

August 2023

**Health Watch – a leading health study of people in the Australian Petroleum Industry**

**FINAL ANALYSIS**

*Health Watch* is a comprehensive program that has monitored the well-being of over 20,000 people who have worked, or currently work, in the petroleum industry. This study followed their health status during their tenure in the industry as well as after they retired or resigned. *Health Watch* recorded instances of cancers and, eventually, determined cause of death. By analysing the findings for various job roles within the petroleum industry and comparing cancer and mortality rates to those of the general Australian population, *Health Watch* offers valuable insights into industry and lifestyle associated risks.

**Summary**

The *Health Watch* Study consistently reveals that employees in the Australian petroleum industry have better health than the general Australian population and are less likely to die from cancer, heart, respiratory and digestive diseases when compared to the broader community. Their chance of developing most types of cancer is similar to, or lower than, that of other Australians.

**The latest data**

These findings represent a concise overview of the health outcomes of the *Health Watch* cohort as presented in the 16<sup>th</sup> *Health Watch* report. The update of the *Health Watch* study is based on mortality data up to 2020 and cancer registration up to 2016. These dates correspond to the most recent information available from the Australian Institute of Health and Welfare at the time of the analysis.

Approximately 60% of the current *Health Watch* cohort comprise members who are now over 70 years old. While only 1,150 members continue to be employed by participating companies, all cohort members, including retirees, are included in the analyses for the *Health Watch* Reports.

*Existing Health Watch members*

Sex	Number of members	Number of deaths	Number of cancers
Male	16,666	4,522	4,477
Female	1,374	142	196
Total	18,040	3,483	3,603

**Health Watch death rates are low for men and women**

After accounting for age, the *Health Watch* cohort demonstrates significantly lower mortality rates compared to the general Australian population. Both men and women within the cohort exhibit an approximately 20% and 30% lower death rate respectively compared to national rates. In all major disease categories, the mortality rate among men was significantly lower, except for nervous system diseases (Alzheimers and Parkinsons), where the rates are similar to the general population. Heart and respiratory disease rate was 27% lower, cancer mortality was 10% lower, diseases of the digestive system and external causes such as accidents were both 29% lower compared to national rates.

**Risk of cancer for men and women not increased**

There is no significant difference in the likelihood of developing most types of cancer for men and women in this industry compared to the general Australian population. However, it is important to note that the proportion of women within the *Health Watch* cohort was relatively small, which limits the ability to conduct detailed analyses specifically for this group.

**The risk of cancer and mortality among men**

The health status of male employees does not vary between different workplaces and, in fact, compares favourably with the rates observed in all Australian men. This means that the likelihood of dying or of getting cancer or heart disease are similar no matter where *Health Watch* members worked including upstream production sites; refineries, terminals and airports.

In comparison to national rates, the *Health Watch* cohort members exhibit:

- *Fewer:* lung cancer, liver cancer and cancers of the lip, oral cavity and pharynx, pancreas and leukaemia.
- *More:* mesothelioma, melanoma and prostate cancer
- *Similar rates of most other cancers including:* colon, stomach and bladder.

Even though the rates of melanoma and prostate cancer were higher in the cohort, the risk of dying from these cancers were the same as the national rates.

**Leukaemia rates continue to decline**

The latest analysis confirms that the risk of developing leukaemia by *Health Watch* cohort members continues to decline and is now, in fact, significantly lower than the general Australian rate. Acute Myeloid Leukaemia is a subtype of leukaemia known to be linked to benzene exposure. Within the *Health Watch* cohort, there have been 24 cases of Acute Myeloid Leukaemia, which is less than the expected number of 32 cases based on rates observed in the Australian population.

**Few asbestos-related lung cancers likely**

There was an overall reduction of 16% in the incidence of lung cancer in the cohort compared to the national rate. This decline is likely attributed to lower smoking rates observed within *Health Watch* compared to the general population. It is important to note that asbestos exposure is another known cause of lung cancer. Some international studies have indicated higher rates of lung cancer among refinery maintenance workers due to potential asbestos exposure, such as through asbestos lagging on pipes. However, within the *Health Watch* cohort, there was no significant difference in lung cancer rates between refinery workers and employees from other workplaces. Furthermore, no distinction was observed in lung cancer rates between maintenance and non-maintenance refinery workers. These findings suggest that the likelihood of asbestos-related lung cancers among Australian refinery workers within the *Health Watch* cohort is relatively low.

### **Melanoma rates are higher than expected**

Melanoma remains one of the most prevalent cancers within *Health Watch*, and its incidence continues to show a 21% increase compared to national rates, particularly in sunnier states. When comparing the cohort to relevant state rates, the risk of melanoma is found to be 23-32% higher. However, it is important to note that mortality from melanoma within the cohort is similar to the national rates.

