



EPHC
Environment Protection and Heritage Council

Time Activity Study

Summary of Findings

A research report to the
Environment Protection and Heritage Council
by the
Centre for Population Studies in Epidemiology,
South Australian Department of Human Services

EPHC

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CHAPTER 1: INTRODUCTION

1.1 Introduction

This report summarises a study into the activity of Australians in relation to their exposure to pollutants in the air, both outdoors and within their homes. A representative sample of children, young adults, and older Australians aged 60 years and over from all capital cities and two regional centres were surveyed. These age groups are those in whom respiratory problems are most prevalent. This study surveyed these people to ascertain their level of exposure to environmental pollutants and the extent of respiratory problems with which this may be associated.

The Time Activity Study surveyed activity of the same sample in winter (September 2002) and summer (February 2003). These results are available as separate reports: Time Activity Study I; September 2002¹ and Time Activity Study II; February 2003². When “winter” and “summer” are used in this report, these refer to September 2002 and February 2003 respectively. This terminology is intended to capture significant differences between ‘hot’ weather and ‘cold’ weather rather than being a strict climatic classification. The two time periods for which activity data were collected enable more information to be made available about annual cycles in activity and symptoms of respiratory problems, and this report highlights the key differences in findings between winter and summer.

This summary document should be read in conjunction with these two reports.

1.2 Statistical methodology

The summer survey was a subset of the winter survey i.e. allowing for sample loss through non-contactable respondents. The figures quoted in the winter and summer reports are therefore not directly comparable as they apply to slightly different totals of respondents. The purpose of this summary report is to provide a statistical comparison of the two reports.

The methodological aspects of this study have also been reported comprehensively in these two reports. In summary, in September 2002, a number of people (or in the case of children, their parent/carer) were interviewed by telephone. In February 2003, these same respondents were recontacted and the same questionnaire was administered. In total, 3127 interviews were repeated (77.7% of the original 4023

interviews, 95.8% participation rate). Demographic information regarding the people surveyed is included in Appendix 3.

Analyses of the winter and summer samples were applied using matched pairs of respondents wherever possible i.e. there were statistical tests performed matching the responses from the same individual between seasons to test for differences in their activity. Paired T tests were performed on the continuous variables of time spent in an activity eg time spent outdoors between 9 AM and 12 PM or time spent in a car. Differences between seasons in the average times for matched pairs were considered significant at the $\alpha = 0.05$ level. Differences between seasons in categorical variables were tested using χ^2 contingency table tests eg the proportion of households opening windows and doors during the day. Goodness-of-fit χ^2 tests were used to show differences for those categorical variables where there were more than two categories eg to determine which geographical regions were significantly different from the national figure for a factor such as alcohol risk. Where there is reference in the text to a “significant difference” this refers to a statistically significant difference ($p < 0.05$).

CHAPTER 2: KEY DIFFERENCES IN FINDINGS BETWEEN SEPTEMBER AND FEBRUARY SURVEYS

2.1 Introduction

The activity of people, both outdoors and within their homes changes with the seasons. The Time Activity Study has collected data to show what these changes are. Similarly, evidence has been gathered on changes in respiratory problems between winter and summer. This section presents a summary of the key findings about differences in these variables between winter and summer.

There are various expectations about activities of people in winter and summer. Winter days are shorter and so outdoor activity is expected to diminish substantially around sunset, whereas in summer it is more likely that people will still be active for a few hours past winter sunset time. The warmer weather in summer is also expected to coax people to go outside, although if the temperatures are very hot they may instead retreat to the shelter indoors. In a similar way, rain, wind, and cold temperatures in winter may discourage people from being active outdoors.

Regional differences exist in these climatic variables and so behaviours are expected to differ between cities. Winter weather conditions in Darwin are substantially different from those in Hobart.

Health factors may also show differences between winter and summer. Some, such as asthma, may increase with breathing cold air. Other breathing difficulties, such as hay fever, may be associated with pollens and other irritants that increase in abundance during summer. Pollutants and irritants within the home may also have seasonal effects associated with the extent to which fresh air is brought into the home, and the emissions from heating and cooking appliances.

The extent to which these associations were evident from the Time Activity Study is presented in this section.

2.2 Health differences

2.2.1 Asthma

The responses from the surveys in winter and summer regarding asthma were divided into two categories; ever had asthma in their life, and current asthma. The first category is not expected to differ in any marked way over the period of six months in these cohorts. The only change that could occur is newly identified asthma being reported in summer by a respondent who reported in the winter survey that they have never had asthma. The differences reported between the surveys in “ever had asthma” refer therefore to variation that has occurred due to sample loss.

Current asthma reporting contained the same variability due to sample loss however a pattern emerged of reduced asthma in adults in southern cities in summer. This may be due to warmer temperature avoiding the stimulation of asthma by cold air. The pattern was not statistically significant because of the variability of the sample.

2.2.2 Wheezing

The frequency of wheezing was reported in categories from rarely to daily or most days. Changes between winter and summer in the frequency of wheezing were observed in wheezing events reported once a week or more frequently.

The reported rates of wheezing were lower in summer in all southern cities as well as Brisbane.

Wheezing was reported in summer in Darwin at a rate similar to the winter rate.

Gladstone reported wheezing in summer at a higher rate than in winter. As a possible explanation, the humidity in Gladstone and Darwin was much higher in summer than winter,

2.2.3 Other respiratory problems

The other respiratory problems asked about were bronchitis, emphysema, and chronic lung disease. Respondents were asked if they had ever been told by a doctor that they had these conditions, not just in the recent season. It would be expected that these

rates would not vary substantially from winter to summer as they referred to lifetime experience of these conditions.

Rates of bronchitis, emphysema, and chronic lung disease were not significantly different between winter and summer.

2.2.4 Heart conditions

Respondents were asked about heart attack, angina, heart disease, and stroke in their lifetime. As the question related to the occurrence of these heart conditions at any time in their life it was not expected that the rates would vary between winter and summer.

There was some variation in Adelaide in the reporting of heart disease with a lower rate of heart attack in the summer survey and a higher rate of angina. These results are from the same sample and can be explained by mistakes by respondents in reporting i.e. reporting angina instead of heart attack. A similar result was obtained from Gladstone.

The results for Launceston showed lower rates of all heart conditions in the summer sample. This was mainly due to bias in the sample lost to follow up.

2.2.5 Other symptoms of ill health

The other symptoms of ill health that respondents were asked about referred mainly to other respiratory conditions (symptoms of cold, flu's, hay fever etc), gastric illnesses, and disturbed sleep.

There was a consistent pattern of significant decreases in the incidence in summer of stuffy or runny noses, sore or scratchy throats, coughs, hay fever attacks, headache, nausea, vomiting, skin rashes or irritation or itching, and difficulty breathing when compared with winter.

In all the other conditions surveyed (diarrhoea, itching or burning eyes, and disturbed sleep) there was no discernible pattern of differences between winter and summer.

The overall measure of other symptoms of ill health was the category of none of these conditions.

There was a significant increase in summer in all cities in the proportion of people reporting none of these conditions. This was taken to indicate better general health in summer.

2.2.6 Alcohol consumption risk

Usual consumption of alcohol was measured in winter and summer in adult respondents.

There was no significant difference in any city in alcohol risk (medium and high risk categories combined) between winter and summer.

2.2.7 Smoking

Smoking and smoking status was measured in both summer and winter

Smoking in the home was not different between winter and summer.

The number of cigarettes and cigars smoked in the home was not significantly different from winter to summer.

Smoking status was not different between seasons.

2.3 Activity differences

2.3.1 Physical activity in adults

Physical activity in adults was assessed in both winter and summer looking at walking.

Walking rates in adults were high in winter, being mostly over 80% of respondents. These rates were similar in most cities in summer, however some centres showed decreases in walking rates. These were Gladstone, Launceston, and Melbourne.

For those adults who did walk, the number of times they walked in the last week was similar in winter and summer.

The proportion of adults doing vigorous exercise in the last week was smaller than those reporting walking, as walking remains the most popular form of physical activity.

The rates of vigorous exercise were variable between winter and summer but with no clear pattern. Again, for those who did vigorous exercise, the number of times this exercise was done in the past week was similar between winter and summer.

Other more moderate physical activity is a category that is more variable in the responses received.

