



November 2013

A continuing study of the health of people in the Australian Petroleum Industry

Health Watch includes over 20,000 past and present employees in the petroleum industry who are tracked during their time in the industry, and after they leave or retire. Along the way, *Health Watch* records any occurrence of cancer and, eventually, the cause of death. By evaluating the results for different jobs within the petroleum industry, and comparing the cancer and death rates with the general Australian population, *Health Watch* provides information about risks in the industry, particular jobs within the industry and risks due to lifestyle. The existing *Health Watch* cohort includes around 18,000 employees and a new cohort was formed in 2010-2012 by recruiting 2,000 current employees in the industry. This new cohort will be evaluated in the future as information becomes available.

Summary

Overall, the Study shows that Australian petroleum industry employees are less likely to die from cancer and from heart, respiratory and digestive diseases than the general population. Their chance of developing most types of cancer is no different to that of other Australians.

The latest data

The findings here are a summary of the latest results of the existing *Health Watch* cohort presented in the 14th *Health Watch* report. This update of the *Health Watch* study is based on deaths to 30th November 2010 and cancers registered to 31st December 2008. These were the latest dates for which the national cancer and death statistics were available from the Australian Institute of Health and Welfare.

Around 60% of the existing *Health Watch* cohort members are born between 1940-1960 (ie. over 60 years old). Around 3,000 members remain employed by participating companies, however, everybody in the cohort, including retirees, is included in the analyses in the 14th *Health Watch* Report.

Existing Health Watch members

Sex	Number of members	Number of deaths	Number of cancers
Male	16,639	2265	2,586
Female	1,374	64	94
Total	18,013	2329	2680

Health Watch death rates are low for men and women

Compared with the general Australian population and after allowing for age differences, the death rate in the *Health Watch* cohort is about 30% lower for men and women compared to the national rates, and lower for men in **all** major disease categories: heart disease (25% lower), cancer (20% lower), respiratory disease (30% lower), diseases of the digestive system (40% lower) and external causes such as accidents (40% lower).

Chance of cancer for men and women not increased

The chance of developing most types of cancer is no different for men and women in this industry compared with other Australians. The proportion of women in *Health Watch* remains small and this prevents detailed analyses.

The risk of cancer and mortality among men

The health of male employees, as measured from the *Health Watch* results, differs very little between those who worked at various types of workplaces in the industry, and compare favourably with the rates in all Australian men. That is, the chance 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. Drivers had about a 10% higher risk of contracting cancer compared with the national rates, but their risk of dying from cancer was about 15% lower than the general Australian population.

Compared with the national rates, the *Health Watch* cohort members have:

Higher rates of: mesothelioma, melanoma, prostate cancer (see discussion over).

Lower rates of: lung cancer, liver cancer and cancers of the lip, oral cavity and pharynx

And a similar rate for most other cancers including: leukaemia, colon, stomach and pancreas

Asbestos-related cancers

There were 39 cases of mesothelioma, 16 more have been identified since the last report. This cancer is strongly associated with asbestos exposure. Among *Health Watch* members, 26 of the 39 cases have occurred in refinery workers and 6 were among drivers. It is likely that several of these cancers are related to asbestos exposure in refineries before the 1970s, although some could be from asbestos exposure outside the petroleum industry.

Asbestos-related lung cancer unlikely in the Australian petroleum industry

Asbestos exposure can also cause lung cancer. Some overseas studies suggest there are asbestos-related lung cancers in refinery maintenance workers. Refinery maintenance workers would have been more likely to have been exposed to asbestos. Our analyses show no difference in lung cancer rates among refinery workers compared with those from all other workplaces. There was also no difference in lung cancer rates between maintenance and non-maintenance refinery workers. This suggests that very few asbestos-related lung cancers have occurred from working in Australian refineries. Overall, the lung cancer rate is 20% lower in the cohort compared to the national rates.

Risk of leukaemia same as general population

The latest analysis confirms that the risk of leukaemia is no greater than that of the general population. One leukaemia type known to be associated with benzene exposure is ANLL. There have been an additional 3 cases in the last 6 years among *Health Watch* members. There are 14 cases, but this is lower than the 20 cases which would be expected, based on rates in the Australian population.

Melanoma rates higher than expected but unlikely to be caused by any workplace factor

There is a 20% increase in the incidence of melanoma among *Health Watch* members compared to national rates. When compared to relevant state rates, the increase in risk of melanoma is 20-30% higher in the cohort. The rate does not increase with increasing duration of employment, time since first employment or period of first employment, which suggests that workplace factors are not the likely explanation.

Prostate cancer rates higher than expected

There are more cases of prostate cancer in *Health Watch* than expected; however, death from prostate cancer is the same as that of the general population. Although the reason for this is unclear, it may mean that *Health Watch* members could be screened for and accessing medical care for prostate cancer at an early stage.

Bladder cancer risk similar to general population

In previous letters to *Health Watch* members, a possible increase in the risk of bladder cancer was reported. However, the risk of bladder cancer for the cohort as a whole is now similar to that of the national population. An excess of bladder cancer remains for drivers (19 cases vs 12 expected) when compared to the general population, but the small number of cases does not allow meaningful analyses of possible contributing factors in drivers. This excess will be continually monitored.

Kidney cancer same as general population

The overall incidence of cancer of the kidney in the cohort remains similar to the national rates.

However, kidney cancer remains in excess among drivers (18 cases vs 12 expected), but the small number of cases does not allow meaningful analysis of possible contributing factors. The rate of kidney cancer in drivers will continue to be monitored

Smoking probably played a part in 40% of deaths

There is a clear pattern that increasing smoking is associated with increasing risk of overall mortality, specifically ischaemic heart disease mortality, increasing risk of overall cancer incidence and mortality, and of bladder cancer incidence.

Compared to non-smokers, those who smoke 1-19 cigarettes a day show:

- a 2.5-fold increase in the death rate
- nearly a 2.5-fold increase in the death rate from heart disease
- nearly a 16-fold increase in cases of lung cancer

Altogether it is estimated that smoking has been a contributing factor to about:

- 41% of all male cancer deaths in the *Health Watch* group – about 390 men
- 43% of deaths from heart disease – about 214 men.

Combining all causes of death, it is estimated that smoking has played a part in about 883, or 39% of the 2,265 deaths among *Health Watch* members. Comparison of the current analyses and those in the 13th *Health Watch* report suggests that smoking effects are becoming more pronounced as the cohort ages.

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 mortality
- the death rate from heart disease is only slightly raised
- the risk of lung cancer remains raised but drops to 6 fold, almost one seventh the risk for the highest smoking group

Alcohol consumption

Moderate drinkers have lower death rates than total abstainers. Heavy drinking (more than 7 drinks per day), however, remains associated with increased overall mortality.

MISSING MEMBERS

We have lost touch with some of the members of the cohort. If you know of a member who has not received this newsletter please ask them to contact us.

WANT MORE DETAILS?

The findings here are a summary of the latest results presented in the 14th *Health Watch* report. The complete report is available on the following websites:

Australian Institute of Petroleum (AIP)
<http://www.aip.com.au/health/ohs.htm>

Monash Centre for Occupational and Environmental Health
(www.coeh.monash.org/healthwatch.html).

YOUR CONTINUING PARTICIPATION IN *HEALTH WATCH* IS VITAL

If you want to ask a question or notify a change of address please ring the free-call number 1 800 631 772 or email us: healthwatch@monash.edu