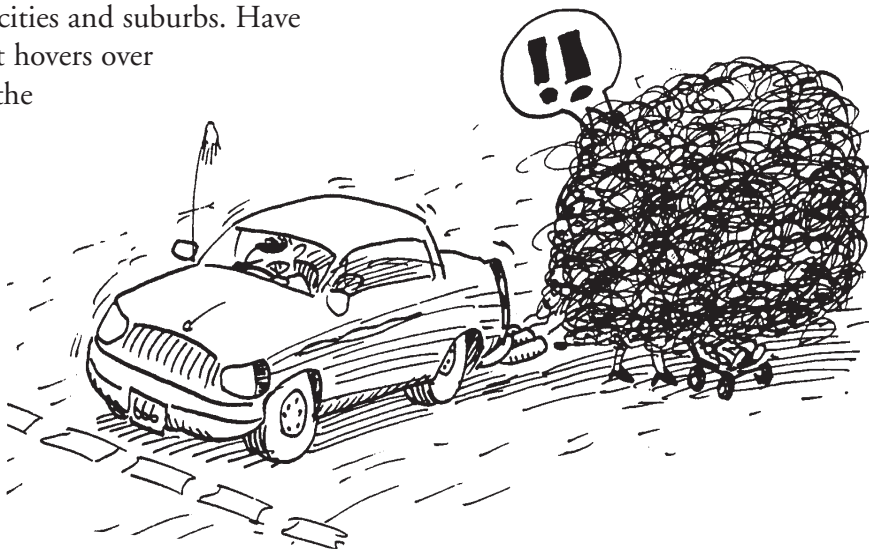
Population trends over the next 15 years and associated demands for travel and services necessitate that a cautious approach be taken in order to ensure that air quality is maintained. (1)

The increase of road transport, however, and the convenience of private motor vehicles and commercial road vehicles is increasingly associated with significant and serious impacts on health, including a decline in air quality, congestion, noise, injury, impacts on ecosystems and social impacts. (1)

Air pollution is visible in many cities and suburbs. Have you noticed the brown haze that hovers over some cities, particularly during the Autumn Months?

Motor vehicles

Emissions inventories show that motor vehicles are the largest source of pollutant emissions in Australian created by humans. Airsheds and these emissions are generally tightly correlated with energy use in our cities.



Motor vehicles are responsible for over 70% of total annual NOx emissions in the major urban areas and over 50% of hydrocarbon emissions. For carbon monoxide, the proportion is significantly higher ranging between 65% and 85% for major urban areas. Motor vehicles are also responsible for virtually all airborne lead in metropolitan airsheds. Currently lead levels are reducing because of the introduction of unleaded petrol but, with increasing numbers of motor vehicles on the roads, lead levels will again begin to rise. The motor car and other road transport is not only responsible for air pollution but also water pollution, land degradation and solid waste, noise and pollution as well.

Types of Pollution



Air pollution is visible in many cities and suburbs and in recent years the cumulative effect of the world's transport systems is taking a toll on the planet. The combination of exhaust emissions from cars and sunlight produces photochemical smog which is increasingly noted for its detrimental health effects.

Noise generated by road traffic has grown to be a significant problem over a short period of time and has been found to increase heart rate, blood pressure and adrenaline output.

Water. The transport system is responsible for considerable run-off from areas such as roads, parking areas, driveways and footpaths. These areas contribute to the quality of water in stormwater run-off, ultimately degrading water quality in water courses, lakes the sea, and groundwater. Lead, zinc and copper are of concern in road run-off and the sources are fuel, tyres, and brakes. Also, oil spilt on road surfaces washes into the stormwater drainage system during rain fall.

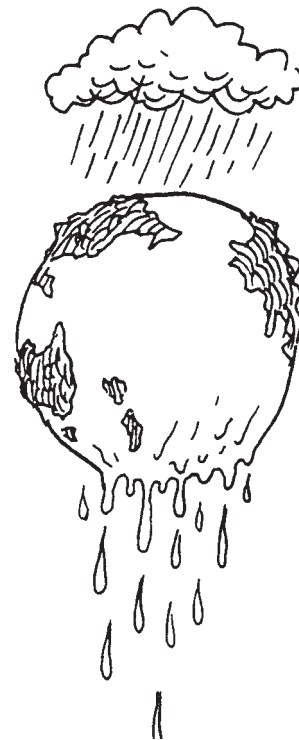
Our landscape is also significantly affected by road transport. Land is not only taken for roads and parking but the materials to build these come from quarries that are scarring the face of the countryside. Once the car is taken out of service it is abandoned causing problems with disposal of waste oil, tyres and more.

