The Business of AIRQuality

SECTION 5.1

GENERAL
BACKGROUND
GUIDELINES

SECTION 5.1 GENERAL BACKGROUND GUIDELINES

This section outlines general best practice guidelines for activities and processes that businesses should use in their control of existing and potential sources of air pollution. The guidelines should be followed when considering development applications for a new premises or changing an existing use. For existing premises the guidelines can help reinforce environmental awareness in all aspects of a business' management and activities.

There are six main areas where best practice should be used to prevent environmental harm. These include:

5.1.1 Business and personnel best practice requirements.
5.1.2 Personnel training.
5.1.3 Environmental risk and hazard management.
5.1.4 Air emissions modelling.
5.1.5 Implementing air pollution control devices (APCDs) and measures.
5.1.6 Land use planning.

5.1.1 Business and personnel best practice requirements

- Businesses should be aware of how their business impacts on the environment and the particular activities that contribute to air pollution.
- No odours, overspray or air pollution should be detectable at the premise boundary. Businesses should prevent emissions from impacting on neighbouring premises particularly in windy conditions.
- Businesses should be familiar with legislation relevant to the activities undertaken on their premises. The principal legislation in NSW addressing pollution is the *Protection of the Environment Operations Act 1997*. It imposes a general environmental duty on all persons undertaking an activity that pollutes or has the potential to pollute, to undertake all reasonable and practicable measures to prevent or minimise any resulting environmental harm. *The Protection of Environment Operations Act 1997* can be found at the Australian Legal Institute's website at *http://www.austlii.edu.au/au/legis/nsw.consol_act/poteoa/1997455/*.
- Personnel managing, owning or employed by a business should:
  - Take reasonable care for their own safety and that of other persons who may be affected by their acts or omissions.
  - Cooperate and ensure safety and environmental controls are followed.
  - Comply with instructions and procedures for their own safety, the health of others and protection of the environment.
  - Report immediately any situation that may present a health and safety or environmental risk.

All personnel under the Protection of the Environment Operations Act 1997 have an obligation to protect the environment.

- Prior to the installation of APCDs businesses should consult an ARA and a suitably qualified air quality consultant to ensure best practice measures are implemented.
- Businesses should use ARAs and industry associations to access information and resources to increase their environmental knowledge.
- Businesses should establish incentives to encourage personnel to prevent air pollution and encourage suggestions on changes for environmental improvement.

5.1.2 Personnel training

- All personnel involved with a business (such as through ownership, employment or contractual engagement) should participate in environmental training. Training should be completed upon commencement of employment and updated annually. Additional training should be conducted when new procedures or equipment are used. Training should cover all aspects of the business and provide the necessary information and skills for a safe and environmentally responsible workplace.
- Training should include:
  - Emergency and spill response procedures and reporting process. **See Section 5.2.4 General activity guidelines general emergency procedures** for best practice guidelines in the event of a spill or emergency.

All personnel should be trained to use a manufacturer purchased spill kit.

  - The legal responsibilities of all personnel to prevent air pollution such as their responsibility under the *Protection of the Environment Operations Act 1997* (Sections 124 to 132 and 147 to 153). The *Protection of the Environment Operations Act 1997* can be accessed on the Australian Legal Institute's website at *http://www.austlii.edu.au/au/legis/nsw/consol_act/poteoa1997455/*.
  - Information about the products used and associated hazards.
  - Any risk and hazard assessment processes.
  - Work practices to be followed for the use, handling, processing, storage, transportation, cleaning and disposal of products used.
  - Work practices to be followed for the operation, commissioning, testing, inspection, maintenance, repair, adjustment or alteration of any equipment.
  - The classification of dangerous goods stored and used on the premises and their requirements.
  - The rights of personnel upon commencement of employment.
- All personnel should be informed and aware of hazards that exist on the premises and given information, instruction, training and supervision in safe work practices.
- Businesses should ensure personnel from non English speaking backgrounds or with special needs are provided with access to relevant training in an appropriate language and have increased supervision if needed.
- Personnel should ensure visitors on the premises are provided with the appropriate information and supervision.

