

DOWNSTREAM PETROLEUM



ENVIRONMENT, HEALTH AND SAFETY



KEY MESSAGES

- AIP and its member companies are committed to safe and environmentally sound practices in their operations. AIP member companies in Australia share the general community concern for conservation of the environment, and seek to protect air, water and soil from contamination through their operations.
- In this commitment to safety and the environment, their aim is to:
 - achieve a zero accident/harm rate
 - treat with care all materials that may cause pollution
 - regularly maintain their refinery, terminal and retail infrastructure to comply with various Federal and State regulations
 - maintain open communications with governments and local communities
 - support market mechanisms for conservation and wise use of our valuable energy resources.
- Some of the programs contributing to these objectives are the AMOSC oil spill response centre, the CRC CARE research program, the petroleum industry Health Watch program, production and supply of low aromatic fuels, and lubricants waste management and recycling programs.



HEALTH WATCH

For over 40 years AIP has sponsored an epidemiological study called Health Watch which tracks the health of over 20,000 past and present employees of the Australian petroleum industry. Health Watch information is important in identifying factors that may be a health risk to industry employees and ways in which these risks may be addressed.

Health Watch is an independent university-based research program, currently conducted by the Monash Centre for Occupational and Environmental Health, a leading international centre for epidemiological research at Monash University.

Health Watch is highly valued by petroleum companies and their employees and is an internationally respected study. Recently the study was expanded to provide new employees in participating company worksites across Australia the opportunity to join, which expanded the *Health Watch* cohort by 2,000 employees.

The study's findings are published in regular Health Watch reports. Overall, the reports have clearly and consistently shown that petroleum industry employees represented in Health Watch have better health than the general community.

For example, the mortality of male employees does not differ between workers at various workplaces in the industry (e.g. refineries, fuel terminals, airports and upstream production sites) and compares favourably with the rates in all Australian men.

The latest Health Watch Report (15th) published in mid-2018 builds on the results of the preceding fourteen reports in demonstrating that compared to the general population, participants in the Health Watch program have:

- lower overall death rates for men and women (around 20% lower);
- lower death rates for men in all major disease categories, including heart disease (28% lower), cancer (12% lower), respiratory

disease (24% lower), diseases of the digestive system (28% lower) and external causes such as accidents (32% lower);

- the same chance overall as the broader Australian community of developing most types of cancer
- lower death rates and cancer incidence for women in the industry compared to that of Australian women generally, but there is only a comparatively small number of women in the study population.
- for men, lower rates of lung cancer (20% lower), liver cancer, and cancers of the lip, oral cavity and pharynx, and similar rates for most other cancers including leukaemia (which was a previous concern), bladder and kidney cancer, and cancers of the colon, stomach and pancreas;
- a reducing risk now of leukaemia, including lower rates than nationally for one leukaemia type known to be associated with benzene exposure, called Acute Myeloid Leukaemia (AML);
- higher rates of melanoma and prostate cancer, but deaths from these cancers are the same as that for the general population; the report suggests that workplace factors or exposures in the petroleum industry are not a likely explanation for these cancer rates;
- higher rates of mesothelioma, likely to be associated with asbestos exposure in the 1950s and 1960s and could also be from asbestos exposure outside the petroleum industry.

Health Watch also analyses the powerful effects of lifestyle on the health of industry employees:

- it is estimated that smoking has played a part in about 50% of the deaths among Health Watch members, but quitting smoking noticeably reduces the risks
- low to moderate drinkers have lower overall death rates than total abstainers, but heavy drinking (7+ drinks per day) remains associated with increased overall mortality.

For more information on the 15th Health Watch Report see:

www.aip.com.au/health/ohs.htm



CRC CARE

AIP is a foundation participant of the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE). CRC Care undertakes innovative, cutting edge research aimed at preventing, assessing and remediating contamination of soil, water and air. CRC CARE is delivering research outcomes that underpin policy development work, numerous technology patents and techniques, and extensive academic and industry training.

The research is divided into four complementary programs:

- 1. Best practice policy:** More effective, efficient and certain national policy for assessing and remediating contamination
- 2. Better measurement:** More accurate, rapid, reliable and cost-effective measurement and assessment
- 3. Minimising uncertainty in risk assessment:** New technology, methods and knowledge for assessing risks to human health and the environment
- 4. Cleaning up:** Innovative clean-up technologies and a wider range of effective management options.

AIP'S KEY FOCUS RELATES TO BOTH THE DEVELOPMENT OF THE NATIONAL REMEDIATION FRAMEWORK (NRF) AND THE DEDICATED CRC CARE PETROLEUM RESEARCH PROGRAM

The NRF will provide regulators and practitioners with practical remediation guidance to complement the National



Environment Protection (Assessment of Site Contamination) Measure.

It is expected that the NRF will facilitate more effective and efficient site remediation where appropriate for the downstream petroleum industry. The success of the NRF will rely on the development of a clear pathway to adoption by regulatory agencies.

The Petroleum Research Program involves collaboration between industry, researchers and environmental regulators to develop best practice, risk-based approaches to remediation of soil and groundwater contaminated by hydrocarbons. The program provides for the development of guidance documents relating to site characterisation, health screening levels for petroleum hydrocarbons, monitored natural attenuation, light non-aqueous phase liquid (LNAPL) remediation, and petroleum vapour intrusion.

