

BRICKWORKS ENVIRONMENTAL REVIEW – UPDATE No 3 – April 2003

This newsletter is the final planned update on the progress of an environmental review of brick manufacturing in the Swan Valley being carried out by the Department of Environmental Protection (DEP). A final report on the review is being drafted and should be available to the public in late April. This newsletter presents some of the main findings of the review. Earlier newsletters in this series are available on the DEP website at <http://www.environ.wa.gov.au>.

Brickworks hits all-time low

Metro Brick recorded its lowest ever hydrogen fluoride emission rate at its Bellevue brickworks in January 2003. As shown in Figure 1, hydrogen fluoride emissions have declined markedly since October 2002, when the company began implementing special procedures to reduce contaminant emissions.

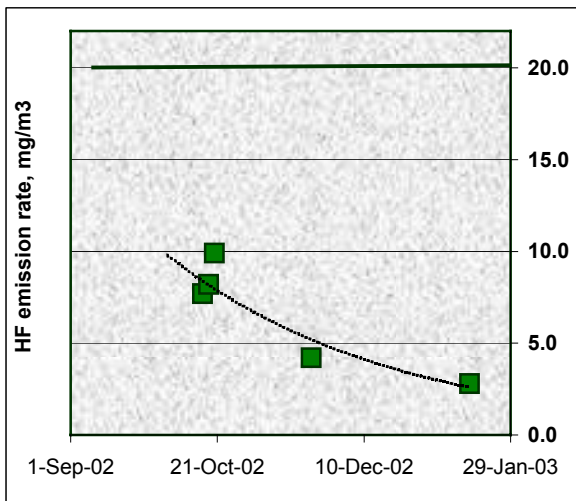


Figure 1 Hydrogen fluoride in Metro Brick stack emissions

Volunteers in the Bellevue and Hazelmere areas who kept diaries of air quality conditions during January 2003 reported that air quality in early January seemed better than it had for months. However, Metro Brick's technical manager, Mike Haigh, was reluctant to take credit for the reduction in air quality complaints, despite the impressive stack test results. He said that changes in the clay mix used in brickmaking were not necessarily the reason for the apparent improvement in air quality and reduced number of health complaints.

Mr Haigh suggested that other factors, including the warm, dry conditions in early January might have affected air quality in the vicinity of Metro's Bellevue operations. He added that Metro Brick is committed to the continued implementation of practices that will further reduce stack emissions.

The company is investigating mechanisms that could relate stack emissions to reported health effects.

Bellevue field monitoring trial

Reporting on a pilot programme of ambient air monitoring conducted in the vicinity of Metro Brick's Military Road brickworks has been delayed. The DEP has requested clarifications and revisions to a draft report prepared by the company which supplied the monitoring equipment used to test for acid gases in ambient air. The initial report received by the DEP said that no acid gases had been detected. The DEP has requested additional information so that it can be confident that the "no acidity" finding is reliable.

Results of particulate monitoring carried out by the DEP during the pilot trial have identified a possible contributor to the respiratory complaints that have been reported at the Midland saleyards: high concentrations of fine airborne dusts. Figure 2 shows the variation in the amount of fine dust (PM₁₀) in air during the field trial.

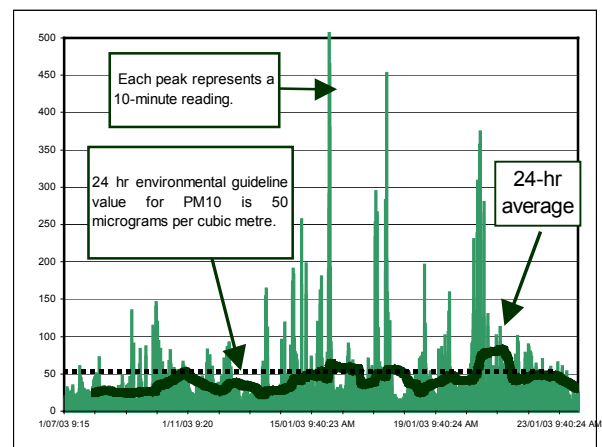


Figure 2 Fine particulates (PM₁₀) in ambient air

Although the measured particulate concentrations did not exceed occupational health and safety standards, there were a number of occasions when the 24-hour average dust concentrations exceeded recommended environmental guidelines. This study finding is important because it is known that the health effects of acid gases (which were the main contaminants of interest during the pilot monitoring programme) can be exacerbated in the presence of high concentrations of particulates.

Laboratory testing of the particulates showed that a major portion of the dust comprised bioaerosols (manure), which is not surprising given that the sampling equipment was located in the Midland saleyards. X-ray testing of the mineral fraction of the dust detected clay minerals found in brick clays, along with other more common soil minerals.

Reality check

In interviews conducted during the Swan Valley brickworks study, some residents expressed concern about the reliability of air quality models used to estimate the concentrations of contaminants in air around the various Swan Valley brickworks. Therefore, as part of the brickworks review, the DEP analysed several years of stack testing results and ambient air monitoring records to check on how well previous modeling studies have predicted brickworks emissions and resulting ambient air concentrations. Some of the findings of this analysis are shown in [Table 1](#).

Table 1 Comparison of observed 7-day average ground level HF concentrations (ug/m3) with predicted concentrations (3 locations near Midland Brick)

	M1	M2	M3
Observed maximum HF	3.77	1.18	1.06
Calculated 99 th percentile	2.22	1.08	0.89
Median observed	0.19	0.29	0.21
Dames & Moore predicted maximum (1993) – Ausplume	0.1	0.15	0.35
SKM predicted maximum (1998) – Ausplume model	0.4	0.7	1.0
DEP predicted maximum (2000) – ISCPrime model, with adjustment of stack heights	2	1.1	1.05
Environmental guideline values (general and sensitive land uses, 7-day average)	1.7	0.8	0.8

A comparison of predicted “worst case” hydrogen fluoride (HF) concentrations at monitoring points near Viveash (M1), Middle Swan (M2) and Caversham (M3) with actual monitored results showed that actual HF concentrations had on some occasions been 5 to 10 times higher than early model predictions. This finding may have implications for approvals of new projects and will be one of the matters raised in the final DEP brickworks review report.

Audit of Midland Brick

One outcome of the Swan Valley brickworks review was to recommend that a formal audit be conducted of Midland Brick’s compliance with its license conditions and with the Ministerial conditions that apply to the operation. A five member team from the DEP auditing and licensing branches carried out a compliance audit of Midland Brick’s Midland and Whiteman sites on 5 March 2003. The final audit report will be issued in late April. The audit report is a publicly available document and copies of the report will be placed in the DEP library. For more information on how to access the Midland Brick audit report, contact the DEP library on 9222 7010.

Director of environmental regulation, Tim McAuliffe, has given the audit his full backing even though the audit findings may highlight some deficiencies in the DEP’s past licensing approaches. Tim has indicated that the audit findings will feed into a review of brickworks licence conditions and Ministerial conditions.

In addition to the formal audit of Midland Brick, inspections of brickworks and tile making facilities at Malaga, Caversham and Bellevue were carried out by DEP inspectors in January and February 2003.

Changing of the guard

With the completion of the Swan Valley brickworks review, the project coordinator Lisa Chandler (shown below with high volume sampler) will finish her contract with the DEP. The implementation of changes recommended in the final brickworks review report will be managed through the DEP’s Swan/Goldfields licensing team. In future, please direct your queries and comments on brickworks matters to 6250 8000. Air quality complaints should continue to be reported via the DEP Pollution Complaints Line on 9222 7123.