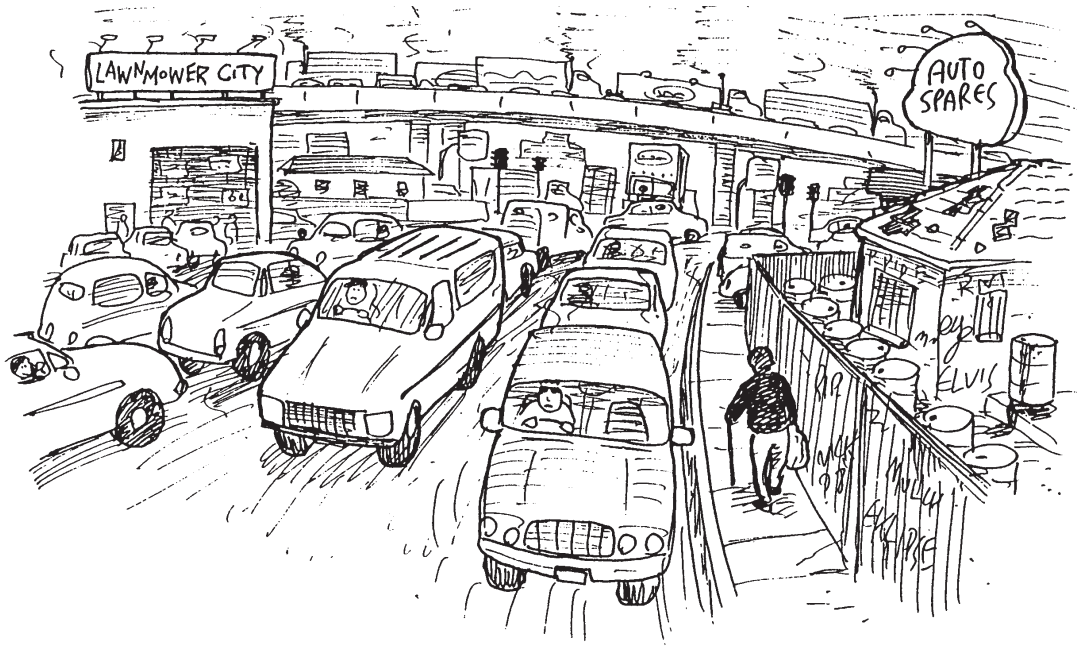
Global impacts of the motor vehicle

Greenhouse gases are released as a result of the burning of fossil fuels. Since the industrial revolution people have continued to increase the output and concentration of certain gases into the atmosphere - these are chlorofluorocarbons (CFC's), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), ozone (O₃), hydrocarbons and nitrogen oxides (NO_x).

The motor vehicle generates more air pollution than any other single human activity. Road transport contributes significantly to this through emissions caused by the fuel combustion process for producing energy, particularly in the form of carbon dioxide (CO₂).

Increases in the concentration of atmospheric gases is predicted to influence global climate change by raising average global temperatures. The likely consequences are increasing sea temperatures, more storms, spread of diseases and loss of species.





Traffic Congestion

Traffic congestion is the most serious source of central city air pollution, it has a marked effect on fuel consumption and therefore on motor vehicle emissions.

Due to the continual increase in the number of vehicles on the road, the frequency with which roads are congested is increasing. Peak periods are particularly prone to congestion. When a car is caught in traffic the car's exhaust is expelling more emissions than usual - this is one of the many reasons not to have so many cars on the road.

If more of us used public transport, walked or rode our bike more frequently, then space would be freed up on the road for vehicles with many passengers like buses and trams, as well as couriers and delivery vehicles.

Urban Form: the shape of our city

Urban form and transport systems are interdependent. Australian cities have been through three distinct transport phases.