There was a relatively consistent increase in summer in the 16 to 25 years age group in the amount of moderate activity.

Results were more variable in the 60 to 65 years age group, with no visible pattern. The same applies to the number of times in the past week that this type of activity was undertaken. There were few respondents in this age group which explains the variability.

2.3.2 Physical activity in children

Reports of the level of physical activity in children were on a scale of 'not at all' or 'not very' active to 'active' and 'very active'.

Very few children were classified as being less than active in both winter and summer.

Significantly fewer children were reported as being 'very active' in summer when compared with winter (winter 57.2%, summer 52.4%) but there were no differences in the other categories.

Fewer children were reported to do organised sport outdoors in summer than in winter (winter 55.7%, summer 43.7%).

For those children who were active outdoors in organised sport there was no difference between winter and summer in the number of hours per week spent in this activity.

2.3.3 Exposure outdoors

Exposure outdoors was assessed in both winter and summer looking at how much time was spent outdoors, doing various activities

The reported time spent outdoors in winter and summer showed a clear pattern of increased time spent outdoors in summer before 9 AM and between 3 PM and 9 PM. This was significant for both days on which reports were collected (yesterday and the day before yesterday).

The period in the middle of the day, between 9 AM and 3 PM, showed significantly less outdoor exposure in summer than in winter.

When this was applied to time spent outdoors breathing heavily as a result of work or exercise the same significant increase in time early and late in the day in summer was observed.

There was however no significant decrease during the middle of the day in this activity when compared with winter.

Time spent in vehicles was reported for different types of transport.

The times reported spent in vehicles showed a highly significant increase in time spent in a car in summer. On average respondents spent 28 minutes more per day in a car in summer as compared with winter.

There were only two other categories with significant differences between winter and summer. Bus travel was significantly lower in summer, and pushbike travel was significantly higher.

All other categories showed no differences, but this was probably due to small numbers of respondents reporting use of these modes of transport.

Time spent in medium or heavy traffic was significantly lower in summer despite the greater time spent in a car.

Visits to service stations were not significantly different between winter and summer, and neither were visits to enclosed car parks.

Other outdoor activities included using petrol engine gardens tools, and the time spent using these were assessed.

The proportion of respondents who were present when petrol engine garden tools were in use was significantly lower in summer than winter (winter 26.1%, summer 21.4%).

For those who were exposed to the emissions from petrol engine garden tools there was no significant difference between winter and summer in the average length of that time exposed.

2.3.4 Exposure indoors

In the summer sample there was significantly greater use of room fresheners or sprays (winter 26.7% of households, summer 29.7%), and significantly less use of humidifiers (winter 1.3%, summer 0.5%).

There was no difference in the use of bathroom or toilet bowl deodorisers.

The heating methods in use were greatly different between winter and summer, as would be expected.

There was virtually no use of wood combustion heaters, open fires, or gas heaters in summer.

Air conditioning was in significantly greater use in summer than winter, with 14.5% of households using air conditioning in winter increasing to 25.9% of households in summer.

Of those household where air conditioning was in use both in winter and summer there was no significant difference in the length of time the air conditioner was in use, with both averaging around 5 ½ hours per day.

There was significantly lower use of electric cook tops when the respondent was present in summer (winter average 36 minutes per day, summer 29 minutes), but no difference in the time spent using gas cook tops or any form of oven.

Questions were asked about the use of volatile chemicals, being glues, nail polish or removers, household cleaning sprays, and household cleaning liquids other than washing up detergent.

The proportion of households using volatile chemicals inside the house was not significantly different between winter and summer, with the exception of household cleaning sprays which were used in fewer houses in summer (winter 9.8% of households, summer 7.6%).

Of the households using these chemicals there was significantly greater use of glues in summer (winter 20 minutes per day, summer 27 minutes) but no difference in time using the other chemicals.

There was significantly less painting, staining or varnishing reported in summer compared with winter (winter 18.5% of households, summer 14.7%).

There was no difference between winter and summer in the proportion of households having new carpet in the bedroom or main living area, or having a bedroom or main living area painted, varnished, or having timber floors treated.

Windows and doors were significantly more likely to be left open in summer (winter 84.2% of households, summer 92.3%).

There was no significant difference between winter and summer in the proportion of respondents who had been bothered by smoke from wood fires in the past week.

Mould growing in rooms in the house was reported, and there was a significant decreased prevalence of mould in summer in toilets (winter 14.3% of houses with mould, summer 7.3%), however there was no difference for any other room in the house.

CHAPTER 3: KEY DIFFERENCES IN FINDINGS BETWEEN AGE COHORTS

3.1 Introduction

Many of the variables measured in these surveys showed differences between age groups, even if there were no differences between winter and summer in the same variable. The seasonal differences are demonstrated above and this section highlights those differences that occur between age groups and which may or may not also have a seasonal component. As such, these differences between age groups have been analysed on the winter data set alone unless there was a substantial difference between seasons in the variable.

A substantial number of questions related specifically to activities that are performed by only some of the age groups eg smoking tobacco and drinking alcohol being reserved for adults. As such not all questions were asked of all age groups, and in several instances there were different age group boundaries to cater for differences in behaviours eg self reported physical activity was asked of the 60 to 65 years age group rather than of everyone in the sample aged 60 years or over. Where these age related questions were asked there was no further analysis by age group.

Another group of variables related to activities within the household, such as painting being done or windows and doors being opened, that are activities that affect all residents and are not specifically initiated by the respondent. These variables are not expected to demonstrate differences by age group. As such, these variables have not been examined by age group.

3.2 Health differences

Differences in health status for a number of variables are easily explained. Asthma is a health condition that primarily affects children, and the effects diminish with age.

The results showed current asthma rising to a peak in the 10 to 14 years age group and diminishing markedly thereafter.

Wheezing on a daily basis was greatest in the 60 years and over age group, but overall the proportions of each age group who suffered any form of wheezing were fairly consistent.

Bronchitis was prevalent in all age groups but mostly so in the 60 years and over age group.

Emphysema and chronic lung disease were also characteristic of the 60 years and over age group and rare in the younger groups.

Symptoms of cold such as stuffy or runny noses, sore or scratchy throats, and coughs were fairly consistent across age groups.

Hay fever attacks were less frequent in the 0 to 4 years age groups but consistent across the others.

Headaches were reported by a third of 10 to 14 year olds and nearly half of 15 to 25 year olds but were substantially lower in the other age groups.

Itching or burning eyes was mainly reported by the 60 years and over age group.

Gastric upsets leading to vomiting or diarrhoea were most prevalent in the 0 to 4 years age group.

This age group also displayed the highest rate of disturbed sleep, along with the 60 years and over age group.

3.3 Activity differences

3.3.1 Physical activity

Similar proportions of each adult age group reported walking as a form of physical activity.

Vigorous activity however was reported by twice as many adults in the 16 to 25 years age group as in the 60 years and over age group, and a significantly higher proportion of the younger age group also did more moderate exercise than did the older age group.

Physical activity in children decreased with increasing age.

The 0 to 4 years age group had the highest proportion reported to be 'very active', and this decreased monotonically with each older age group.

The reverse was true for the proportion reported to be 'not very active', which increased from 0.8% of the 0 to 4 years age group to 15.4% of the 15 years age group.

3.3.2 Exposure outdoors

The pattern of activity outdoors was variable between centres and over the seasons, but several general points can be concluded.

The most active age group overall was the 5 to 14 years age group, and their activity was mainly centred in the afternoon, perhaps corresponding with after school times although this effect will be somewhat diluted with the inclusion of weekend data in the responses.

The age group least active outdoors was in most cases the 15 to 25 years age group. The activity of this age group was more spread across the day but in many cases the

peak activity was afternoon with activity extending further into the evening than for other groups.

The 60 years and over age group showed most activity in the morning with a reasonable consistent decline in levels of activity as the day progressed.

There was a peak in morning activity also for the youngest age group, the 0 to 4 years age group. In this young age group however there was also a second peak of activity in the afternoon, with a marked hiatus in the middle of the day.

The age group that consistently spent more time in a motor car was the 15 to 25 years age group.

The 60 years and over age group spent more time in the car than the youngest age groups in winter but in summer there was little difference between age groups apart from the 15 to 25 years age group.

There was little difference between the other modes of transportation, other than pushbike, as the use of these modes was very limited. Pushbikes however were popularly used by all age groups up to 15 years in summer, exceeding the use of pushbikes by adults.

