EXPERT WITNESS CAUCUSSING CONFERENCE
AND JOINT WITNESS STATEMENT – HEALTH RISK ASSESSMENT

IN THE MATTER	ENV-2023-AKL-160
BETWEEN	Allied Asphalt Limited – direct referral application for consents in relation to an asphalt plant in Mt Maunganui

Facilitator	Environment Commissioner Myers
Date	28 March 2024
Venue	Teams

Witnesses	**For**
Lyn Denison	Allied Asphalt Limited
Emily Wilton	Bay of Plenty Regional Council
Lou Wickham	Toi Te Ora Public Health, National Public Health Service
Awhina Ngātuere	Ngati Kuku hapū

JOINT WITNESS STATEMENT

ISSUES

1. Methodology for conducting HRA for projects

a. Health statistics

b. Workers in Mount Maunganui Airshed (MMA)

c. Choice of unit risk factors

d. Incremental Risk Approach

Matters of Agreement

a. Health statistics

Dr Denison has used the age standardised baseline health rates (mortality and hospital admissions) in the HRA. The data was obtained from the New Zealand Ministry of

Health (Te Whatu Ora) and has been standardised by Te Whatu Ora using the WHO methodology for age standardisation of health data. By comparison the HAPINZ 3.0 study that Mx Wickham employed in the Mount Maunganui air quality risk assessment uses actual numbers of deaths/hospital admissions at a CAU level which have not been standardised for age across the different CAUs. Dr Denison will add clarification around the use of age standardised data in her reply evidence.

b. Worker exposure in Mount Maunganui Airshed

Mx Wickham queried the method of assessing the risk to the health of workers in the MMA. Dr Denison stated that she had compared the maximum concentrations predicted in the industrial area to the Worksafe NZ workplace exposure standards (WES) and that there was compliance with all WES by a significant margin.

The experts all agreed that exposure time is a relevant factor as workers will not be present for the continuous exposures assumed in the development of chronic guidelines. The experts agreed that it would be a better approach to use the same assessment methodology used for the residential receptors and schools, childcare centres and College for the workers and adjust the chronic exposure times. Dr Denison will add a section on worker health using this approach in her reply evidence.

c. Choice of unit risk factors

There was discussion on the selection of the unit risk factors for carcinogens in the HRA. Dr Denison provided a table that compared the unit risk factors from the OEHHA and the US EPA which showed the OEHHA values were typically more up to date and health protective. Dr Denison agreed to add a rationale for the use of OEHHA risk factors, including the table presented at the caucusing, in her reply evidence.

d. Incremental risk approach

There was discussion around how to assess the significance of the change in PM_{10}, $PM_{2.5}$ and NO_2 risk estimates. It was agreed that a key consideration was whether the new plant meets the requirement for Best Practicable Option (BPO) and reduction to the greatest extent practicable.

Matters of Disagreement

Dr Wilton and Mx Wickham have concerns that the incremental risk approach used in the HRA did not take into account cumulative impacts in a polluted airshed. They are of the view that the application should be considered in terms of overall benefits to health for the whole airshed.

Dr Denison commented that the acceptable risk criteria used in the HRA is consistent with international approaches that only apply to incremental risk and not total risk. She notes this is also consistent with the New Zealand Ministry for the Environment Contaminated Soil Guidelines. She also noted that the emissions from other sources in the airshed would remain constant and the only change associated with the Allied Consent Application are the changes in air quality due to the proposed Allied Plant. Dr Denison's view is that this is best assessed by looking at the incremental change in emissions due to the Allied operations existing and proposed which are a very small fraction of the total emissions in the airshed. Dr Denison is of the view that the incremental risk approach shows the improvement to the health of the community due to emissions from the Allied operations both existing and proposed as everything else will remain the same as it is a Consent Application for Allied Asphalt not an air quality management plan for the airshed.

Mx Wickham and Dr Wilton do not consider the use of WES appropriate for assessing worker health on different sites because these limits are specific to a site and its operations. For example, the (8-hr and 15-minute) WES for sulphur dioxide (SO_2) at a specific workplace are mandatory concentrations limits for workers on that site who may be exposed to SO_2 (noting workers on this site may also have personal protection equipment for SO_2). These SO_2 WES do not apply to offsite workers in other industrial locations that do not emit SO_2 (noting these offsite workers will not have personal protection equipment for SO_2). Rather, Mx Wickham and Dr Wilton consider that the ambient acute SO_2 guidelines apply to these other industrial sites (particularly as SO_2 is a fast-acting bronchoconstrictor).

Dr Denison disagrees with the use of ambient guidelines for worker exposure because the exposure times for workers differ to those used in the development of ambient guidelines and prefers a risk-based approach. The ambient air quality standards assume that people are exposed 24 hours/per, 7 days/week, 52 weeks per year over a

70-year lifetime. A typical worker exposure is 8 hours/day, 5 days per week, 46 weeks/per over a 40-year working lifetime.

2. Quantifying improvements in health impacts including existing versus new plant impacts, offsetting of health impacts between different pollutants and cumulative health risk from exposure to multiple pollutants

Matters of Agreement

The experts agree there is benefit is assessing the potential improvements/disbenefits of the new plant compared to existing plant quantitatively (i.e. through health risk assessment).

