

Benbow Environmental Services

Load Based Licensing in NSW

Pollution has become a significant concern in today's society because of its contribution to global warming and in return the subtle climate changes that affect society's standard of living. This has resulted in increased awareness towards the environment and the establishment of the Load Based Licensing (LBL) scheme as a basic incentive approach, primarily targeting agriculture and industry, to reduce the pollution harming the environment

If a premises meets the definition of one or more 'Scheduled Activity' set out in Schedule 3 of the Protection of Environment and Operations Act, they will generally require an Environmental Protection Licence (EPL) from the Department of Environment and Climate Change NSW (DECC - formerly the NSW DEC). Depending on the type and size of the 'Scheduled Activity', such a site or facility may be determined to have assessable pollutants for which load fees are payable under the load based licensing system. All licence holders pay administrative fees. Pollutant load fees are, however, for the potentially most polluting activities in the state.

Pollutant load is the terminology for the pollutant fee, which has to be paid in return for releasing certain amounts of pollutants in a given period of time (generally 12 months). The DECC has developed the 'Load Calculation Protocol' which details the approved methods for calculating emissions for LBL. Three methods used as a means of calculating actual pollutant loads include source monitoring (stack testing), generic emission factors or site specific emission factors.

Stack testing is a well-known testing procedure used commonly by industrial companies to regularly monitor pollutants being released from their site's emission points. Although expensive, it is compulsory in order to avoid heavy penalties for not completing the mandatory requirement.

Generic emission factors are conservative values that can be used to estimate pollutant loads with relative ease. However, as the factors are generally derived from average data and designed so that high emitters cannot under calculate loads, one disadvantage associated with this is the potential over-estimation of pollutant load that could result with using such a conservative value. This then results in paying a higher pollutant load cost compared to what is actually being released on site. Further accurate measurements such as stack testing can be an alternative to ensure that what is being released on site is equivalent to the pollutant fee.

Another alternative to this is the development of site-specific emission factors, which may initially be quite time-consuming but may be less expensive compared to stack testing in the long term. This method is time-consuming due to the extensive study that is required to determine the specific emissions that are unique to the site's processes and activities.

A site-specific emission factor study can provide a greater advantage in some LBL reporting cases due to its potential to address not only the type of emissions that are released site-specifically, but also to address the main causes of pollution and other process-specific factors that might not have been of concern. Awareness to certain issues of the site's process or activity is raised, allowing mitigation measures to be easily generated. This can further lead to other improvement activities or programs such as cleaner production, energy efficiency, or cost-benefit studies, which can greatly contribute to the company's well being and its sustainability in the future: socially, economically and environmentally.

Developing site specific emissions factors requires an extensive study of the site's processes and the possible emission sources of pollution. This study may require a specialist in cooperation with the premise's staff to thoroughly check all the inputs and outputs of the site, process activities and procedures. Inputs generally include all raw materials consumed on site as well as energy and water usage, while outputs include all products and the resultant emissions from the activities of the site. This portrayed 'balance' between inputs and outputs is then used by the specialist to model the emissions in conjunction with fundamental mass transfer, heat transfer, particle technology and reaction mechanics. Emission factors are derived from this model, reflecting the site's processes and pollution release. Site specific emission factors require approval by the LBL Technical Review Panel at the Department of Environment and Climate Change NSW.

Regardless of which alternative methods are used to calculate the pollutant load, the measurement of assessable pollutants needs to be of high accuracy, which is evident in the requirements listed in the LBL guidelines for secure pollutant monitoring.

Benbow Environmental can assist your organisation by completing the annual pollutant load calculations necessary under LBL, using either generic emission factors or site specific emission factors. If you would like to find out more about developing site specific emission factors or LBL, please contact our office.

News in brief

- Final registration date for mandatory participants in the Australian Government's Energy Efficiency Opportunities program passed on March 31st, 2007.
- New State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007, from 16 February 2007
- Odour update - On April 10th, staff at Benbow Environmental met with the Nasal Ranger Inventor Chuck McGinley and discussed the latest technological developments with the device. The Nasal Ranger is just one of the field methods BE utilise to collect odour data in field services. As odour can be a sensitive and potentially subjective issue, BE welcomes advances in technology to improve quantitative data capture and analysis.

- Welcome to the following staff who have joined or returned to our team since the last newsletter:
 - Peter Eisenhuth - Technical Officer assisting our Principal Consultant;
 - Hacer Kilic - Environmental Consultant;
 - Duke Ismael - Graduate Environmental Engineer;
 - Thavone Shaw - Graduate Environmental Scientist; and
 - Virginia Short - Office Administrator.



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Benbow Environmental

Engineering a Sustainable Future for Our Environment

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Benbow Environmental News Update

Engineering a Sustainable Future for Our Environment

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Developing Environmental Management and Sustainability in your company

The level of environmental management and sustainability awareness in a company or business organisation is an indicator of the overall professionalism and sustainability of business endeavours.