Slightly more respondents aged 60 years and over were present when petrol engine garden tools were in use than for any of the other age groups, for whom results were consistent.

3.3.3 Exposure indoors

The use of heaters in summer was almost nil, leading to substantial differences in exposure of respondents to possible emissions from these appliances. Air conditioner use however continued in summer.

There was no significant difference in the time spent with the air conditioner on between the winter and summer sample, for any of the age groups.

Use of cooking appliances was significantly greater in the 60 years and over age group than in the younger age groups. This applied to electric and gas cook tops and electric ovens. The numbers for gas ovens were smaller and the difference was less pronounced but the 60 years and over age group still spent the most time using these appliances.

Use of volatile chemicals was substantially different between age groups.

Glue use was highest in the 5 to 14 years age group.

Nail polish or remover use was equally high in the 5 to 14 years and 15 to 25 years age groups.

Use of household cleaning sprays and household cleaning liquids was predominantly confined to adults.

Painting, staining, and varnishing activity declined with age, from 38% in the 0 to 4 years age group, to 9% in the 60 years and over group.

There was a higher proportion of adults reporting having been bothered by smoke from wood fires than there was in the children groups aged up to 15 years.

CHAPTER 4: SUMMARY OF OUTDOOR EXPOSURE TIMES

4.1 Summary of outdoor exposure times

Total times of exposure in outdoor activities are summarised here in the following tables, to enable comparisons between cities and between winter and summer. The activities shown are the major elements of the survey; total time spent out of doors, including time spent in strenuous activity that would cause heavy breathing as shown in Table 4.1, and transport related activities. The average time spent outdoors as a proportion of a 24 hour day and a waking day (18 hours) is presented in Table 4.2. The transport activities include total time spent in a car, and the proportion of that time when the car was in medium to heavy traffic as shown in Table 4.3. In addition, the average time spent in the previous day on public transport is shown in Table 4.4.

The times spent outdoors are total times for the day and ignore patterns of exposure during the day. These are dealt with elsewhere in this report. These times enable quantification of the differences noted between seasons, and between cities in activities by these age groups. The sample sizes comprise all those respondents who answered both the winter and summer surveys. These samples have been weighted to the populations in each city. The numbers therefore reflect the proportions of each city that are in each age group eg Darwin has a small proportion of residents aged 60 years and over and therefore the sample size for that age group is substantially lower than in other cities.

Table 4.1: Average time spent in previous day in outdoor activities.

	Average time spent outdoors				Average time spent outdoors			
	– total				– breathing heavily			
	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs
Winter	h:m (n)	h:m (n)	h:m (n)	h:m (n)	h:m	h:m	h:m	h:m
Adelaide	2:05 (45)	2:47 (96)	2:56 (105)	2:56 (144)	0:29	1:05	0:33	0:32
Brisbane	3:11 (40)	3:48 (83)	2:49 (91)	3:10 (87)	1:07	1:24	0:39	0:32
Canberra	3:07 (45)	3:10 (95)	3:28 (109)	3:06 (82)	0:45	0:53	0:48	0:27
Darwin	4:10 (46)	4:33 (89)	4:12 (88)	3:39 (41)	1:08	1:16	0:38	0:45
Gladstone	3:37 (52)	4:50 (112)	3:06 (89)	3:42 (71)	0:44	1:37	0:44	0:24
Hobart	2:17 (42)	3:19 (89)	3:20 (92)	2:52 (117)	0:26	1:18	0:40	0:33
Launceston	3:07 (33)	3:31 (70)	3:34 (70)	3:38 (93)	1:07	0:58	0:42	0:30
Melbourne	1:41 (39)	3:10 (80)	2:54 (86)	2:19 (101)	0:19	1:12	0:34	0:24
Perth	3:08 (38)	3:37 (82)	3:45 (89)	3:36 (91)	0:53	1:03	0:54	0:33
Sydney	3:22 (41)	4:11 (81)	3:34 (86)	3:36 (97)	1:01	1:14	1:08	0:29
Summer	h:m	h:m	h:m	h:m	h:m	h:m	h:m	h:m
Adelaide	2:42	3:45	3:37	2:57	0:55	1:30	0:56	0:15
Brisbane	3:11	3:10	2:26	3:01	0:44	1:00	0:28	0:33
Canberra	3:08	4:01	3:55	3:38	0:40	1:01	0:46	0:25
Darwin	3:32	4:06	3:22	3:09	1:05	1:13	0:41	0:25
Gladstone	2:49	3:24	2:29	2:23	0:52	1:12	0:43	0:23
Hobart	4:24	5:12	4:29	3:46	1:04	2:06	0:58	0:22
Launceston	4:40	6:24	4:14	4:53	0:57	2:09	0:57	0:37
Melbourne	2:50	4:38	3:55	2:59	0:50	2:10	0:49	0:24
Perth	4:50	3:48	3:18	3:13	1:38	1:19	0:56	0:34
Sydney	3:41	4:09	3:33	3:30	1:27	1:34	0:54	0:45

Note: Times are expressed as hours: minutes. Samples are respondents who answered both surveys. Sample sizes in brackets.

Table 4.2: Average time spent in outdoor activities as per Table 4.1 expressed as proportion of 24 hour day and waking day (18 hours).

	Average time spent outdoors – total				Average time spent outdoors – breathing heavily			
	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs
	%	%	%	%	%	%	%	%
Winter								
Adelaide	9 (12)	12 (15)	12 (16)	12 (16)	2 (3)	5 (6)	2 (3)	2 (3)
Brisbane	13 (18)	16 (21)	12 (16)	13 (18)	5 (6)	6 (8)	3 (4)	2 (3)
Canberra	13 (17)	13 (18)	14 (19)	13 (17)	3 (4)	4 (5)	3 (4)	2 (3)
Darwin	17 (23)	19 (25)	18 (23)	15 (20)	5 (6)	5 (7)	3 (4)	3 (4)
Gladstone	15 (20)	20 (27)	13 (17)	15 (21)	3 (4)	7 (9)	3 (4)	2 (2)
Hobart	10 (13)	14 (18)	14 (19)	12 (16)	2 (2)	5 (7)	3 (4)	2 (3)
Launceston	13 (17)	15 (20)	15 (20)	15 (20)	5 (6)	4 (5)	3 (4)	2 (3)
Melbourne	7 (9)	13 (18)	12 (16)	10 (13)	1 (2)	5 (7)	2 (3)	2 (2)
Perth	13 (17)	15 (20)	16 (21)	15 (20)	4 (5)	4 (6)	4 (5)	2 (3)
Sydney	14 (19)	17 (23)	15 (20)	15 (20)	4 (6)	5 (7)	5 (6)	2 (3)
	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs
Summer	%	%	%	%	%	%	%	%
Adelaide	11 (15)	16 (21)	15 (20)	12 (16)	4 (5)	6 (8)	4 (5)	1 (1)
Brisbane	13 (18)	13 (18)	10 (14)	13 (17)	3 (4)	4 (6)	2 (3)	2 (3)
Canberra	13 (17)	17 (22)	16 (22)	15 (20)	3 (4)	4 (6)	3 (4)	2 (2)
Darwin	15 (20)	17 (23)	14 (19)	13 (18)	5 (6)	5 (7)	3 (4)	2 (2)
Gladstone	12 (16)	14 (19)	10 (14)	10 (13)	4 (5)	5 (7)	3 (4)	2 (2)
Hobart	18 (24)	22 (29)	19 (25)	16 (21)	4 (6)	9 (12)	4 (5)	2 (2)
Launceston	19 (26)	27 (36)	18 (24)	20 (27)	4 (5)	9 (12)	4 (5)	3 (3)
Melbourne	12 (16)	19 (26)	16 (22)	12 (17)	5 (5)	9 (12)	3 (5)	2 (2)
Perth	20 (27)	16 (21)	14 (18)	13 (18)	7 (9)	5 (7)	4 (5)	2 (3)
Sydney	15 (20)	17 (23)	15 (20)	15 (19)	6 (8)	7 (9)	4 (5)	3 (4)

Note: Times are expressed as proportions of 24 hour day and in brackets waking day (18 hours). Samples are respondents who answered both surveys.

Table 4.3: Average time spent in previous day in a car or medium traffic.

