

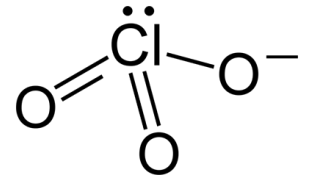
MONASH INDUSTRY TEAM INITIATIVE (MITI)

The Origin and Control of Iodine and Chlorates in Bovine Milk

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BACKGROUND

BURRA FOODS

Burra Foods is a milk processor based in Korumburra in South Gippsland specialising in infant formula and other nutritional powders and exports their products globally.

IODINE

A necessary nutrient for humans, iodine aids in thyroid function and a lack of it is the leading cause of intellectual disabilities. Conversely there is a legal limit of iodine in milk products and too much variation in iodine levels of milk can lead to out of specification products. A goal of this project was to help farmers attain milk iodine levels within a standardised range.

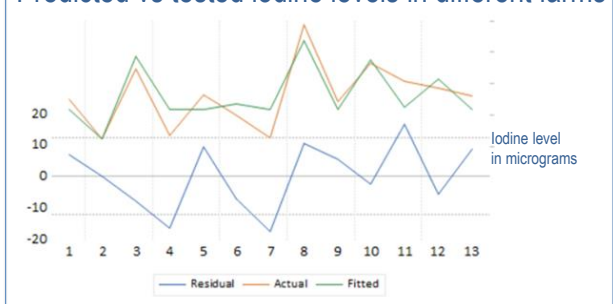
CHLORATES

A new field of research in relation to milk, chlorates are chemical compounds derived largely from the breakdown of cleaning chemicals. In humans, consumption of chlorates can cause blood cells to burst and damage their ability to provide oxygen to vital organs, resulting in disability or death, among other issues. Limiting chlorates in milk was therefore another goal of this project.

PROCESS

- As we were new to the milk industry, our project began with research using peer reviewed journal articles relating to these contaminants
- Using this, we created a questionnaire which was used to ask farmers about the practices they used
- From these results, we picked out farms to test for iodine and chlorate levels in the milk.
- The testing results were regressed against each farm's practices to identify the most harmful practices
- Predictive models and best practice sheets were developed, fulfilling the two main deliverables we aimed to create in the project.

Predicted vs tested iodine levels in different farms



OUTCOMES

PREDICTIVE MODELS

Since testing for iodine and chlorates in milk is costly and time consuming, it resulted in the models not being overly robust. Only two of the tests for chlorates came back with measurable values, so only the iodine model was developed. Burra foods will be able to better predict which farms have higher results when formulating their products at the factory. The performance of the developed model is highlighted by the graph on the right

BEST PRACTICE SHEETS

We created two best practice sheets to educate farmers on how to limit iodine and chlorates presence in their milk. These are to be distributed by the milk supply team after the completion of the project. With the use of these, there should be a reduction in iodine variation and overall chlorates in the milk that Burra Foods receives.

FUTURE RECOMMENDATIONS

In the future, more testing and research will be needed to better understand these new and important topics and refine the predictive model. We hope that the work we have done will help future Burra Foods employees gain new understandings in these areas.

ACKNOWLEDGEMENTS

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