5.1.3 Environmental risk and hazard management

- An annual risk assessment should be conducted for all activities where environmental harm may occur. Additional assessments should be conducted when:
  - An activity is modified.
  - New information on the potential environmental harm of an activity becomes available.
  - Monitoring indicates inadequate control.
  - New and improved control activities or measures become practical.
- To conduct an assessment the activities of a business should be divided into individual assessments and any risks involved evaluated. A risk assessment should include:

- Identification of and information on all products and activities including the potential environmental risk or hazard they present. For example information on the product used, the nature and severity of potential environmental and health effects and the degree of exposure that may occur.
- Any environmental and health and safety information identified by the MSDS.
- Suggested management options for the selection of equipment and APCDs and measures.
- Suggested management options for the proper use and maintenance of equipment and APCDs and measures.
- Identification of any training required.

- Assessment findings should be kept on record permanently (particularly those identifying significant risk) and displayed near the activity or product presenting the risk.
- All assessment reports should be readily available to all personnel employed by the business and an ARA on request.
- For further information on conducting risk assessments for hazardous substances the NOHSC Worksafe publication *Guidance Note for the Assessment of Health Risks Arising from the Use of Hazardous Substances in the Workplace [NOHSC:3017 (1994)]* should be followed. This publication is available on the NOHSC's website at *http://www.nohsc.gov.au/PDF/Standards/GuidanceNotes/AssessmentHealthRisksHazardousSubstancesWorkplace.pdf*.

A risk assessment made this business change from diesel to electric powdered forklifts. This helped reduce air pollution and protected personnel.

5.1.4 Air emissions modelling

- The modelling of air emissions should be conducted with computerised dispersion models. The models are categorised as screening, regulatory or specialist scientific models. Some examples include:
  - **Screen 3 – screening:** Screening models are used to conduct a quick analysis to determine whether more detailed regulatory and specialist scientific modelling is warranted. They include worst case meteorological and emissions data and use generic site characteristics.
  - **AUSPLUME – regulatory:** All regulatory dispersion modelling should be carried out using AUSPLUME in accordance with the *Approved Methods & Guidance for the Modelling and Assessment of Air Pollutants in NSW* produced by the NSW DEC. The methods and guidelines are available on the NSW DEC's website at *http://www.environment.nsw.gov.au/resources/amgmaap.pdf*. The AUSPLUME dispersion model provides ground level concentration and deposition rate predictions for any pollutant, including odours emitted from different sources, such as point (for example stacks), area (for example wastewater ponds) and volume (for example fugitive industrial emissions) sources. AUSPLUME modelling includes site-specific meteorological and emissions data and more accurately considers the site characteristics than screening models. The results provide a more accurate representation of actual impacts and can be used to develop conditions of approval for new and existing developments.
  - **CALPUFF and TAPM – specialist scientific:** CALPUFF and TAPM applications are specialist scientific applications that can have policy implications. These models are typically used for regional predications air shed modelling.
- ARAs may request businesses to supply a report from a suitably qualified air quality consultant to demonstrate emissions from premises will not cause environmental harm, typically by using the regulatory model AUSPLUME.

- In general modelling, should be carried out when:
  - Emissions are released from a single point source such as a stack and contain a concentration of more than 100 times the design ground level concentration set by the NSW DEC at the top of the stack. The design ground level concentrations can be found in the *Approved Methods & Guidance for the Modelling and Assessment of Air Pollutants in NSW* produced by the NSW DEC. The methods and guidelines are available on the NSW DEC's website at *http://www.environment.nsw.gov.au/air/amgmaap/index.htm*.
  - Emissions are discharged from an inadequately designed stack with insufficient height and exhaust velocity, hampering the ability of emissions to disperse and dilute.
  - The proposed facility exists within variable terrain or is influenced by unusual meteorological factors.
  - Complaints have been made.
  - There is a suspected breach of the *Protection of the Environment Operations Act 1997* or odours or emissions are detectable at the boundary of the premises, or there is evidence of odour or emissions passing over the premise boundary. *The Protection of the Environment Operations Act 1997* can be accessed at the Australian Legal Institute's website at *http://www.austlii.edu.au/au/legis/nsw.consol_act/poteoa/1997455/*.
  - There are no records for the maintenance or operation of APCDs.
  - A new premise is being developed or an existing premise is applying for a change of use. For new developments data should be drawn from previous monitoring records from similar developments.
  - There is a suspected breach of odour threshold levels or design ground levels concentrations set by the NSW DEC. These levels are published in the *Technical Notes for the Draft Policy for the Assessment and Management of Odour from Stationary Sources in NSW* and *Approved Methods & Guidance for the Modelling and Assessment of Air Pollutants in NSW.* Both are available on the NSW DEC's website at *http://www.environment.nsw.gov.au/air/odour.htm* and *http://www.environment.nsw.gov.au/air/amgmaap/index.htm* respectively.