CRC CARE has also led a project on the assessment, management and remediation of perfluorooctanesulfonate (PFOS) and perfluorooctanoic acid (PFOA). These perfluorochemicals have historically been used to improve the ability of fire-fighting foam to smother fire. CRC CARE has not only developed comprehensive guidance documents for site assessment and remediation in relation to PFOS and PFOA, but CRC CARE has developed a proven on-site solution called matCare that removes aqueous film forming foams from contaminated soil and wastewater.

For more information on CRC CARE, see: <https://aip.com.au/programs/crc-care>

OIL SPOIL RESPONSE

Companies involved in petroleum exploration and production, and in refining and distribution of petroleum products, have major programs in place to minimise the risk of a marine oil spill. Company personnel are also trained to respond to any oil spill so as to minimise any environmental impact. These company specific petroleum industry activities are supported and supplemented by the Australian Marine Oil Spill Centre (AMOSC), a wholly owned subsidiary of AIP set up in 1991. AMOSC has offices at Geelong, Victoria and Fremantle, WA, with additional equipment warehouses in Exmouth WA and Broome WA.



AMOSC's primary roles are to:

- provide equipment and personnel on a 24-hour basis to support a major oil spill response,
- maintain petroleum industry stockpiles of equipment for use in a response to a major oil spill,
- maintain the Australian petroleum industry Subsea First Response Toolkit for use during loss of well control scenarios
- maintain and support petroleum industry capability to respond to oiled wildlife during an oil spill response,
- coordinate Australian petroleum industry mutual aid arrangements for oil spill response
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- train, accredit and maintain a core group of spill response personnel
- advise governments on the industry capacity and capabilities.

AMOSC also provides a range of ancillary services and advice to the petroleum and shipping industries, and to governments in Australia and in the South Pacific region on:

- oil spill pollution emergency response plans
- selection and management of oil spill response equipment, including short term equipment hire,
- operational and strategic advice on oil spill response matters
- access to international oil spill response providers and petroleum industry spill response networks.

AMOSC forms a key part of the petroleum industry's commitment to support Australia's national oil spill response arrangements, as set out in Australia's National Plan for Maritime Environmental Emergencies, in petroleum industry obligations under the Environment Protection and Biodiversity Conservation legislation, and in requirements imposed on the petroleum industry by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

AMOSC resources and services are also made available to Australian governments, through a memorandum of understanding with the Australian Maritime Safety Authority (AMSA), to support responses to oil spills from general shipping and other sources.

AMOSC has provided substantial support to all major oil spill responses in the Australasian region for many years, including the Montara oil spill off the northwest of WA, the Pacific Adventurer and Shen Neng oil spills off Queensland, the Pasha Bulker incident at Newcastle, and the Rena oil spill in New Zealand.

For more information on AMOSC, see: <https://amosc.com.au>

FUEL FOR REMOTE COMMUNITIES

Petrol sniffing continues to be a major concern in some remote communities.

Industry actively supports Government initiatives to address this concern. Since 2005, the industry has produced low aromatic fuels to be supplied to remote communities and the regions surrounding these communities. Low aromatic fuel has been designed to discourage people from sniffing by lowering the amount of the toxic aromatic components, which give people who sniff petrol a 'high'.

THERE ARE AROUND 180 RETAIL SITES ACROSS QUEENSLAND, THE NORTHERN TERRITORY, WESTERN AUSTRALIA AND SOUTH AUSTRALIA THAT SELL LOW AROMATIC FUEL.

The replacement of regular unleaded fuel with low aromatic fuel in targeted regions is a proven strategy to reduce petrol sniffing. Research by the Menzies School of Health Research has found that:

- low aromatic fuel is linked with a continuing decline in the numbers and frequency of young people sniffing petrol in remote communities;
- sniffing rates have been reduced by 88% across communities surveyed since 2005-07; and
- a comprehensive regional approach works best to reduce petrol sniffing.

AIP member companies continue to work closely with federal, state and territory governments to help tackle petrol sniffing.

WASTE MANAGEMENT AND RECYCLING

Lubricants are not completely consumed in use and result in waste oil that needs to be collected and recycled. AIP members have adopted a product stewardship role for their products and are actively supporting the collection and recycling of waste oil and its packaging.

The Australian Government has introduced a product stewardship scheme for waste oil to support recycling, funded through an excise on sales of lubricants. AIP members are also active signatories to the Australian Packaging Covenant which aims to design more sustainable packaging, increase recycling rates, and reduce packaged litter.

AIP, on behalf of its member companies, established and operated a collection and recycling program for used plastic oil containers across Australia for more than ten years. However, due to significant free rider issues where around half of all market participants did not financially contribute to the scheme, the program was closed at the end of 2016. At full scale, over 430 collection sites across Australia were maintained by VIP Packaging on behalf of AIP, with around 500 tonnes of plastic being recycled into various industrial products.

AIP remains committed to identifying a workable solution where all industry participants (beyond the four AIP members) contribute to managing this waste stream. AIP supported the listing of Used Oil Bottles on the National Product Stewardship List and expects that this process will deliver a workable solution to this waste stream. AIP also maintains that there is an opportunity to consider recycling of used oil bottles as part of the impending review of the Product Stewardship (Oil) Act.



For more information visit www.aip.com.au