- The walking city era, where people walked everywhere and lived closely together in a town.
- Followed closely by the tram and railway era when there was a substantial increase in the size of the capital cities. At this time development was encouraged along tram and railway routes.
- The automobile era brought a revolution in transport and the suburbs expanded to fill the undeveloped land between the transport corridors that were already developed. From the 1950's onwards the number of petrol stations, parking areas and roads greatly increased. People became more car orientated and car dependent.
- Because we had such mobility, suburbs were planned a long way from the city centre, away from available public transport networks.
- Urban form and the structure of our suburbs has had a huge effect on energy use and the way we plan our trips. Population expansion needs to be located closer to public transport, employment and amenities such as shopping malls.

Social Issues

People should have ready access to transport. Travel is not often undertaken for its own sake but from a need to get somewhere for some activity or purpose like sport, shopping, going to the doctors, getting to work, recreation or even school.

People without cars are often disadvantaged in our society, as our cities are now planned around car users. Non car owners may have difficulty getting to some areas not serviced by public transport. People who don't own cars are often older, frail, disabled or low income earners. These members of our community often don't have enough money to run a car. People who stay at home may find themselves isolated because the household car may not be available during the day.

Low density suburbs are developed on the assumption that residents will have cars. Where public transport services do exist the services are often infrequent, don't go where people want to go and run to limited timetables.

The motor vehicle has shaped the nature of social interaction within our society.

Streets used to be living places where children played and many social networks were formed, they were places of social interaction. Nowadays, instead of meeting people informally on the street as we go about our daily business, whether it be going to school, work or even going out for a meal, we are sitting isolated from the very fabric of the society we live in by travelling directly to somewhere in a big steel box.

The public is becoming more and more isolated by this behaviour.

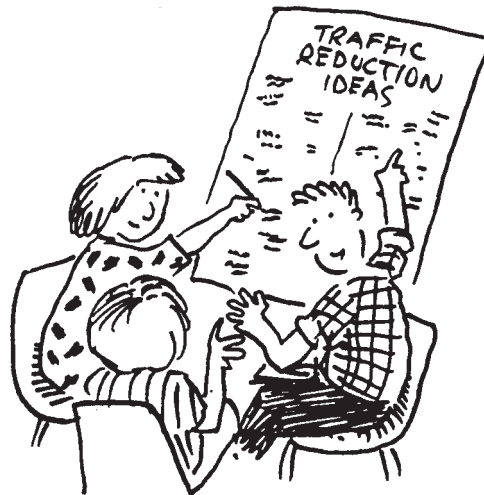
Technology

Technology will be able to bring about many changes to improve the efficiency of the motor vehicles. However, these improvements will be negated by the increasing number of kilometres we are driving. In order to get the benefit of these technologies and improve air quality we must cut back on the amount we drive.



Towards a Solution

Smogbusters Way To School is a great way to get started by deciding to walk, cycle, use public transport or even carpool. It is a great way to help keep our air as clean as possible.



We can:

- take responsibility and make wise transport choices. The less we drive our cars, the better our air quality will be.
- at least once or twice a week, leave the car at home and walk, use public transport, cycle or even carpool with a friend to reduce the number of Vehicle Kilometres Travelled (VKT) and hence reduce emissions into the atmosphere from the motor vehicle.
- be a part of the *Smogbusters Way To School* day and help raise awareness about this pressing issue.
- as part of the *Smogbusters Way To School* day consider a way to get to school that does not involve using a car or at least reduces the vehicle kilometres travelled.
 - * Walk with a friend
 - * Cycle to school being careful to obey all road rules
 - * Organise a walking school bus
 - * Use public transport
 - * If you live a long way from school and there is no public transport then organise to travel with a friend and only bring one car instead of two.

The Benefits

By taking action we can:

- *help to reduce the number of cars on the road and reduce the amount of pollution expelled into the air.*
- *get fit by walking or cycling to school*
- *have fun talking to friends on the way to school*
- *allow a carer (or driver) to enjoy more free time (when it is not their turn to drive).*

Remember if you breathe this initiative is important to you.



References:

- (1) *Transport and Health: Assessing the Impact* - A collaborative project conducted by the Department of Public Health, Flinders University of South Australia and the South Australian Community Health Research Unit. 1997.
- (2) *Urban Air Pollution in Australia: An Inquiry* by the Australian Academy of Technological Sciences and Engineering 1997
- (3) Australian Conservation Foundation: *Global Warming Information Kit.*