AUSTRALIAN ASPHALT PAVEMENT ASSOCIATION

advisory note 14

SUMMARY OF SBS BITUMEN FUME MONITORING PROJECT

Boral Asphalt, CSR Emoleum Road Services, Pioneer Road Services, Australian Petroleum (Ampol), BP Bitumen, Mobil Bitumen, Shell Bitumen and SAMI have completed the SBS Bitumen Fume Monitoring Project.

The AAPA Federal HSE Committee has guided the project, the objectives of which were:

- To assess how much bitumen fume the Paver Driver, the Screed Board Operator, the Raker and the Ganger are exposed to.
- To analyse the bitumen fume, particulate and hydrocarbon vapours to better understand exactly what affects workers' health.
- To find ways to minimise exposure during paving operations.

We used the BHP EHL sampler to collect fume, because it provided the best information and means of assessment. Unfortunately, a health effects exposure standard has not been established for bitumen fume based on this technique. We used the current Bitumen Fume Worksafe standard and the proposed American ACGIH standard. These standards use older monitoring techniques which do not look at all the components in the fume. These standards were based on nose and eye irritation effects. The standards provide guidance for safe work environments.

Results

- Out of 108 results, 105 were below the Worksafe and ACGIH exposure standards.
- We noticed that we got higher results when workers used lots of diesel fuel to stop the PMB sticking to trucks and clean equipment.
- Also, excessive fuming occurred when product was supplied to the work site at higher temperatures than recommended.
- The results allowed the job exposures to be ranked from highest to lowest for both Class 320- and SBS-asphalt in the order Paver Driver > Screed Board Operator > Raker> Ganger.
- Most of the hydrocarbon compounds in the air were of a type which have the potential to cause eye, nose and throat irritation.
- We looked for the complex hydrocarbon compounds which have been associated with long term health effects and found very low levels. Levels were similar to those that had been reported in other studies. The levels confirm existing research, which has not led to bitumen being classified as a cancer causing chemical.

The project group has made the following recommendations:

- Diesel fuel used as a truck slip agent and to clean down paving equipment was a major contributor to fume generation and the irritant effects experienced by the workers. Alternative non fuming chemical products are slowly being developed and should be used where possible.
- Application temperatures must be reduced to a minimum to avoid unnecessary fume generation.
- Job rotation should be used to reduce higher exposures from the position in the crew such as Paver Driver or when the workers are located down wind eg Right and Left Screed Board Operators.
- Fume extractor systems for paving equipment should be promoted.
- The AAPA SBS Draft Code of Practice should be revised in light of the results of the study and used to train workers about the hazards and safe work practices.

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