	Average time spent in a car				Average time spent in medium/heavy traffic			
	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs
Winter	h:m	h:m	h:m	h:m	h:m	h:m	h:m	h:m
Adelaide	0:28	0:36	0:48	0:48	0:12	0:14	0:23	0:17
Brisbane	0:42	0:29	1:00	0:37	0:21	0:10	0:19	0:16
Canberra	0:42	0:27	0:50	0:54	0:14	0:08	0:12	0:28
Darwin	0:39	0:30	0:38	1:04	0:08	0:06	0:08	0:14
Gladstone	0:39	0:33	0:54	0:44	0:08	0:44	0:24	0:21
Hobart	0:49	0:44	0:40	0:35	0:04	0:10	0:11	0:14
Launceston	0:35	0:30	0:42	0:59	0:02	0:06	0:14	0:13
Melbourne	0:23	0:57	0:53	0:45	0:08	0:26	0:36	0:26
Perth	0:32	0:34	0:56	0:44	0:06	0:11	0:13	0:20
Sydney	0:48	0:39	0:59	0:38	0:38	0:11	0:22	0:28

	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs
Summer	h:m	h:m	h:m	h:m	h:m	h:m	h:m	h:m
Adelaide	1:08	1:09	1:33	1:04	0:08	0:15	0:29	0:19
Brisbane	1:15	1:02	1:28	1:00	0:08	0:09	0:20	0:15
Canberra	1:08	1:27	1:18	1:16	0:09	0:07	0:13	0:17
Darwin	1:02	1:03	1:20	1:31	0:09	0:09	0:06	0:15
Gladstone	1:09	1:10	1:27	0:59	0:10	0:09	0:07	0:07
Hobart	1:10	1:10	1:27	1:02	0:09	0:07	0:12	0:10
Launceston	1:22	1:12	1:20	1:03	0:07	0:07	0:10	0:08
Melbourne	1:01	1:12	1:15	1:01	0:10	0:18	0:26	0:17
Perth	1:03	1:10	1:26	1:05	0:07	0:06	0:17	0:28
Sydney	1:07	1:01	1:16	1:01	0:10	0:15	0:21	0:12

Note: Times are expressed as hours: minutes. Samples are respondents who answered both surveys.

Table 4.4: Average time spent in previous day on public transport.

	Average time spent on public transport			
	0-4 yrs	5-14 yrs	15-25 yrs	60+ yrs
Winter	h:m	h:m	h:m	h:m
Adelaide	0:00	0:02	0:12	0:04
Brisbane	0:00	0:07	0:12	0:05
Canberra	0:01	0:04	0:09	0:02
Darwin	0:00	0:02	0:06	0:00
Gladstone	0:00	0:09	0:05	0:06
Hobart	0:00	0:07	0:10	0:02
Launceston	0:00	0:02	0:05	0:00
Melbourne	0:02	0:05	0:33	0:05
Perth	0:00	0:01	0:08	0:03
Sydney	0:00	0:04	0:27	0:18
Summer	h:m	h:m	h:m	h:m
Adelaide	0:04	0:03	0:06	0:01
Brisbane	0:00	0:06	0:11	0:06
Canberra	0:02	0:04	0:11	0:05
Darwin	0:00	0:08	0:05	0:00
Gladstone	0:00	0:04	0:02	0:05
Hobart	0:02	0:06	0:02	0:01
Launceston	0:00	0:03	0:03	0:00
Melbourne	0:00	0:09	0:18	0:06
Perth	0:00	0:00	0:04	0:05
Sydney	0:00	0:14	0:15	0:05

Note: Times are expressed as hours: minutes. Samples are respondents who answered both surveys.

CHAPTER 5: KEY DIFFERENCES IN FINDINGS BETWEEN GEOGRAPHICAL REGIONS, CAPITAL CITIES AND REGIONAL CENTRES

5.1 Introduction

For the purposes of the comparison between geographical regions of Australia the surveyed cities were further classified according to their dominant climatic characteristics and regional grouping where appropriate. These groupings of centres express the similarities between cities that are geographically close or otherwise share climates that were associated with similar patterns of behaviour in the respondents to the surveys.

The grouping of cities into regions is shown in Table 5.1.

Table 5.1 Regional definition of cities

Cities	Regions
Adelaide	Dry south and west
Perth	
Brisbane	East coast
Sydney	
Canberra	South east
Melbourne	
Darwin	Tropics
Gladstone	
Hobart	Tasmania
Launceston	

Comparisons were also made between capital cities and smaller regional centres. This was done by combining all eight capital cities into a single group and doing the same to Gladstone and Launceston as a group.

5.2 Health differences

Differences in health status between the geographic regions were assessed. There was no significant difference between regions in the prevalence of current asthma or any other current respiratory condition. There were also no differences between regions in the prevalence of any heart diseases or conditions. Symptoms of stuffy or runny

noses were higher than the national average in the South East, but lower in the Tropics and Tasmania. Similarly, symptoms of sore or scratchy throat were significantly higher in the South East. Cough symptoms were significantly lower in Tasmania, and hay fever attacks were significantly higher in the Dry South and West. The Tropics exhibited significantly higher prevalence of diarrhoea and disturbed sleep. There were no differences between regions in any of the other symptoms of ill health. The medium to high risk from alcohol consumption was significantly greater in the Tropics than in any other region. The prevalence of people frequently smoking in the home of the respondent was significantly lower than the national figure for the Dry South and West and the South East but significantly higher for the Tropics.

Health differences between regional and capital cities were also assessed. There were no significant differences between capital cities and regional centres in the prevalence of current asthma or any other respiratory conditions or any heart conditions. Stuffy or runny noses as symptoms of ill health were significantly lower in the regional centres, and disturbed sleep was significantly higher in regional centres, but otherwise there were no differences between capital cities and regional centres in symptoms of ill health. Moderate to high alcohol risk was not different between regional centres and capital cities and neither was the prevalence of frequent smoking in the home.

5.3 Activity differences

5.3.1 Exposure outdoors

There were differences between winter and summer in reported activity outdoors that also showed patterns between regions. In the mornings before 9 AM there was significantly higher activity in winter in the East Coast and the Tropics. By the period in the early afternoon between 12 PM and 3 PM there was significantly higher activity in Tasmania. In the late afternoon and evening in winter the greatest activity was again in the Tropics. The pattern in summer reflected the climatic differences between the seasons. Activity in the middle of the day between 9 AM and 3 PM was significantly lower in the Tropics and significantly higher in Tasmania. In the summer evenings between 6 PM and 9 PM there was less activity in the East Coast and the Tropics, and significantly higher activity in the South East and Tasmania.

The differences observed between the seasons in time spent in a car were consistent across all the regions. There were no differences between regions in time spent in a car in both winter and summer. The amount of time spent in medium or heavy traffic

was significantly lower in Tasmania in both winter and summer, and significantly lower in the Tropics in summer.

Regional centres displayed some differences in levels of activity outdoors compared with capital cities. There was significantly greater activity outdoors in regional centres between 9 AM and 12 PM in both winter and summer. There were no other differences between centres in summer, but in winter there was also greater activity outdoors in regional centres in the early morning between 6 AM and 9 AM and in the late afternoon between 3 PM and 6 PM. Time spent in a car was identical between regional centres and capital cities, including accounting for the differences between winter and summer. The time spent in medium or heavy traffic was significantly less in regional centres in summer.

5.3.2 Exposure indoors

Exposure indoors was assessed looking at heating and cooling and ventilation. In winter the proportion of households using wood combustion heaters was significantly higher in Tasmania and lower in the East Coast and Tropics. Of those in use there was no difference in the time spent using the wood combustion heater. A similar pattern was observed for the use of open fires. The use of gas heaters was most prevalent in the Dry South and West and the South East. There was no significant difference in the time spent using a gas heater. The opening of windows and doors in the house during the day was significantly more prevalent in the Tropics and the East Coast in winter but not in summer. The prevalence of open windows and doors was significantly lower in both winter and summer in the South East and Tasmania. The prevalence of mould on inside walls of the dwelling was significantly higher in the Tropics and significantly lower in Tasmania.

Use of room fresheners, deodorisers, or humidifiers was not different between regional centres and capital cities.