The best environmental management involves viewing the company and operation from a holistic point of view. The cycle of business operations are identified, and monitoring provides data for management and improvement. When looking at the operation of truck movement for instance we look at the noise, greenhouse gas emissions, fuel inputs, tracking of sediment on tyres, dangerous and combustible goods in transit and storage, route planning and potential traffic issues as well as potential disturbances to the community and natural systems such as flora and fauna. There is a wide array of external aspects a company's operations may have on the environment.

The opportunity to develop environmental management at your business depends on an understanding of what can be achieved. Examples of environmental management opportunities Benbow Environmental can assist with are:

• **Product Life Cycle Analysis**

This looks at identifying the complete cycle of the business and opportunities for improvement. The site may be reduced to components and the individual components can be targeted for goal orientated outcomes.

• **Energy and Fuel Auditing**

This looks at the energy and fuel inputs including identifying different methods of goal achievement and potential savings. Fuel auditing would determine proper and efficient use of equipment including burners and transport and available alternative technologies. Many operations are not moving to efficient energy opportunities that exist.

• **Environmental Auditing**

This involves an audit of the site or operation to determine compliance with applicable legislation. Value adding can also be generated with recommendations and best practice technologies included to gauge appropriateness for your site or operation. Reducing environmental hazards, adequacy of safeguards, and awareness of site personnel are examples of issues we focus on in our audit protocols.

• **Sustainability Management**

This can involve several methods depending on business structure. Clear operating systems must be generated and the potential security of the maintenance of site and operation would be taken into account.

• **Efficiency Management**

Primarily in production this can take the perspective of equipment maintenance, human resource management including workflow and site operations. Clear monitoring data would be generated to monitor change and improvement.

• **Monitoring Services**

Equipment and service personnel to provide data for decision making. This may include water meters, energy meters, sensed trigger alarms or a wide variety of developing technology that provide the data you need to make decisions or alternatively develop automated systems when viable. Real time monitoring is increasing in popularity in the environmental field.

• **Awareness Training**

Training to clearly identify the company stance on the environment, how this interacts with legislation and the community as well as identifying impacts and site specific concerns of operations. *Continued on Page 2.*

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New Project Highlights

- Preparing the Environmental Management System for Australia's largest Public Private Partnership (PPP) Project - EDI Rail Hitachi Joint Venture PPP Project with RailCorp and Reliance Rail with operations in Australia including design, construction, commissioning and through life support of rolling stock for 30 years;
- Visy Tumut Stage 2 - \$500M project, detailed operational noise design and traffic noise management;
- Compliance study of jetty operation at Port Kembla;
- Noise Control of pipe manufacturing in the Illawarra highlights innovation;
- Environmental assessment of a key sustainability project for the Southern Highlands; and
- Preparation of a manual for battery storage, use and handling across Australia.

Design Achievements

- Acoustical design of large timber mill at Tumarumba for night time operation successful;
- New technique for preventing surface contamination of playground with asbestos cement implemented; and
- Innovative solution for poultry odour to be implemented at Kulnura reducing potential inputs and managing buffer land requirements.

New office opening

May 2007 saw the opening of our Wollongong office. Set up to improve service delivery to the Illawarra, Southern Highlands and the rest of southern NSW, the office is ideally located within the Unanderra Industrial area. Phone (02) 4271 0492 for more information.



Developing Environmental Management and Sustainability in your company – Continued from Page 1

• Cleaner Production

This is a large study conducted on the company as a whole to identify potential in both use of materials and style of operation. It looks at how materials and people are used to achieve the business operations and where monitoring and target objectives for future continual improvement can be engaged.

While OHSE managers are focussed on keeping people at work uninjured, the wider implications of human mistakes present the most risk to the environment and company operations. While all efforts should be made towards human safety, does your business usually operate only on a minimum compliance basis with regard to environmental aspects?

Most environmentally conscious businesses have failed to document their environmental pursuits unless they have a documented sustainability system or environmental management system. These systems provide accurate and documented records and more importantly, a framework for management. In essence the system would provide a direction for future environmental and efficiency savings.

One simple way to start is a suggestion box that is operated effectively with open, prompt communication to everyone about changes implemented based on those suggestions. The benefits are two-fold first you can see what is important to the staff (their currency) and when people have security that good ideas will be acted upon they are more likely to participate, because they can see the real and practical benefits of their participation.

Another straightforward way is to conduct environmental awareness training. Awareness for the environment details how we (as a company) are together in the problem and looking for solutions as a team rather than opposing parties looking to draw on everchanging battlelines, while the environmental

opportunities remain neglected, and the company's competitive edge is lost.

Participation is the key to change, no-one is to be excluded from new developments that come with environmental management. Resistance to change is a concern for business as it cannot operate efficiently or effectively. This is because the change does not always reap clear rewards for those subject



Environmental awareness training

to or enacting it. The development of environmental perspective in business represents the best solution to bring staff on board with the requirements of the business because it brings them into the business with an opportunity for a higher, more valued contribution.

There are so many ways to develop a company environmentally and unless you have a good environmental manager in position or environmental consultant assigned to the responsibility, your company is missing opportunities that your competitors are taking up. Now is the time to start to develop environmental management in your business.