### **Mesothelioma risk remains elevated**

There were 63 cases of mesothelioma, which is an increase of 14 cases since the previous report. This type of cancer is strongly associated with exposure to asbestos. Among *Health Watch* members, the majority of mesotheliomas occurred in those who were either refinery operators or maintenance operators. It is also important to acknowledge that some cases may have been caused from asbestos exposure outside the petroleum industry.

### **Prostate cancer rates are higher than expected**

The incidence of prostate cancer within the *Health Watch* cohort continues to be higher than the expected number of cases. However, the mortality rate from prostate cancer is similar to that of the general population. While the exact reason for this pattern remains uncertain, one possible explanation is that *Health Watch* members undertake higher rates of screening for prostate cancer compared to the general population. This proactive approach to screening may contribute to the earlier detection and treatment of prostate cancer, ultimately resulting in similar mortality rates despite the apparent higher cancer incidence within the cohort.

### **Bladder and Kidney cancer risk similar to general population**

Previous *Health Watch* analyses highlighted a potential elevated risk of bladder cancer. However, the current and previous analysis reveals the overall risk of bladder cancer within the cohort is now comparable to that of the national population. The overall occurrence of kidney cancer within the cohort remains similar to the national rates.

### **Drivers (mostly tanker drivers)**

Compared to the general population, the risk of dying from all causes combined is lower for the driver job group and dying from cancer, specifically, was similar to national rates. Risks of getting prostate cancer and melanoma are higher than expected. Cancer risk is associated with smoking, and the driver group has a higher proportion of ever smokers – 73% for drivers compared with 65% for the remaining workforce.

### **Most smoking-related diseases in men lower than the general population**

Lung cancer, cancer of the lip, oral cavity and pharynx, and deaths from respiratory disease including COPD are significantly lower in men in *Health Watch* than in the general population.

### **Smoking probably played a part in over 40% of deaths**

There is a noticeable and unsurprising pattern indicating that smoking is linked to an elevated risk of overall mortality, particularly ischaemic heart disease mortality. Smoking is also associated with an increased risk of overall cancer incidence and cancer related mortality, and of bladder cancer incidence.

When comparing individuals who smoke 1-19 cigarettes a day to those who have never smoked, the following observations can be made:

- a 215% increase in the overall death rate
- a 252% increase in deaths from heart disease
- a 1200% increase in cases of lung cancer

Higher rates of these deaths and cancers are seen in those who smoke more. Altogether it is estimated that smoking has been a contributing factor to about:

- 49% of all male cancer deaths – about 700 men
- 48% of heart disease deaths – about 290 men.

By considering all causes of death, it is estimated that smoking has contributed to approximately 1470 cases, which accounts for 43% of the 3,419 deaths among *Health Watch* members who have ever smoked.

### **Quitting reduces the risks**

Risk of lung cancer and heart disease is clearly reduced by quitting smoking. Compared to non-smokers, those who quit show:

- only a slight increase in overall mortality
- heart disease death rate similar to never smokers
- the risk of lung cancer remains raised but the risk is a fraction compared to the highest smoking group

### **Alcohol consumption**

In comparison to moderate drinkers who consume 1-7 alcoholic drinks per week, heavier drinkers who consume up to 3 drinks per day experience a 50% higher death rate and a 22% increased rate of cancer. Moreover, those who drink excessively (more than 7 drinks per day), experience an 80% higher death rate and a 26% higher rate of cancer compared to moderate drinkers.

### **WANT MORE DETAILS?**

The findings here are a summary of the latest and final results presented in the 16th *Health Watch* report. The complete report is available on the following websites:

Australian Institute of Petroleum (AIP)  
[www.aip.com.au/programs/health-watch](http://www.aip.com.au/programs/health-watch)

Monash Centre for Occupational and Environmental Health  
[www.monash.edu/medicine/sphpm/coeh/research/healthwatch](http://www.monash.edu/medicine/sphpm/coeh/research/healthwatch)

### **FINAL ANALYSIS**

After more than 40 years, the *Health Watch* Study is coming to a close. There has been little in the way of major change in the findings since the last report, and the Study is therefore no longer providing new scientific information for the industry and its employees. However, the very longstanding and independent conduct of the Study and its strong reputation provides well-based confidence in its published analysis and findings over an extended investigation period.

Please keep a look out for a Wrap Up Report encompassing the many years of overall results, feature stories, recollections and more. This will be published on the above websites.

### **THANK YOU FOR YOUR CONTRIBUTION TO THE HEALTH WATCH STUDY OVER MANY YEARS**

Got a question? Please email us:  
[healthwatch@monash.edu](mailto:healthwatch@monash.edu)