An APCD used for dust extraction and collection which vents through an appropriately configured stack (stack not visible).

- For the modelling of odorous emissions the *Draft Policy for the Assessment and Management of Odour from Stationary Sources in NSW 2001* and *Technical Notes* produced by the NSW DEC should be consulted. The draft policy and technical notes can be found on the NSW DEC's website at *http://www.environment.nsw.gov.au/air/odour.htm*.

5.1.5 Implementing air pollution control devices (APCDs) and measures

- In general APCDs and measures should be implemented in a hierarchical manner. First, an assessment on whether the product or activity can be eliminated should be conducted. If elimination is impractical then consideration should be given to each of the other control measures (substitution, isolation, engineering and administrative controls) until effective control measures are identified. In practice several options are usually used in combination to achieve the desired outcome. The hierarchy of control measures is:

– Elimination which completely removes the associated risks. For example, using a physical rather than a chemical process to clean a workpiece or purchasing material supplies ready cut and sized rather than conducting dust-producing cutting and shaping activities.
– Substitution which involves replacing a hazardous activity or product with a less hazardous substance or altering an activity to present less risk. For example, using a product in paste or pellet form rather than a dusty powder or applying paint with a brush or roller instead of spray painting.
– Isolation which involves the separation of activities by distance or physical barriers to reduce risks.
– Engineering controls which include the modification of activities or equipment to help minimise risks from hazardous products. For example, automation of an activity or ventilated booths for spray painting.

Engineering controls such as local exhaust ventilation and extraction of dust and odours helps protect the environment and personnel health.

– Administrative controls which help reduce risk through organisational actions. Administration controls are usually implemented when other measures are not technically feasible and include a variety of measures such as training.

- When businesses implement APCDs and measures consideration should be given to:
  – The lack of personnel and resources required to move beyond compliance and be proactive rather than reactive.
  – The reliance of businesses on product suppliers to optimise existing processes and investigate options for air pollution prevention. In certain situations suppliers may not suggest less environmentally harmful alternatives for fear of lower sales.
  – Uncertainty about future regulatory activity. Inconsistency in enforcement actions creates uncertainty and potentially competitive imbalances within an industry type. It also generates distrust of ARAs, inhibiting effective communication.
  – The power of the customer. Customers may request an environmentally harmful product or activity despite safer products or activities being available.
  – A lack of knowledge to adequately understand statutory obligations.

5.1.6 Land use planning

- Industrial premises with the potential to cause air pollution and odour should not be located close to sensitive land uses such as dwellings, shops, schools and public areas.
- The potential impact of the location of an external air exhaust or stack on neighbouring premises should be taken into consideration when assessing development applications.

Air exhaust and stacks which have been constructed to consider the potential impacts on neighbouring premises.

- Industrial premises with the potential to cause air pollution and odour should have buffer distances established between the industrial activity and sensitive land uses. Local Councils should seek the services of a suitably qualified air quality consultant for advice on effective buffer distances. **See Section 5.1.4 General background guidelines air emissions modelling** for best practice guidelines on modelling.
- Businesses should always operate with development consent and within the conditions of this consent.
- All risks to the environment on a site should be investigated prior to granting consent for an industrial premise or activity.
- The area's zoning and general surrounding land uses should be considered when determining an application involving an industrial activity.