

# **ModSIG / OdourSIG Workshop**

Clean Air Society of Australia & New Zealand  
Friday 14th September 2007 Brisbane

## **Summary**

A one-day joint ModSIG / OdourSIG workshop was held on the 14<sup>th</sup> September 2007 following the IUAPPA conference. This workshop followed on from the June 2006 Odour Conference in Coolangatta to progress identified issues. At the Coolangatta workshop four areas and working groups were set up with following chair persons:

- Modelling Odour Under Low Wind Speed Stable Conditions (Dr Ken Rayner, WA DEC);
- Area Source Sampling (Terry Schulz, The Odour Unit);
- Community Impact Tools (Roger Cudmore, Golder Associates (NZ)); and
- Tier 1 Separation Distances (Chris Harris, SA EPA)

A summary of the four sessions is provided below:

### **Modelling Odour Under Low Wind Speed Stable Conditions**

Four invited presentations were given on recent work in this area:

- Modelling for light wind stable (LWS) conditions. Applications to odour modelling - Ken Rayner (WA DEC)
- Modelling low wind speed conditions with TAPM – Ashok Luhar (CSIRO) (Included TAPM Update)
- Technical development, evaluation and current developments on AERMOD's Low Wind Speed scheme – Bob Paine (ENSR Corporation - USA)
- Do Sub 1-hour met data improve CALPUFF predictions – Jenny Godfrey (TRC) (Included CALPUFF Update)

Other smaller presentations included:

- A report on the 11th conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes – Ken Rayner
- AUSPLUME Update – Guy Edgar (Victorian EPA). Presented by Owen Pitts)
- Update on US findings on Odour - Ken Casey Texas Agricultural Experiment Station. Texas A&M University System

Following this a workshop session was held with the following points of agreement obtained.

### **Ausplume**

ModSIG supports the intended evaluation of AUSPLUME/AERMOD/CALPUFF/TAPM that is currently being scoped by the EPAV.

The meeting agreed to convey concerns about AUSPLUME performance and IP ownership, with a suggestion that CASANZ-ModSIG might be a more suitable repository of AUSPLUME IP in the longer term. This was raised due to concerns

that EPAV apparently are no longer committed to maintaining and updating AUSPLUME.

It was agreed that Microsoft VISTA is currently causing execution problems with AUSPLUME. There was support to seek funding to rectify this problem. The meeting supported an approach to Microsoft for funding, although it was not regarded as likely to be accepted.

## Calpuff/ LWS Modelling

When using CALPUFF in LWS conditions, ModSIG recommends a minimum  $\sigma$  value of 0.2 m/s instead of 0.5 m/s. This is consistent with a change in the default from 0.5 m/s to 0.2 m/s that is understood to being made in the CALPUFF code by TRC.

CALMET assumes scalar wind speed data. ModSIG notes that there is a need to be careful with respect to modelling LWS dispersion conditions, especially where there is large  $\sigma\theta$  and large differences between scalar and vector wind speeds

TAPM output files provide vector wind speed data. There is a need to consider the implications when using TAPM data in models that use scalar wind speed values (e.g., CALPUFF, AUSPLUME). This may affect plume rise and stability-related calculations, for example.

In the short-term, modellers should be aware of potentially artificial results with AUSPLUME at higher percentiles due to AUSPLUME being a Gaussian plume model and the need for a lower wind speed cutoff. It is noted that AUSPLUME model results can be very sensitive to small changes from the default wind speed cutoff of 0.5 m/s.

In the long-term, ModSIG strongly recommends field validation studies for LWS dispersion modelling. The following process was proposed:

- initial scoping/evaluation of existing datasets (e.g., CD of field studies provided by Bob Paine; German field survey data; any other relevant sources) for their relevance to LWS modelling
- modelling phase
- evaluation

Registered for membership of the Validation Group: Ken Rayner (chair), Christine Killip, Robin Ormerod, Owen Pitts, Jon Harper, Ashok Luhar and Michael Bell.

Note, additional people on this working group are welcome.

## Tier 1 Separation Distances

The workshop generally agreed with the following:

The aim of a Tier 1 Separation distance guideline is to protect the landuse integrity between industries and residents from unsatisfactory odour impacts

The guideline would be a CASANZ document that provides guidance and recommendations for planning authorities.

