



Welcome

Welcome to the 2nd edition of the A.W.N. (Air Water Noise) Consultants newsletter. Throughout the months between Editions 01 and 02, A.W.N. has been very busy undertaking large scale environmental projects across Australia. During a recent month, A.W.N. was working simultaneously in Western Australia, South Australia, Victoria and New South Wales, demonstrating the truly national capability of the company.

In addition to the varied geographical location of projects, the type and application of the work was also diverse. A.W.N., in consortium with Team Ferrari Environmental, was involved in a federally funded indoor air quality project, examining the effect of unflued gas heaters on indoor air quality. By contrast, A.W.N. also conducted continuous VOC monitoring and odour surveys during a trial of a new contaminated site remediation technology. Further detail of the indoor air quality project and other items of interest are given in subsequent articles.

Recent staff developments at A.W.N. include the addition of Anthony Myszka to the A.W.N. team. With extensive experience in ambient air quality monitoring and instrument maintenance, Anthony has brought a great deal of knowledge and expertise to this area of the business. Other appointments include the selection of Frank Fler as a Planning Panels Victoria Sessional Panel Member.

TEAM LEADERS

| | |
|-------------------------|--|
| Frank Fler: | Environmental auditing and odour |
| Mark Tulau: | Source emission testing, NPI and modelling |
| Anthony Myszka: | Ambient air quality monitoring |
| Jacinda Houston: | Indoor air quality |

More information, including a range of case studies, can be found on the recently updated A.W.N. website: www.awn.com.au

Planning Panels Victoria Appointment

A.W.N. Consultants is proud to announce the appointment by the Victorian Minister of Planning of Frank Fler as a Planning Panels Victoria Sessional Panel Member.

Planning Panels Victoria manages the public participation phase of the environmental assessment process under the Victorian *Planning and Environment Act* and *Environment Assessment Act*.

Panels play an important role in the consideration of submissions, conduct of public hearings, preparation of reports and in making recommendations to the relevant government authorities.

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Unflued Gas Heaters and Indoor Air Quality

Throughout winter and spring of 2003, A.W.N. Consultants, in consortium with Team Ferrari Environmental, conducted an indoor air quality study on domestic residences using unflued gas heaters in Sydney, Melbourne, country Victoria and Canberra. The Study is the largest of its type undertaken in Australia.

The Department of the Environment and Heritage commissioned the study following the formulation of the study protocol by a reference network of experts.

The aim of the study was to compile scientific indoor air quality data from Australian homes where unflued gas heaters are used. Through measurement of indoor air quality parameters it was intended that an increased knowledge of the relationship between specific contaminants and unflued gas heater use could be determined, as could influencing factors.

Specifically indoor air quality was determined through measurement and notation of the following parameters:

- Indoor concentrations of nitrogen dioxide, nitric oxide, carbon monoxide, carbon dioxide and formaldehyde;
- Outdoor concentrations of nitrogen dioxide and nitric oxide;
- Indoor temperature and relative humidity;
- Ventilation rate;
- Ambient wind speed, wind direction, rainfall, barometric pressure, temperature and relative humidity;
- Gas appliance details;
- House construction and age.

Mobile laboratories were used for nitrogen oxides and meteorological sampling, as instruments could be located in a secure environment with minimal inconvenience to study participants. Portable instruments for carbon monoxide, carbon dioxide, temperature and relative humidity measurement were also set up in test rooms. The scale of the project (approximately 120 homes tested) ensured that a range of heater brands, types and ages were evaluated.

In general the results of the study indicated that the levels of nitrogen dioxide, carbon monoxide and carbon dioxide in rooms where unflued gas appliances were operating were substantially higher than the highest concentrations measured in ambient air in Australia (the measured average peak indoor 1 hour nitrogen dioxide levels were over ten times higher than the equivalent outdoor values measured). In many cases the contaminant concentrations were significantly above recommended human health based indoor air quality criteria.

Further to the scientific results, the study also illustrated the fact that many of the study participants were not aware of indoor air quality issues or knowledgeable about their heater operational conditions and safety requirements.