Use of heating methods differed between regional centres and capital cities. Wood combustion heaters were significantly more prevalent in regional centres but there was no difference in the prevalence of wood fires. Use of gas heaters was significantly more prevalent in capital cities. Use of cooking appliances was more influenced by the availability of fuels (either gas or electricity) as mentioned in the seasonal reports than it was by whether the town was a regional centre.

There was no difference between regional centres and capital cities in the use of volatile chemicals in the home. The same applies to the frequency of painting, staining, or varnishing. The frequency with which windows and doors were left open in the home, both in winter and summer, was not different between regional centres and capital cities. Reports by the respondent about being bothered by smoke from wood fires were not different between regional centres and capital cities.

CHAPTER 6: AT RISK GROUPS

6.1 Introduction

Groups classified as 'at risk' were those with either current asthma or another current respiratory condition. Also included in this category were respondents who at some time in their life had experienced a cardiovascular (CV) event such as a heart attack, angina, or stroke, or been diagnosed with heart disease. There were very small numbers of respondents aged less than 26 years of age in the survey who reported a CV event (3 respondents for the whole of Australia). No further analysis was done on this age group and the results presented below refer just to CV events in the 60 years and over age group.

6.2 Health differences

Respondents with current asthma were significantly more likely than those without asthma to report all symptoms of ill health with the exception of vomiting.

A similar situation existed for respondents with a current respiratory condition who reported significantly more sore or scratchy throats, coughs, hay fever attacks, nausea, itching or burning eyes, skin rashes, difficulty breathing, and disturbed sleep.

Respondents who reported a CV event were significantly more likely in both winter and summer to report a stuffy or runny nose, coughs, skin rashes or irritation or itching, difficulty breathing, or disturbed sleep than respondents who did not report a CV event. In winter, respondents reporting a CV event were also significantly more likely to report hay fever attacks or diarrhoea.

6.3 Activity differences

6.3.1 Exposure outdoors

Physical activity in adults was not significantly different for those with current asthma or another current respiratory condition compared with respondents without those conditions.

Walking in winter was reported at a significantly higher rate by respondents who also reported a CV event. There were no other differences in physical activity by CV status.

Children reporting either current asthma or another current respiratory condition were just as active as children reporting none of those conditions.

Respondents with current asthma spent more time outdoors between the hours of 12 PM and 6 PM in both winter and summer. This is possibly explained by respondents with current asthma being of a younger average age than those without asthma, however there was also a significantly higher amount of time spent outdoors in winter between the hours of 9 AM and 3 PM by those reporting another current respiratory condition. This latter group included a substantial proportion of older respondents. There were no significant differences in the time spent outdoors between those who reported a CV event and those who did not. This was true for both winter and summer.

Time spent in a car was significantly lower for those with current asthma in winter and for those with another current respiratory condition in summer.

6.3.2 Exposure indoors

There was no significant difference in the use of room fresheners or sprays, bathroom or toilet bowl deodorisers, or humidifiers between those with either current asthma or another current respiratory condition and those without those conditions.

Use of heating methods did not differ between those with asthma or respiratory conditions and those without.

Respondents with current asthma were significantly more frequent users of glues and significantly less frequent users of household cleaning sprays and household cleaning liquids.

There was no difference for respondents reporting another current respiratory condition.

There was significantly more painting, staining, or varnishing in household of respondents with current asthma than those without, but no difference for other current respiratory conditions.

The rate at which windows and doors were left open in the home did not differ between those with current asthma or another current respiratory condition and those without. This applied equally for winter and summer.

REFERENCES

1. Taylor A, Kenny B., Starr G, Avery J. *Time Activity Study I – Winter 2002*. 2003 Centre for Population Studies in Epidemiology, South Australian Department of Human Services.
2. Taylor A, Kenny B., Starr G, Avery J. *Time Activity Study II – Summer 2002-2003*. 2003 Centre for Population Studies in Epidemiology, South Australian Department of Human Services.

APPENDIX 1: LETTER OF INVITATION



NEPC Service Corporation

Level 5, 81 Flinders Street

Adelaide SA 5000

12 August 2002

Telephone 08 8419 1200

Facsimile 08 8224 0912

Dear Householder

I am writing to seek your assistance in an important general health and well-being survey in relation to environmental issues being conducted by the Environmental Protection and Heritage Council. The Council, together with the National Environment Protection Council, is responsible for developing air quality standards for the protection of health in Australia.

The Council has contracted the Centre for Population Studies in Epidemiology at the South Australian Department of Human Services, to conduct this survey.

Should you be able to assist us, one of our interviewers will be contacting you in the next couple of weeks to conduct a telephone interview. This interview will take approximately 10 to 15 minutes. **All information collected will be confidential.** This research aims to bring benefits to the community by increasing our understanding of community health and the extent of any concerns and about environmental health issues.

If you have any queries about the survey or if you do not wish to participate, please contact Anne Taylor, Programme Co-ordinator on **1800 635 352**.

Yours faithfully

Dr B.P. Kennedy
Executive Officer

APPENDIX 2: QUESTIONNAIRE

NATIONAL ENVIRONMENTAL SURVEY

Summer - January 2003

(For Interviewer's initial information from Sample
for Summer survey spreadsheet:

If Age ≥ 16 years, CATI programming to display
PHONE, FIRST NAME, AGE and **SEX** of
respondent then Go to DEM1

If Aged < 16 years, CATI to display
CHILD'S NAME, AGE and **SEX** as well as
RELATION SHIP to child & (if available) **FIRST
NAME** of person who answered questions for that
child respondent then Go to DEM1)

TIME OF SURVEY

DEM1 Enter Year

(Single Response. Enter 9999 if not
stated)

1. Enter Year - - - -

DEM2 Enter month

(Single Response)

- | | |
|----------------|-------|
| 1. January | [] |
| 2. February | [] |
| 3. March | [] |
| 4. April | [] |
| 5. May | [] |
| 6. June | [] |
| 7. July | [] |
| 8. August | [] |
| 9. September | [] |
| 10. October | [] |
| 11. November | [] |
| 12. December | [] |
| 13. Not stated | [] |

DEM3 Enter day of the week

(Single Response)

- | | |
|---------------|-------|
| 1. Monday | [] |
| 2. Tuesday | [] |
| 3. Wednesday | [] |
| 4. Thursday | [] |
| 5. Friday | [] |
| 6. Saturday | [] |
| 7. Sunday | [] |
| 8. Not stated | [] |

DEM4 Enter date (Single Response)

- | | |
|---------------|-------|
| 1. Enter Date | _____ |
| 2. Not stated | [] |

INTRODUCTION

Sequence guide:

If "First Name" is available from spreadsheet Go to Q1
If "First Name" not available from spreadsheet Go to Q3

1 Hello, May I speak to [name]?

(Single Response)

- | | |
|--------|-------|
| 1. Yes | [] |
| 2. No | [] |

Sequence guide:

If Q1 = 1 Go to Q2

If Q1 = 2 Either: a) Get the person, clarify first name,
and Go to Q2
b) Make an appointment to call
back later (within 24 hours)

2 My name is calling again on behalf of
the National Environment Protection Council,
a government body involved with health and
the environment.

We spoke to you around September last year
regarding your health, and you said that you
would be able to participate in a follow up
interview. We would now like to ask you the
questions again about your health at this time
of year. Are you available for an interview
now?

(Single Response)

- | | |
|-----------------|-------|
| 1 Available | [] |
| 2 Not Available | [] |

Sequence guide:

If Q2 = 1 Go to A.

If Q2= 2 Make an appointment to call back
later (within 24 hours)

3 Hello, My name is calling again on
behalf of the National Environment
Protection Council, a government body
involved with health and the environment.
May I speak to the [relationship to] of
[child's name /child in the household of
age N]?

(Single Response)

- | | | | |
|---|-----|-----|----------------------------------|
| 1 | Yes | [] | (Read Options. Single Response.) |
| 2 | No | [] | 1. 0 to 2 [] |

Sequence guide:

If Q3 = 1 clarify person is same as mentioned in initial information, Go to Q4

If Q3 = 2 Either: a) Get the person clarify first name and Go to Q4

b) Make an appointment to call back later (within 24 hours)

- | | | |
|----|-----------------|-----|
| 2. | 3 to 4 | [] |
| 3. | 5 to 14 | [] |
| 4. | 15 to 25 | [] |
| 5. | 60+ | [] |
| 6. | Not stated | [] |

B. HEALTH CONDITIONS

Confidentiality and assurance

- 4 We spoke with you around September last year regarding the health of [child's name], and you said that you would be able to participate in a follow up interview. We would now like to ask you the questions again about your health at this time of year. Are you available for an interview now?
- (Single Response)
- | | | |
|---|---------------|-----|
| 1 | Available | [] |
| 2 | Not Available | [] |
- Sequence guide:
- If AGE <= 2 Go to NS

A.3 [Have you / has *child's name*] ever been told by a doctor that [you have / he has / she has] asthma?

