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Developing a hazard analysis worksheet in a small food business with the application of a T-shaped matrix diagram

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ABSTRACT

Based on the information obtained from quality/food safety managers, hazard analysis worksheets (HAWs) and flow diagrams were identified, using the ABCD method, as the elements which generate the most extended areas of food safety management systems (FSMSs) based on HACCP procedures. In order to simplify this part of documentation, a shortened form of HAWs designed on the basis of a T-shaped matrix diagram (T-HAWs) was developed. T-HAWs were implemented on a trial basis in three small food businesses (SFBs) for a period of six months. After five months, documentation users evaluated the suitability of both the classic and the new forms of HAWs. The evaluation results were expressed in a numerical form as the documentation usability index (DUI), which values for the classic HAWs amounted from 0.55 to 1.1, and for T-HAWs ranged from 1.3 to 1.8. Student's t-test confirmed the existence of significant differences of the DUI values between both evaluated forms of the HAWs.

The study demonstrates that the FSMSs documentation area may be a subject of research aimed at simplifying and reducing the volume of system documents through the use of effective methods and management tools. The T-HAWs developed in this work, in combination with a simplified flow diagram, provided an opportunity for a significant reduction in the classic HACCP plan, which may facilitate the implementation and application of the Codex HACCP principles and HACCP-based procedures in SFBs. Even though the T-HAWs were positively assessed by the users of HACCP documentation, certain limitations were identified, therefore the results of this study should be regarded as preliminary investigations which require to be continued with a greater number of SFBs representing a greater range of food industry sectors included.

Key words: documentation, HACCP, matrix diagram, small food businesses.

Applied abbreviations

C-HAW – classic hazard analysis worksheet.

CMW – control measure worksheet.

CSS – corrected sum of significance.

DUI – documentation usefulness index.

EFSA – European Food Safety Authority.

FAO – Food and Agriculture Organization.

FR – final rank.

FSMS – food safety management system.

G – growth of the hazard.

GHP – good hygienic practices.

GMP – good manufacturing practices.

HACCP – hazard analysis and critical control point.

HAW – hazard analysis worksheet.

L – likelihood of the hazard.

OPRP – operational prerequisite programs. PP – process pack.

PRP – prerequisite programs.

RI – rank index.

SFB – small food business.

SI – significance if the hazard.

SOP – standard operating procedure.

S – severity of the hazard.

TC – total number of applied criteria.

T-HAW – T-matrix diagram hazard analysis worksheet.

TS – taxation score.

WHO – World Health Organization.

1. Introduction

The manufacturing of safe foodstuffs is determined by the application of prerequisite programmes (PRPs), i.e. good practices (GMPs, GHPs, etc.) and the HACCP principles

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