ATTACHMENT 1

Percentile Limits Currently used by the USEPA in their NAAQS and Risk Assessment Guidelines: Summary prepared by Dennis Hlinka

My suggested limit up to the 98th or 99th percentile is based on a number of USEPA established concentration limits for various pollutants. The current National Ambient Air Quality Standards (NAAQS) for SO_2 is the 99th percentile of the 1-hour daily maximum, for NO_2 it is the 98th percentile for 1-hour concentration averaged over three years, and for PM_{10} is the 98th percentile averaged over three years. The NAAQS are conservatively established limits to provide public health protection [https://www.epa.gov/criteria-air-pollutants/naaqs-table]. All of these standards are based on running through at least 5-years of hourly meteorological data, just like what was performed for the Port of Tauranga runs.

There are other well-established USEPA criteria regarding human health and environmental fate and effects risk assessments for methyl bromide applications/fumigations (USEPA, 2006). In that report, the USEPA recommended an upper limit of the 99th percentile concentration in establishing effective buffer zone distances.

In one of USEPA's latest guidance documents on human exposure assessment (USEPA, 2016), their exposure metric is the 95th percentile and specifically mention on page 15 that "care is taken to select exposure factors that do not result in unrealistically conservative estimates."

The 95th percentile is the most common of the high-end exposure limits used today by U.S. regulators in most exposure assessments to establish buffer zones (Rice and Griffin, 2008). As I mentioned in our discussion last week, the buffer zone estimations based on the typical 95th estimated through the PERFUM model and using incorrect (conservative) model assumptions were found to "far exceed the distances at which dangerous levels of fumigant have ever been detected." [https://www.wileyrein.com/newsroom-newsletters-item-4724.html]. To try to extend any additional conservatism to both the model results and pollutant concentrations through an extreme high-end percentile will likely compound into unrealistically conservative limits. By not considering the reduction in model uncertainty through the refinement of both the emissions and meteorological processing through the monte carlo processing like the one used in the Tauranga modeling is an error that can lead to ultra-conservative assumptions.

The extreme upper end of the high-end limits 99th percentile and above are for the most extreme maximum exposure range considerations and thus considered ultra-conservative. Going back to that earlier statement (USEPA, 2016), those upper end limits of the 99th percentile and above may be conservatively unrealistic.

References

Rice, R., and J. Griffin, User's Guide for the Probabilistic Exposure and Risk Model for Fumigants (PERFUM), Version 2.5. [https://www.exponent.com/experience/probablistic-exposure-and-risk-model-for-fumigants/~/media/b1fb4a39ce4c4bd481aaad28a5dd1cb1.ashx]

USEPA, 2006: Report of Food Quality Protection ACT (FQPA) Tolerance Reassessment and Risk Management Decision (TRED) for Methyl Bromide, and Reregistration Eligibility Decision (RED) for Methyl Bromide's Commodity Uses. U.S. Environmental Protection Agency, EPA 738-R-06-026, August 2006. [https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/red_PC-053201_1-Aug-06.pdf]

USEPA, 2016: Guidelines for Human Exposure Assessment. U.S. Environmental Protection Agency, Risk Assessment Forum, Peer Review Draft, January 7, 2016.