(Single Response.)

- | | | |
|----|------------|-----|
| 1. | Yes | [] |
| 2. | No | [] |
| 3. | Don't know | [] |

Sequence guide:

If Q4= 1 Go to A.

If Q4= 2 Make an appointment to call back later (within 24 hours)

A. INITIAL DEMOGRAPHICS

, Some of the questions that I will ask you will be the same questions that were asked in the last interview. We would like to see whether these things have changed because of the differences in weather at different times of the year, so please bear with us.

As some of the questions relate to certain groups of people only, could you please tell me your age / child's name's age.

Sequence guide:

If QA.3= 2 Go to QA.5

If AGE < 16 Go to QA.5

A.4 [Do you / does *child's name*] still have asthma?

(Single Response.)

- | | | |
|----|------------|-----|
| 1. | Yes | [] |
| 2. | No | [] |
| 3. | Don't know | [] |

A.1 Age of respondent

(Single Response. Enter 9999 if not stated.)

- | | | |
|----|--------------|--------|
| 1. | Enter years | [] |
| 2. | Enter months | [] |
| 3. | Enter weeks | [] |
| 4. | Not stated | [9999] |

Sequence guide:

If QA.1 = 4 Go to QA.2

A.5 In the last month, how often, if at all, did [you/*child's name*] suffer from WHEEZING?

(Read Options. Single Response)

- | | | |
|----|------------------------------|-----|
| 1. | Daily or most days | [] |
| 2. | Once or twice a week | [] |
| 3. | Once or twice a month | [] |
| 4. | Rarely or never | [] |
| 5. | Don't know / not sure | [] |

A.2 Which age group [are you / is the person who was last to have a birthday] in? Would it be

A.6 [Have you / has *child's name*] ever been told by a doctor that [you have / he has / she has] any of the following respiratory problems that have lasted six months or more?

(Read Options. Multiple Response.)

1. **Bronchitis** []
2. **Emphysema** []
3. **Chronic lung disease** []
4. None of the above []

Sequence guide:

If QA.6 = 4 & AGE >=16 Go to QA.8

If QA.6 = 4 AGE < 16 Go to NS

A.7 [Do you / does *child's name*] still have [these / this] other respiratory problem(s)?

(Single Response.)

1. Yes []
2. No []
3. Don't know []

Sequence guide:

If AGE < 16 Go to NS

A.8 Have you ever been told by a doctor that you have any of the following conditions?

(Read Options. Multiple Response.)

1. **Heart attack** []
2. **Angina** []
3. **Heart disease** []
4. **Stroke** []
5. None of the above []

B. SYMPTOMS OF ILL HEALTH

B.1 During the last two weeks, have [you/child's name] experienced any of the following complaints or symptoms?

(Read Options. Multiple Response)

1. **Stuffy or runny nose** []
2. **Sore or scratchy throat** []
3. **Cough** []
4. **Hay fever attacks** []
5. **Headache** []
6. **Diarrhoea** []
7. **Nausea (felt sick but did not vomit)** []
8. **Vomiting** []
9. **Itching or burning eyes** []
10. **Skin rashes, irritation or itching** []
11. **Difficulty breathing** []
12. **Disturbed sleep** []
13. None []

C. HEIGHT AND WEIGHT - BODY MASS INDEX (BMI)

Sequence guide:

If Age < 2 Go to NS

C.1 What is [your / *child's name*] height without shoes?

(Single Response. Enter 999 if not stated)

1. *Enter Centimetres* []
- OR
2. *Enter Feet : Inches* []
 3. Don't know []
 4. Refused []
 5. Not stated [999]

C.2 What is [your / *child's name*] weight? (Undressed in the morning)

(Single Response. Enter 999 if not stated)

1. *Enter Kilograms (Kg)* []
- OR
2. *Enter Stones : Pounds* []
 3. Don't know []
 4. Refused []
 5. Not stated [999]

D. ALCOHOL CONSUMPTION

Sequence guide:

If age < 18 Go to NS

The following questions are about drinking alcohol.**D.1** How often do you usually drink alcohol?

(Single Response.)

1. I don't drink alcohol []
2. Less than once a week []
3. Specify number of days per week []
4. Refused []

Sequence guide:

If QD.1 = 1 Go to NS

D.2 A Standard Drink is equivalent to a schooner or midi of full strength beer, a glass of wine or a nip of spirits. On a day when you drink alcohol, how many drinks do you usually have?

(Single Response.)

1. Specify number drinks []
2. Refused []

E. SMOKING**The following question(s are/ is) about tobacco smoking. This includes cigarettes, cigars and pipes.****E.1** Which of the following best describes [your /child's name's] home situation?

(Single Response.)

1. **[My /child's name] home is smoke free** (includes smoking is allowed outside) []
2. **People occasionally smoke in the house** []
3. **People frequently smoke in the house** []
4. Don't know []
5. Refused []

Sequence guide:

If QE.1 = 1, 5 & age < 16 Go to NS

If QE.1 = 1, 5 & age >= 16 Go to QE.4

E.2 How many cigarettes were smoked in [your/child's name] house yesterday?

(Single Response. Enter 999 if not stated. Enter number)

1. Enter number []
2. None []
3. Don't know []

Sequence guide:

If Age < 16 Go to NS

E.3 How many pipes or cigars were smoked in [your/child's name] house yesterday?

(Single Response. Enter 999 if not stated. Enter number)

1. Enter number []
2. None []
3. Don't know []

E.4 Which of the following best describes your smoking status?

(Read options. Single Response.)

1. **I smoke daily** []
2. **I smoke occasionally** []
3. **I don't smoke now but I used to** []
4. **I've tried it a few times but never smoked regularly** []
5. **I've never smoked** []
6. Refused []

F. PHYSICAL ACTIVITY

Sequence guide:

If AGE ≥ 65 or < 2 Go to NS

If AGE < 16 Go to QF.4

The next few questions are about any physical activities that you may have done in the last week.**F.1** In the last week, how many times have you walked continuously, for at least 10 minutes, for recreation, exercise or to get to or from places?

(Single Response. Enter number of times. Enter 0 if none)

1. None []
2. Enter number of times []
3. Not stated/Don't know []

F.2 This question excludes household chores or gardening. In the last week, how many times did [you/child's name] do any vigorous physical activity which made you breathe harder or puff and pant? (e.g. tennis, jogging, cycling, keep fit exercises).

(Single Response. Enter number of times. Enter 0 if none)

1. None []
2. Enter number of times ____
3. Not stated/Don't know [999]

F.3 This question excluded household chores or gardening. In the last week, how many times did you do other more moderate physical activities that you have not already mentioned? (e.g. lawn bowls, golf, gentle swimming, etc)

(Single Response. Enter number of times. Enter 0 if none)

1. None [] Go to NS
2. Enter number of times ____
3. Not stated/Don't know [999]

Sequence guide:

If AGE ≥ 16 Go to NS

F.4 Over the course of the last month do you consider [child's name] to have been physically active?

(Read Options. Single Response)

1. **Very active** []
2. **Active** []
3. **Not very active** []
4. **Not at all active** []
5. Don't know []

F.5 On average, how many hours per day or per week does [child's name] spend doing organised sport outside?

(Single Response. *Interviewer note: Does not = PE at school, organised means regular commitment to activity. Enter number of hours/ day or hours/ week*)

1. None []
2. Enter hours per day ____
3. Enter hours per week ____
4. Don't know [99]
5. Refused [999]

G. TIME SPENT OUTDOORS

The next few questions are about the time people spend outdoors, and their level of exertion while outside. This excludes the time spent in cars or other vehicles.

5 How much time did [you/child's name] spend outdoors yesterday during the following time periods?

(Record Response for every time period. Enter 999 if not stated. *Interviewer note:* Enter number of hours and/or nearest 15 minutes.)