Overall the unflued gas heater study produced a large indoor air quality data set derived from real life situations. Further independent studies are needed to increase the latitude of this data set with recommendations made for similar studies in school classrooms where unflued gas heaters are used.

For further information about the study, or to obtain information about A.W.N.'s experience in indoor air quality monitoring, please call Jacinda Houston on (03) 9758 7299 or email j.houston@awn.com.au.



Mobile Monitoring Van – set up in front of a domestic residence

Staff Profile – Anthony Myszka

Hi, my name is Anthony Myszka and I have recently started working for A.W.N. Consultants in the capacity of Environmental Officer. Although my initial training was in microbiology, I caught the ‘environmental bug’ which has allowed me to progress in various roles that have proven both challenging and rewarding.

I commenced my newly chosen career with the Rural Water Commission. Whilst there, I worked in the Hydrographic department and was primarily involved with measuring stream flows and provided maintenance to remote gauging installations throughout country Victoria.

I then made the transition from measuring water flow to air quality by serving ten years with the Environment Protection Authority of Victoria. Initially, I performed service and maintenance to the ambient air quality monitoring network (Melbourne and Geelong) as well as writing QA procedures and managing projects. I progressed to become the designated Calibration Officer responsible for calibrating gas analysers and meteorological sensors.

Following this, I spent two years with Ecotech, honing my servicing, calibration and auditing skills whilst maintaining a network of ambient stations. Whilst with Ecotech, I worked with continuous particulate matter analysers (TEOM) as well as gaining valuable experience with DOAS instruments used for monitoring stack emissions.



“I’m looking forward to making new contacts and increasing my skill-set with A.W.N.”

New PM₁₀ & PM_{2.5} Australian and New Zealand Standards

AWN Consultants continues to lead the field in ambient air quality monitoring. AWN was responsible for drafting the soon to be released Australian/New Zealand Standards covering ambient air quality monitoring for PM₁₀ and PM_{2.5} using low volume samplers (LVS):

- AS/NZS 3580.9.9 “Determination of suspended particulate matter—PM₁₀ low volume sampler—Gravimetric method”;
- AS/NZS 3580.9.10 “Determination of suspended particulate matter—PM_{2.5} low volume sampler—Gravimetric method”.

AWN is also the first air quality laboratory in Australia to gain NATA accreditation for PM₁₀ LVS and PM_{2.5} LVS. This adds to our already extensive NATA accreditation for ambient air quality monitoring, which now includes:

- CO₂, CO, H₂S, NO_x and SO₂ (continuous analysers);
- Dust deposition (insoluble solids, ash, combustible matter & soluble solids);
- TSP, PM₁₀ and PM_{2.5} (HVS & LVS);
- Fluorides;
- Heavy metals;
- VOC speciation (evacuated canisters);
- Reduced sulphur compounds (evacuated canisters).

LVS sampling for suspended particulate matter has a number of advantages, including lower project costs and ease of location, with no reliance on 240 V power. LVS filter weighing however requires a high performance six figure microbalance and tight control on the humidity and temperature of the conditioning environment. AWN’s microbalance and balance room meet these stringent requirements.

For more information contact Anthony Myszka on (03) 9758 7299 or email a.myszka@awn.com.au.



A.W.N. inspection of USEPA PM_{2.5} monitoring equipment assessment platform, North Carolina



A.W.N. LVS sampler at hard rock quarry

Melbourne Terminal Chemical Storage Facility, Victoria

Terminals Pty. Ltd. provides port side bulk liquid storage and handling services at the Melbourne Terminal, Coode Island, West Melbourne, for the plastics, chemical, petroleum, mining, pharmaceutical and food industries. The bulk liquids terminal has a storage capacity of 74,000 m³, with a throughput in excess of 250,000 tonnes per annum, the largest facility of its type in Australia.

Major chemicals handled are benzene, BTX, acrylates, acrylonitrile, propylene oxide, styrene, TDI, phenol, phthalate plasticisers and a range of organic solvents. Organic vapour emission sources include:

- Storage tank diurnal breathing and cleaning;
- Ship unloading and loading;
- Road tanker unloading and loading;
- Container filling;
- Exchange pits, pump pits and road tanker pits;
- Dock line pigging and pressure testing;
- Wastewater tanks.