The guidelines would make reference to existing industry documents or similar that have well supported separations distances eg *National Environmental Guidelines for Piggeries* Australian Pork Limited August 2004

In preparing this document, industries should be prioritised based on some measure of their overall impact, but priority would be industries where odours can not be readily avoided or controlled eg compost facilities.

The level of protection to be covered is routine emissions and atypical emissions eg cleaning of a tank and other maintenance. If atypical emissions are the focus, then a risk-based approach might be appropriate.

Level of protection would be differentiated with respect to the ability to economically control emissions.

The guidelines should contain recommendations in relation to vegetation effects on odour dispersion.

The guidelines must have clear disclaimers and qualifications to ensure that OSIG'S interests are met. It is noted that some delegates, especially from New Zealand, were wary of the implications of developing such a document unless its scope and limitations are clearly set out in an appropriate manner.

## **Area Source Emissions**

Terry Schulz presented a summary of the various issues with area source sampling and argued that CASANZ had been debating this far too long with out any real progression. Terry suggested a way forward that involved:

- Setting up a CASANZ Steering Committee
- Collate existing data
- Develop a work plan for an R&D project
- Seek and obtain funding from EPAs, wastewater, pig, feedlot and waste management industries
- Let contracts to 2-3 groups
- Prepare report
- Lobby to have method accepted

This 'way forward' was accepted as being the core basis of a well-designed approach to settle outstanding questions about the suitability of the different area source sampling methods. It was noted that the proposed approach should also address micro-meteorological (back-calculation) methods as well as flux chambers and wind tunnels.

The following names were put forward to join the Area Source working group chaired by Terry: Tracy Freeman, Owen Pitts and Robin Ormerod

## **Community Feedback tools**

The aim of the discussion on community feedback tools was to determine to what level the OSIG community is in agreement about methodology and criteria (percentage exposure) for four community feedback tools, namely odour annoyance surveys, complaints analysis, odour diaries and downwind ambient odour assessment VDIs.

There were few people at the OSIG/MODSIG who had attempted to use any of the community feedback tools to assess the significance of odour impacts on communities or individuals. The tools had mainly been used to assist with understanding any odour problems, with odour modelling the main method of assessment except in New Zealand where odour modelling is the least used tool. The majority of surveys and diary programmes seem to be carried out in NZ. Before there can be any agreement about accepted criteria, the OSIG needs to be able to see how the community feedback tools relate to actual effects. Therefore the focus of future work needs to be collation of how the tools have been used and been useful in the past and documentation of how criteria relate to actual effects.

### **Odour Diaries**

There is general agreement about methodology for odour diaries, although it was considered that the OSIG should document this. There wasn't agreement about a 1% odour time being used as an indicator of acceptable the odour exposure, with justification and documentation of experiences needed to get an informed consensus.

It was agreed that appropriate training of diary panellists was essential to getting useful diaries. Site tours could also be useful help the diarists identify which part of the plant is causing the odour.

A standard diary template and recommendations of programme length and training is something that OSIG could provide.

### **Community Odour Surveys**

There appears to be accepted methodology for carrying out a community survey at least amongst the NZ consultants who have completed them routinely. Although a review is being carried out by Beca (NZ) on behalf of the Auckland Regional Council. This reviews the current method of carrying out a community annoyance survey. This document will become public and will be useful to review in line with the original odour survey questionnaire.

Of those consultants who have completed odour surveys, it was generally agreed that 20% at least annoyed was appropriate.

It would be useful to have a summary of odour annoyance survey results/reports on the OSIG website.

There was concern that an odour annoyance survey may be a measure of the communities annoyance generally rather than just due to odour.

**Complaint analysis**

General agreement that complaints analysis was not useful for assessing odour effects. However, it was considered that the complaint information should go to the industry quickly from authorities to enable faster action.

**Downwind ambient odour assessment – VDI**

It was generally agreed that downwind ambient odour assessments are very hard to do following the VDI guidelines exactly, for logistical reasons (i.e the number of people required, the expense and how long it took to gather enough data).

Proposed just to use them at complainant's location rather than in grid pattern. If the VDIs are to be used for assessing actual effects, the method for carrying out downwind assessments and the method for establishing effects using the VDI method needs to be developed.