**Scientific Interpretive Summary**

**Chlorinated Compounds Formed during Chlorine Wash of Chicken Meat**

Use of chlorinated compounds as disinfectants and/or decontaminants is common in the poultry industry; the three most common being aqueous chlorine, chlorine dioxide and acidified sodium chlorite (ASC). It is well-known that the chlorination of water supplies can lead to the formation of chlorinated by-products in water but there is a paucity of data on food safety aspects e.g. do chlorinated compounds form in or on treated chicken and might they pose risks to the health of consumers. ESR were contracted to conduct a detailed review of the scientific literature on this issue and if there are any potential risks, identify possible risk management options.

The review reports that while there is some evidence that chlorine can react with substances in chicken carcases when they are treated with aqueous chlorine, oxidation (and not interaction with chlorine) is the main type of reaction from the use of chlorine dioxide and ASC. Notwithstanding this, it is known that ASC treatment does not cause significant changes to fatty acid or amino acid/protein composition of carcasses, and the same is expected when chlorine dioxide is used because it is a less powerful oxidising agent. Aqueous chlorine also leads to formation of a substance that is weakly able to interact with genetic material, but only at levels much higher than is used in the poultry industry. This substance (semicarbazide) is thought to arise from breakdown products after interaction of the chlorine with some amino acids (arginine and histidine), and other substances that contain nitrogen such as citrulline, creatine or creatinine. Chloroform has also been detected in chicken flesh, but it is most likely to have arisen from absorption from the chiller water and not from interaction with components in the chicken flesh. The levels of chloroform detected are so low that its presence in the chicken meat would lead to intakes much lower than that which the WHO reports as its tolerable daily intake (TDI) – the intake which will not cause any detectable health effect if consumed over a lifetime. Further, residues of chlorite and chlorate residues arising from the use of ASC are such that exposures would be much lower than their respective WHO acceptable intakes, even for the consumers with the high intakes (95th percentile) of chicken products.

In conclusion, the review did not identify any likely consumer risks that might arise from the use of ASC, chlorine dioxide or aqueous chlorine (including hypochlorite) when used as decontaminant washes of chicken meat. This also includes the view that there was no evidence that the use of these washes lead to the production of substances with the potential to cause cancer, particularly at the levels of use by the poultry industry. Accordingly there was no need to identify existing risk management options.

While this review shows that there is no scientific justification for ongoing investigation of this issue, NZFSA will continue to monitor the international scientific literature on this topic, particularly keeping watch on any developments resulting from the recent WHO expert consultation.

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