Cadmium is an element with no known biological function and it exhibits both acute and chronic toxicity in animal species. For those species used as animal food cadmium levels are regulated for the protection of the human consumer. Cadmium occurs most commonly as a contaminant in natural phosphate rock and gains entry to the human food chain through use of this material as a fertiliser for enhancing plant growth. New Zealand, as do many other countries, depends on the use of phosphate for the maintenance of their domestic food supplies as well as for generating foreign exchange.

The New Zealand Food Safety Authority (NZFSA) currently has in place restrictions on the supply of offals from animals over 30 months old to the human food supply to limit exposure of consumers to cadmium. This discard represents a significant economic loss to the farmers. It is known that cadmium accumulation in offal correlates quite well with age—all other factors being equal and the age limit is one that is readily identifiable by examination of the dentition of the animal at slaughter. It is also widely recognised that cadmium levels in the offal of animal is generally correlated with soil levels and phosphate fertiliser use. These correlations, while positive, are poor because of other factors such as, but not limited to varying soil levels, soil type, cadmium exchange capacity of the soil, herbage type and husbandry practices. It has been found that a significant proportion of the discarded offal are within the New Zealand MRL which is an unnecessary waste of animal material. NZFSA proposes to use GIS to identify regions according to the cadmium status of offals from that region and use that information to categorise regions according to risk of producing offals in breach of the MRL. This information will be correlated with the animal identification information and in particular the exact age of the animal supplied at slaughter to determine eligibility of the offals for human consumption on a per animal or per line basis without the need for excessive testing. The risk model will be refined to accommodate, as much as can reasonably be known about the other factors affecting accumulation, so that some predictive capacity is incorporated into the model.

The discard criteria for offals can then be set to optimally manage compliance with the MRLs with the lest economic loss to farmers.