Occupational Improvements to the Confectionery Industry

Manufacturing industries advance and improve at a phenomenal velocity, with the constant input of technology providing an immense choice of chemicals to the clientele market. As the chemical range expands, the workplace hazardous management practices need modifying to provide an appropriate level of protection to new occupational contaminants and possible adverse health effects. Often the manufacturing industry moves at a faster rate than the occupational regulators, which can mean there are as yet no approved sampling or assessment methods.

Food manufacturing companies improve and modify product ingredients to ensure the end product's performance suits their targeted consumers and competes well with other market products. A product gains consumer loyalty by providing the marketed promises and a continuous wide product range to suit the adventurous tastes of the consumer. Some food manufacturers today choose to expand into other food markets to make the most of an opportune gap in the market, and because often they already have the manufacturing capabilities and process equipment to support the change. The confectionery industry is highly competitive and readily displays this evolutionary behaviour to survive in an always-changing market. Therefore it has been a natural progression for some of these companies to expand into pharmaceutical lozenges.

Benbow Environmental were commissioned to conduct an occupational hygiene assessment of a Therapeutic High Boil process for a new medicated lozenge product. The production of the lozenge, introduced anaesthetic airborne contaminants into the surrounding atmosphere and breathing zones of employees. To determine the best practice to capture contaminant emissions,

advice for adopted sampling and laboratory methodology was obtained from the NSW Workcover Laboratory - Testsafe Australia, Chemical Analysis Branch.

The scope of the assessment was to capture airborne concentrations of the chemical ingredients during production of the lozenge. The sampling regime comprised of a combined method of both static and personal locations to identify possible hazardous operating areas. Samples with captured contaminant emissions were converted to exposure concentrations. Due to an absence of occupational exposure limits, additional research was prepared to offer guidance to reduce constituent exposure.

Anaesthetic principal routes of exposure, from research review of pharmaceutical publications, identified contaminants enter the body via skin or eye contact/absorption and inhalation pathways. Research of chemicals highlighted reactions may occur to sensitive individuals. Initially to minimise exposure effects a recommendation was made to reduce chances of reactions by applying mandatory personal protection measures to limit exposure to; skin, eyes, nose or respiratory system.

Due to the supportive and diligent nature of the company, the positive outcome that eventuated from the assessment was the installation of extraction fume systems to reduce potential occupational exposure to employees. Extraction of contaminants at the identified hazardous zones greatly reduces sensitive reactions to process personnel. The innovative occupational workplace approach, is a testament of the company's occupational responsibility to its employees.

The Entertainment Industry and Working with your Community

Many of our readers would be unaware of the significant role Benbow Environmental plays in managing the noise from Sydney's outdoor concerts.

Concerts held at Bondi over the Christmas and New Year period attracted large crowds of patrons and operate into the early hours of the morning.

A three day music festival, The Great Escape, began at Cockatoo Island in the Easter of 2005 and over the past two Easter's has been held at Newington Armoury, part of the Sydney Olympic Park.

Concerts generate significant sound power levels to enable the youthful audience to fully appreciate the music and acts. A natural consequence of this is high noise levels at residences where many are not as appreciative of the style of music or its intrusion into their homes.

Managing this situation where there are residential suburbs housing many thousands requires different skills to our usual environmental services.

Liaison with the community on a personal basis has been a critical factor in preventing a ground swell of opposition to these concerts.

Our Principal Consultant specialises in this aspect which was originally developed at two 24 hour concerts held at the Royal Agricultural Showground. Our role of independently monitoring noise compliance of these events for the State Government continued over two years until a suitable balance between the residential community and noise management of the events was achieved by participation of many.

The noise criteria used are significantly higher than the background 45dB(A) intrusiveness criteria that are applied to industrial developments. There are pragmatic reasons for this, the music events are one offs and there are limitations to the noise control options available.

Our noise management plan involves five aspects:

- Control the L_{Aeq} and L_{Amax} level;
- Alter the levels for sensitive times of the evening and night;
- Stringently control the "bottom end" of the sound spectrum to avoid the rhythmic bass beat that can be so cerebrally irritating and distressing. Residents often term this as being an "acoustic assault"; and

- Significantly – have an experienced person who will control the volume of the sound and deal honestly with residents.

We prepare an initial noise management plan, guide the promoter in the layout of the music event, establish the sound levels at the mixing desks, as well as monitor and control the level of the music and the sound quality during the event. Finally a detailed noise compliance report is provided after the event.

The number of noise complaints from the events managed by Benbow Environmental is always at a minimum and we focus on opportunities for improvement through working with the community.



Noise monitoring equipment in use at 'The Great Escape' music event.



Illawarra on Show

Benbow Environmental exhibited alongside the Illawarra's leading businesses at the inaugural 'IBC Business Expo – Illawarra on Show' on May 30th. Organised by the Illawarra Business Chamber (IBC), the expo aimed to showcase the products and services of businesses across the region, provide networking opportunities, and introduce key speakers to discuss current business issues. Benbow Environmental welcomed the opportunity to showcase our services and increase the exposure of our Wollongong office. Due to the great success of the Expo, the IBC announced that the Expo would become an annual event.