1. **Between 6am and 9am** ____
2. **Between 9am and 12 midday** ____
3. **Between 12 midday and 3pm** ____
4. **Between 3pm and 6pm** ____
5. **Between 6pm and 9pm** ____
6. **Between 9pm and 6am** ____
7. **Didn't go outside** []
8. **Don't know** []
9. **Refused /never go outside** []

Sequence Guide:

If Q5 = 7 Go to Q7.

6 For each of those time periods when you were outside yesterday, how much time did [you/child's name] spend doing work or exercise that caused [you/child's name] to breathe heavily?

(Record Response for every time period displayed. Enter 999 if not stated.)

Interviewer note: Enter number of hours and/or nearest 15 minutes.)

1. **Between 6am and 9am** ____
2. **Between 9am and 12 midday** ____
3. **Between 12 midday and 3pm** ____
4. **Between 3pm and 6pm** ____
5. **Between 6pm and 9pm** ____
6. **Between 9pm and 6am** ____
7. **Refused /never go outside** []
8. **Didn't go outside** []
9. **Don't know** []

None []

(CATI programming to display only periods where response >0 in Q5 and check to be included which prevents period per category for Q6 to exceed period for Q5)

I would now like to ask you the same two questions about the day before yesterday, that is [interviewer to calculate and name day]

- 7 How much time did [you/child's name] spend outdoors on **interviewer to calculate day**, the day before yesterday during the following time periods?

(Record Response for every time period. Enter 999 if not stated. *Interviewer note:* Enter number of hours and/or nearest 15 minutes.)

1. Between 6am and 9am ____
2. Between 9am and 12 midday ____
3. Between 12 midday and 3pm ____
4. Between 3pm and 6pm ____
5. Between 6pm and 9pm ____
6. Between 9pm and 6am ____
7. Didn't go outside []
8. Don't know []
9. Refused /never go outside []

Sequence Guide:

If Q7 = 7 Go to QG.1

- 8 For each of those time periods when you were outside on **interviewer to calculate day**, the day before yesterday, how much time did [you/child's name] spend doing work or exercise that caused [you/child's name] to breathe heavily?

(Record Response for every time period displayed. Enter 999 if not stated.

Interviewer note: Enter number of hours and/or nearest 15 minutes.)

1. Between 6am and 9am ____
2. Between 9am and 12 midday ____
3. Between 12 midday and 3pm ____
4. Between 3pm and 6pm ____
5. Between 6pm and 9pm ____
6. Between 9pm and 6am ____
7. Refused /never go outside []
8. Didn't go outside []
9. Don't know []
10. None []

(CATI programming to display only periods where response >0 in Q7 and check to be included which prevents period per category for Q8 to exceed period for Q7)

- G.1 How much time did (you/child's name) spend in /on any of the following vehicles yesterday?

(Read options. Multiple Response.)

(Record Response for every vehicle displayed. Enter 999 if not stated.

Interviewer note: Enter number of hours and/or nearest 15 minutes.)

1. Car ____
2. Bus ____
3. Train ____
4. Tram ____
5. Ferry ____
6. Truck ____
7. Motorbike / Scooter ____
8. Pushbike ____
9. No []
10. Don't know [999]

Sequence Guide:

If QG.1= 9, 10 Go to NS

If QG.1 ≠ 1 Go to QG.3

- G.2 What is the year of manufacture of the car that (you/child's name) were [in / mainly in (if more than one)]?

(Single Response. Enter 999 if not stated.)

1. Enter year ____
2. Don't know []
3. Not stated [999]

- G.3 How much time did (you/child's name) spend in medium or heavy traffic yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours ____
2. Enter minutes ____
3. none []
4. Not stated/Don't know [999]

H. INDOOR AIR RISKS

H.1 Did your household use any of the following products yesterday?

(Read Response)	Options.	Multiple
1. Room fresheners or sprays (Interviewer note: products that emitted a spray or scent etc)		[]
2. Bathroom or toilet bowl deodorisers		[]
3. Humidifiers		[]
4. Don't know		[]
5. None		[]

H.2 Did your household use any of the following heating methods yesterday?

(Read Response)	Options.	Multiple
1. combustion heater	[]	Wood
2.		Open fire []
3. heater		Gas []
4. Don't know		[]
5. None		[]

Sequence Guide:

If QH.2 = 1 Go to QH.3

If QH.2 = 2 Go to QH.4

If QH.2 = 3 Go to QH.5

If QH.2 = 4,5 Go to QH.7

H.3 How much time was a wood heater used in the room while [you/child's name] were present yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

- Hours []
- minutes []
- Not used []
- Not stated/Don't know [999]

Sequence Guide:

If QH.2 = 2, Go to QH.4

If QH.2 = 3 Go to QH.5

Else Go to QH.7

H.4 How much time was an open fire used in the room while [you/child's name] were present yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

- Enter hours
[]
- Enter minutes
[]
- Not used
[]
- Not stated/Don't know [999]

Sequence Guide:

If QH.2 = 3 Go to QH.5

Else Go to QH.7

H.5 How much time was a gas heater used in the room while [you/child's name] were present yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

- Enter hours []
- minutes []
- Not used []
- Not stated/Don't know []

H.6 Does the gas heater used have a flue or chimney, or is it ducted?

(Single Response.)

- Flue []
- Chimney []
- Ducted []
- No []
- Don't know []

H.7 Did your household use air conditioning for cooling or heating (reverse cycle) yesterday?

(Single Response.)

- Yes []
- No []
- Don't know []

Sequence Guide:

If QH.7 >= 2 Go to QH.9

H.8 How much time was an air-conditioner used for cooling or heating while [you were / child's name was] in the house yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. minutes []
3. Not stated/Don't know []

H.9 Do you have an electric or gas cook top or oven stove?

(Read Options. Multiple Response.)

1. **Electric cook top** []
2. **Gas cook top** []
3. **Electric oven** []
4. **Gas oven** []
5. No []
6. Don't know []

Sequence Guide:

If QH.9 = 1 Go to QH.10
 If QH.9 = 2 Go to QH.11
 If QH.9 = 3 Go to QH.12
 If QH.9 = 4 Go to QH.13
 If QH.9 >= 5 Go to QH.14

H.10 How much time was your electric cook top used while [you were /child's name was] present in the kitchen yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

Sequence Guide:

If QH.9 = 2 Go to QH.11
 If QH.9 = 3 Go to QH.12
 If QH.9 = 4 Go to QH.13
 Else Go to QH.14

H.11 For how much time was your gas cook top used while [you were /child's name was] present in the kitchen yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

Sequence Guide:

If QH.9 = 3 Go to QH.12
 If QH.9 = 4 Go to QH.13
 Else Go to QH.14

H.12 For how much time was your electric oven used while [you were /child's name was] present in the kitchen yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

Sequence Guide:

If QH.9 = 4 Go to QH.13
 Else Go to QH.14

H.13 For how much time was your gas oven used while [you were /child's name was] present in the kitchen yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

H.14 Did [you/child's name] use any of the following products yesterday?

(Read Options. Multiple Response)

1. **Glues** (Interviewer note: any type) []
2. **Nail polish or removers** []
3. **Household cleaning sprays** []
4. **Household cleaning liquids (not washing up detergent)** []
5. None []
6. Don't know []

Sequence Guide:

If QH.14=1 Go to QH.15
If QH.14=2 Go to QH.16
If QH.14=3 Go to QH.17
If QH.14=4 Go to QH.18
Else Go to QH.19

H.15 How much time did [you/child's name] use glue yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

Sequence Guide:

If QH.14=2 Go to QH.16
If QH.14=3 Go to QH.17
If QH.14=4 Go to QH.18
Else Go to QH.19

H.16 How much time did [you/child's name] use nail polish or remover yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

Sequence Guide:

If QH.14=3 Go to QH.17
If QH.14=4 Go to QH.18
Else Go to QH.19

H.17 How much time did [you/child's name] use used household cleaning sprays yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

Sequence Guide:

If QH.14=4 Go to QH.18
Else Go to QH.19

H.18 How much time did [you/child's name] use used household cleaning liquids yesterday?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not used []
4. Not stated/Don't know [999]

H.19 Did [you/child's name] visit a service station yesterday (to buy petrol, groceries, pump tyres etc)?