"A.W.N. has a good understanding of business and EPA requirements and consistently produces work of a high standard to deliver the desired outcome."

A.W.N.
means
environmental
engineering
excellence

Works Approval Application

A.W.N. (Air Water Noise) Consultants was commissioned by Terminals to prepare an EPAV Application for Works Approval, covering the \$60 million redevelopment of the chemical storage and handling facility. A.W.N. also assisted in plant and equipment preliminary design, conducted negotiations with EPAV and Department of Human Services and assisted in the community consultation and public hearing process.

Works Approval was granted for the chemical storage facility redevelopment, with no subsequent third party objections.

Air emission sources are now controlled by combustion systems, together with product specific air pollution control systems {vapour return (storage to ship; road tanker to storage tank), activated carbon adsorption systems and wet chemical scrubbers}.

Carlo Fasolino, Victorian Manager of Terminals, stated that "A.W.N. has a good understanding of business and EPA requirements and consistently produces work of a high standard to deliver the desired outcome".

Carlo further notes that "What has impressed me most is the high level of commitment and negotiating skill A.W.N. has shown when dealing with the regulatory authority".



Aerial view of Terminals Site

Further consulting services

Other environmental monitoring and management services provided by A.W.N. Consultants to Terminals have included:

- Conduct of a statutory Environmental Audit, under the provisions of the Environment Protection Act, to assess the effectiveness of an activated carbon adsorption system used for the control of vapours emitted from acrylate storage and handling operations;
- Detailed design of a wet chemical scrubbing system to achieve a 99.99% removal efficiency for acrylate vapour emissions to air, together with plume dispersion modelling to assess environmental impacts;
- Conduct of a Waste Audit and subsequent preparation of a Waste Management Plan covering all site operations;
- Ambient air quality monitoring programme, utilising USEPA Method TO-14A SUMMA canisters and GC/MS analysis, to determine VOC and acrylate concentrations in adjacent residential communities;
- An extensive emission monitoring programme, measuring odour and speciated VOC's emitted from site vapour emission control systems, under a range of "worst case" operating conditions;
- Evaluation of options for the continuous monitoring of acrylates emitted from activated carbon bed adsorption systems. Installation, operation, calibration and maintenance of a continuous emission monitoring system installed on an activated carbon adsorption system exhaust, together with associated data validation and reporting of benzene emission data;
- Plume dispersion modelling to assess the environmental impact of benzene, acrylonitrile, acrylates and odour emissions to air from site, at both ground level and elevated receptors located on the adjacent container wharf;
- "Real time" mathematical modelling of benzene emissions sources over a 7 month period, aimed at determining maximum predicted benzene concentration sites beyond the site boundary, together with ambient air quality monitoring, utilising SUMMA canisters, to verify model predictions;
- Preparation of a Stormwater Management Plan, aimed at identifying opportunities to reduce the risks of contaminated stormwater, and consequently reducing or mitigating environmental impacts

caused by the discharge of site stormwater to the Maribyrnong River;

- Assessment of the adequacy of chemical storage bunds, based on EPAV Bunding Guidelines;
- Conduct of a stormwater quality monitoring programme, utilising storm event actuated incremental samplers, to determine actual site requirements for a first flush stormwater diversion system.



Combustion systems, Terminals, Melbourne

Accredited Licence Application

A.W.N. Consultants prepared the application to EPAV for an Accredited Licence. The subsequent granting of an Accredited Licence to Terminals recognises the company's high level of environmental performance and its ongoing ability to manage and improve this performance. The other benefits of an Accredited Licence are a reduction in Waste Discharge Licence fees and removal of the requirement of Works Approval for new or modified processes, other than for major works. A.W.N. subsequently conducted statutory EMS, Environmental Compliance, Waste and Environmental Risk Audits, prerequisites for the maintenance of Accredited Licensee status.

MORE INFO

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