Estimating the financial consequences of a milk dioxin contamination in the Dutch dairy chain
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The aim of this study was to quantify the financial consequences of a milk-dioxin crisis on the stages of the dairy chain involved. The milk dioxin contamination impact model was designed for this purpose and also was used to estimate the net costs of control measures limiting the impact. Results obtained based on the assumption of the worst-case scenario in which the entire daily production of each business unit from feed supplier to milk processor is contaminated suggested that the financial impact of one dioxin incident would be €141.2 million. Another assumption was that the dioxin contamination started at one feed processing plant and was detected 2 weeks after initial contamination (the high-risk period), which would result in the involvement of 714 dairy farms, 26 milk processors, and 2,664 retailers. The stages of the chain that contributed most to the total net costs were the milk processor (76.9%) and the dairy farm (20.5%). If the high-risk period were shorter, i.e. 3 days, the estimated total financial impact decreases to €10.9 million. Thus, early detection of the contamination is crucial for decreasing the number of food businesses involved and lowering the total financial impact. The most influential inputs of the model were the sale price of milk at the processing stage, the daily amount of milk processed per processing plant, the farm-blocking period, and the daily amount of milk produced per farm. However, the effect of these inputs on the total financial impact was less than 10.0%. These results can be used to establish priorities in the application of control measures to limit the financial and public health impacts of a possible food safety incident.