Mx Wickham considers that whilst the intent of using the maximum consented annual emission rates was to be conservative in the air quality assessment, it artificially inflates the difference between Dr Denison's predicted annual risk estimates for existing and proposed plant.

Dr Wilton agrees and considers that the incremental HRA assessment by Dr Denison could provide an indication of the "improvement in health impacts in the airshed" provided changes are made to the data to account for the increased hours of operation and the actual baseline (as opposed to the current approach which estimates risk for the maximum consented emission rate). The quantification of these factors falls into the "air quality" rather than health and as such could not be explored in the health expert conferencing.

Specifically, Dr Wilton notes that the new plant (at 200 tph) would have to operate for 1,500 hours to produce 300,000 tonnes per year which is more than the 850 hours the existing plant (at 80 tph) would operate at to produce 68,000 tpa. Applying a production related increase to the quantified risks in the HRA for the new plant would likely result in an increase in health risk for NO_2 even when operating on gas relative to the existing plant.

Dr Denison is uncertain about the applicability of the technical points that Dr Wilton has raised but considers that any increase in health effects from NO_2 will be very small. Dr Denison notes that Sections 4.4.3 (Table 4.9) and Section 4.6 (Table 4.15) of the HRA prepared as part of the Consent Application provide an assessment of the potential health effects of NO_2 for both the existing and proposed Plants. This analysis shows

that there is a small increase in health risk due to NO_2 with the proposed Plant with the use of diesel as a fuel.

Dr Wilton notes a further consideration for the "improvement in health impacts in the airshed" approach is whether the current consent limit annual PM emission or the actual annual PM emission is considered as the baseline. If the actual baseline is used, then there would be less health benefit associated with the new plant.

Awhina wants to note that the traffic emissions associated with the Allied Plant have not been included in the air dispersion modelling and therefore the health risk assessment. Awhina also wants to highlight that there is no Te Ao Māori health risk assessment for this proposal which is a much more holistic approach than used currently in the HRA. This includes consideration of physical as well as spiritual, mental and whanau wellbeing.

Matters of Disagreement

Dr Wilton considers that additional NO_2 mitigation or lower annual production rates (e.g., by condition of consent) would limit the extent to which the health benefits of improvements in particulate for the new plant were eroded by increases in NO_2. Lou Wickham concurs.

Dr Denison, based on the health risks shown in the HRA, notes that the increase in health risk for NO_2 due to the use of diesel is very small and is much smaller than the reduction in risk shown for improvements in PM_{10} and $PM_{2.5}$. Dr Denison is of the view that there would be minimal erosion of health benefits due to the reduction in PM_{10} and $PM_{2.5}$.

3. Choice of concentration response functions for modelling PM_{10} and NO_2 exposure and implications

Matters of Agreement

The HRA has used both the WHO and HAPINZ 3.0 CRFs in the assessment. The Experts are satisfied that the HRA has considered the impacts using both CRFs.

Matters of Disagreement

Dr Wilton notes that irrespective of which CRFs are used, the increases in NO_2 associated with the proposed increased production are likely to erode some of the health benefits that would occur as a result of predicted improvements in airshed particulate. Dr Wilton further notes increased health impacts of NO_2 with diesel use and considers that where diesel is used that additional production limits by way of conditions would help limit the increased risk. Lou Wickham concurs.

Dr Denison, based on the health risks shown in the HRA (Tables 4.4, 4.5, 4.9 and 4.15 of the HRA), notes that the increase in health risk for NO_2 due to the use of diesel is very small and is much smaller than the reduction in risk shown for improvements in PM_{10} and $PM_{2.5}$. Dr Denison is of the view that there would be minimal erosion of health benefits due to the reduction in PM_{10} and $PM_{2.5}$. Irrespective of which CRFs are used the reductions in risk estimated for PM_{10} and $PM_{2.5}$ are greater than the small increases predicted for the proposed Plant with the use of diesel.

4. Health risk associated with benzene and dioxin

Matters of Agreement

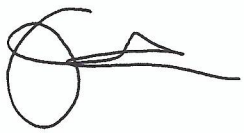
There is no robust background data for benzene or dioxins in the airshed. The HRA provides an assessment of incremental risk which shows a very low risk well within risk criteria adopted by international agencies and NZ Contaminated soil guidelines which were used in the HRA.

Dr Denison considers the international criteria of an acceptable risk of $1x10^{-5}$ and a negligible risk of $1x10^{-6}$ to be appropriate. Mx Wickham is of the view that the acceptable risk level of $1x10^{-6}$ for exposure by residential receptors to individual environmental pollutants should be applied.

The experts also note the air quality modelling used in the HRA does not include truck or vehicle emissions or fugitive emissions.

Dr Denison considers the margin of safety (predicted risk estimates orders of magnitude below acceptable and negligible risk criteria) is high enough that the inclusion of vehicle emissions would not change the conclusions of the HRA.

Signed:

Witness	Signature	Date
Lyn Denison		7 April 2024
Emily Wilton		7 April 2024
Lou Wickham		7 April 2024
Awhina Ngātuere		8/04/2024.