(Single Response.)

1. Yes []
2. No []
3. Don't know []

H.20 Did [you/child's name] visit an enclosed car park yesterday?

(Single Response.)

1. Yes []
2. No []
3. Don't know []

H.21 In the last month, has [your/child's name] bedroom or main living areas been painted, varnished or had timber floors treated?

(Single Response.)

1. Yes []
2. No []
3. Don't know []

H.22 In the last week, has [you/child's name] done any painting, staining or varnishing?

(Single Response. *(Interviewer note: any type of painting, including at pre-school)*)

1. Yes []
2. No []
3. Don't know []

Sequence Guide:

If QH.22 =2 Go to QH.24

H.23 How much time did [you/child's name] spend painting, staining or varnishing?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter Days []
2. Enter hours []
3. Enter minutes []
4. Not stated/Don't know []

H.24 In the last month, has [your/child's name] bedroom or main living area had new carpet?

(Single Response.)

1. Yes []
2. No []
3. Don't know []

9 Were windows or doors left open in [your/child's name] house yesterday?

(Single Response)

1. Yes []
2. No []
3. Don't know []

10 Does mould grow on the inside walls of [your/child's name] dwelling?

(Single Response.)

1. Yes []
2. No []
3. Don't know []

Sequence Guide:

If Q10 =2,3 Go to Q12

11 In which rooms of the dwelling does mould grow?

(Read Options. Multiple Response.)

1. Bathroom []
2. Toilet []
3. Bedroom []
4. Living room []
5. Dining room []
6. Kitchen []
7. Other []
Specify _____
8. Don't know []

12 What is the nature of [your/child's name] dwelling? Is it a :

(Read Options. Single Response)

1. Detached house []
2. Attached house []
3. Flat or Apartment []
4. Mobile home []
5. Other []
Specify _____
6. Don't know []

13 What is the main building material in [your/child's name] dwelling? Is it:

(Read Options. Single Response)

1. Timber []
2. Brick []
3. Concrete []
4. Plywood []
5. Other []
Specify _____
6. Don't know []

H.25 Does [your/child's name] dwelling have an under-roof garage with direct access to the house?

(Single Response.)

1. Yes []
2. No []
3. Not stated/Don't know []

14 In the last week, have [you/child's name] been bothered by smoke from wood fires?

(Single Response)

1. Yes []
2. No []
3. Not stated/Don't know []

15 Do [your/child's name] live within 100m of a busy 4-lane road or highway?

(Single Response)

1. Yes []
2. No []
3. Not stated/Don't know []

16 In the last week, were [you/ has child's name] present when any petrol engine garden tools were used?

(Single Response.)

1. Yes []
2. No []
3. Not stated/Don't know []

Sequence guide:

If Q16 =2,3 Go to NS

17 In the last week, how much time were [you/ child's name] present when petrol engine garden tools were used?

(Single Response. Enter 999 if not stated. Enter number of hours and/or minutes)

1. Enter hours []
2. Enter minutes []
3. Not stated/Don't know []

I. DEMOGRAPHICS

Now to finish off with some general questions.

I.1 Voice (ask if unsure) / Sex of selected respondent.

1. Male []
2. Female []

I.2 Including (yourself / child's name) how many people living in this household are in each of the following age groups?

(Multiple Response. Interviewer note: enter number of people in each age group)

1. **0 to 4** []
2. **5 to 14** []
3. **15 to 24** []
4. **60+** []
5. Not stated []

I.3 What is the Postcode of the house?

(Single Response.)

1. Enter postcode []
2. Not stated [9999]

Sequence Guide:

If Q1.3 < 9999 & AGE >= 18 years Go to Q18

If Q1.3 < 9999 & AGE <18 years, Go to Q24

I.4 What town, suburb or community do [you/ child's name] live in?

(Single Response.)

1. Enter town/suburb []
2. Not stated []

Sequence guide: If AGE <18 years, Go to Q24

18 What is your marital status?

(Read options - Single Response.)

1. **Married** []
2. **Living with a partner** []
3. **Separated** []
4. **Divorced** []
5. **Widowed** []
6. **Never married** []
7. **Refused** []

19 What is your work status?

(Read options - Single Response.)

1. **Full time employed** []
2. **Part time/casual employment** []
3. **Unemployed** []
4. **Engaged in Home duties** []
5. **Retired** []
6. **Unable to work** []
7. **Student** []
8. **Other**
(specify) _____

20 What kind of work have you done for most of your life?

(Single Response.)

1. **Specify** _____
2. **Never Worked** []

Sequence guide:

If Q19 >=3 Go to Q24

21 Did you work yesterday?

(Single Response.)

1. **Yes** []
2. **No** []
3. **Not stated/Don't know** []

22 Did you work the day before that?

(Single Response.)

1. **Yes** []
2. **No** []
3. **Not stated/Don't know** []

23 Where do you work?

(Read Options. Multiple Response)

1. **At home** []
2. **In a shopping centre** []
3. **In a factory / workshop** []
4. **In an office** []
5. **In a vehicle** []
6. **Outdoors** []
7. **Other** []
Specify _____
8. **Not stated/Don't know** []

24 What is [your/child's name's] country of birth?

(Single Response.)

1. **Australia** []
2. **Austria** []
3. **Bosnia-Herzegovina** []
4. **Canada** []
5. **China** []
6. **Croatia** []
7. **France** []
8. **Germany** []
9. **Greece** []
10. **Holland/Netherlands** []
11. **Hong Kong** []
12. **Iran** []
13. **Italy** []
14. **Japan** []
15. **Malaysia** []
16. **New Zealand** []
17. **Philippines** []
18. **Poland** []
19. **Slovenia** []
20. **Spain** []
21. **U.K. and Ireland** []
22. **USA** []
23. **Vietnam** []
24. **Former Yugoslav Republic of Macedonia** []
25. **Former Yugoslav Republic of Serbia and Montenegro** []
26. **Other** country
(specify) _____
27. **Don't know** []

Sequence guide:

If Age ≥16 years, Go to Q25

If Age <16 years, Go to Q1.5

- 25 Which best describes the highest education qualification you [have/ child's name has] obtained?

(Read options - Single Response.)

1. **Still at school** []
2. **Left school at 15 years or less** []
3. **Left school after age 15** []
4. **Left school after age 15 but still studying** []
5. **Trade/Apprenticeship** []
6. **Certificate/Diploma** []
7. **Bachelor degree or higher** []
8. Not Stated/Refused []
9. Don't know []

- I.5 Can you tell me the approximate annual gross income of [your / child's name's] household? That is, for all people in the household before tax is taken out. I'll read out some categories and could you please tell me into which one your household's income falls?

(Read options - Single Response.)

1. **Up to \$12,000** []
2. **\$12,001 - \$20,000** []
3. **\$20,001 - \$30,000** []
4. **\$30,001 - \$40,000** []
5. **\$40,001 - \$50,000** []
6. **\$50,001 - \$60,000** []
7. **\$60,001 - \$80,000** []
8. **More than \$80,000** []
9. **Don't know** []
10. Not stated/refused []

- 26 How many residential telephone numbers, including mobile phones, can be used to speak to someone in this household?

(Single Response. Interviewer note: do not include Internet or fax numbers)

1. Enter number _____
2. Don't know [99]

- 27 How many times [do these / does this] number(s) appear in the White Pages?

(Single Response. Interviewer note: do not include Internet or fax numbers. Total number of entries includes numbers that are listed more than once.)

1. Enter number _____
2. Don't know [99]

(Single response)

1. Yes (specify - record first name only) _____
2. No []

That concludes the survey. On behalf of the National Environmental Protection Council, thank you very much again for taking part in this survey.

APPENDIX 3: DEMOGRAPHIC TABLE

Table A3.1: Number of interviews conducted by State and age group

City or Town (in alphabetical order)	0 to 4 years	5 to 14 years	15 to 25 years	60 years or over	Total
Adelaide	45	96	105	144	390
Brisbane	40	83	91	87	301
Canberra	45	95	109	82	331
Darwin	46	89	88	41	264
Gladstone	52	112	89	71	324
Hobart	42	89	92	117	340
Launceston	33	70	70	93	266
Melbourne	39	80	86	101	306
Perth	38	82	89	91	300
Sydney	41	81	86	97	305
Total	421	877	905	924	3127