FOOD QUALITY ASSURANCE IN THE ZOO

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SUMMARY

Modernization and renovation of zoos is taking place rapidly. Unfortunately, the importance of production and preparation of safe food with regard to the health of the animals, as well as with regard to have a good hygiene image through food quality assurance is underestimated by many.

A report has been made with the purpose of providing an analytical framework suitable for implementation in the zoo and aiming at the basics of Total Quality Control (TQC). Therefore it contained priorities regarding decreasing levels of contamination, and the change of attitudes towards high hygienic standards. The project has mainly been set up as a desk research based on two concepts:

-International organization for standardization norms for the setting up of systems for quality control (NEN-ISO 9000-series) (Heer and Ahuis, 1991)

-The Hazard Analysis Critical Control Point concept (HACCP) (Anonymus, (1992)

To be able to implement TQC in the Rotterdam Blijdorp Zoo, a manual has been made. This manual has been divided into six parts: process description, quality documents, review of procedures, quality care at purchase, management of quality and management of hygiene.

It can be concluded that working with the concept of Total Quality Control is able to change the attitude of zoo personnel towards better hygiene standards resulting in lower risks of possible contaminations of animals, personell and public.

Total Quality Control makes it for a zoo easy to adjust to a constantly changing environment and will lead to a better effectivity and a higher efficiency.

Introduction

Nowadays zoos have an important role in the education of the public regarding nature and the preservation of animal species which are threatened with extinction. Modernization and renovation of zoos is taking place rapidly. Unfortunately, the importance of production and preparation of safe food with regard to the health of the animals, as well as a good hygienic image through food quality assurance is underestimated by many. Little to nothing has been published on the safety and quality of zoo food although the most common infectious disease of zoo animals is gastroenteritis. (Richter and Al-sheddy, 1990). It is known that raw products (especially meat) harbor pathogens such as Campylobacter, Salmonella, Staphylococcus, Clostridium, Aeromonas and Escherichia Coli. Recently a Salmonella problem in a zoo has been described, whereby food could not be excluded as vehicle for this problem. (Dorrestein et al., 1994)

In the Netherlands it is permitted to use carcasses that are declared unfit for human consumption as animal food in the zoo without any preservation, since they can be considered as "low risk material".

Quality is difficult to measure. Despite this fact, quality measurement within the European Community should not be aimed at end-products control but on control of processes as a whole. A company can get certified when it can provide a handbook in which it makes the who, what, when, where, why and how questions in the production process clear. It is supposed that integrated quality assurance will surely lead to a better effectivity and efficiency. (Waszink, 1991)

The purpose of our investigation was to construct an analytical framework suitable for implementation in the ²⁰⁰, which contained priorities regarding decreasing levels of contamination and the change of attitudes of ^{personell} towards high hygienic standards.

Materials and methods

* Organization of the project

The organization of this project has been set up as a three months student work task under supervision of a professional guidance team. The guidance team was formed by a member of the Department of Science of Food of Animal Origin, specialized in advises about health risk and hygienic control. Doctor A.C. Waszink, Business Faculty of the Erasmus University, specialized in quality control and certification, and a food-expert of the Rotterdam "Blijdorp Zoo", giving zoologic guidance and documentation.

* Set up of the project

The project has mainly been set up as a desk research based on two concepts;

-International organization for standardization norms for the setting up of systems for quality control (NEN-ISO 9000-series) (Heer and Ahuis, 1991)

-The Hazard Analysis Critical Control Point concept (HACCP) (Anonymus, (1992)

The report is aiming for basics of Total Quality Control (TQC) in a zoo. TQC contains the following areas; controlling of production processes, the microbiological and (public) health risks of product and process and the nutritional value of the food in question.

Most quality programs are confined to operational management. However this is just the first implementation phase. TQC contains procedures at tactical and strategic level as well. (Berry, 1991)

* Literature and research

In addition to literature about above mentioned concepts, reports made by the Dept. of Science of Food of Animal Origin were used. This department handles microbiological and hygienic research in zoos. A lot of practical value has been added with interviews and meetings with the staff, veterinarians and other personnel of the zoo.

* Practical approaches

For procedural description of processes we used a Top-Down approach which started at the macro level of food preparation (exhibit 1). Within the macro-scheme we went down to the operational level, at which flow charts give an detailed procedural description of the tasks that must be done. (Challik, 1990)

Results and discussion

To be able to implement TQC in the Rotterdam Blijdorp Zoo, a manual has been made. This manual has been divided into several parts.

* Process description

For every product or group of products a flow chart of handling practices of the the product can be made. In in this flow chart every task or control action will get a number. Corresponding with this number there are quality documents, which will be discussed later. For the critical points which must be governed, a control action is set up. For these control actions it is important that frequencies of control, norms and actions when norms are not met, will be defined.

From this a visual quality plan for the work-floor can be made. This plan contains quality governing and process control tables which are corresponding with the flow-charts. Flexible quality assurance is possible in this way.

* Quality documents

For the food preparation process we made drafts of menu's, product documents; work-instructions;, controlinstructions; specifications; and registration forms.

The menu is traceable by the animal registration number and written down in quantities, which are easy to adjust by the workers. Nutritional analyses are made by computer and compared with the horse-domestic. The most important aspects of the product document are; the guarantees of the producer, the food and the safety aspects of the product. The way the product must be handled within the zoo to prevent risks is anticipated here. Instruction criteria were described in a way that it could be understood by people with an appropriate education and experience level. A good instruction can only be made when it is implemented by the worker itself. This

draft contains quidelines concerning the materials, means, manpower and method used as well as quidelines of the concept.

Specification is done in such a way that the requirements of production become clear. This enables constant adjustment of quality control at critical points. The most important aspects of registration forms that were taken into account were traceability, relevance and practical use.

* Review of procedures

The above discussed documents have a static base. For the zoo as a very dynamic organization it is important to adjust to changing circumstances. This is why procedures and documents have to be reviewed in time. For this purpose review-procedures were drawn up. This has been done in a way that knowledge is available and responsibility is clear. The procedures are supported by decision-trees. We must not forget that these procedures can change as well.

Menu-review is very important and is done three times a year. Most important aspects are: user experience, condition of the animal, new data, new products, risks of the menu, and costs of the menu.

* Quality care by purchase

Quality-care starts with the suppliers. They determine to a great extent how much the zoo is exposed to risks. Most important questions to be answered here are: What does the supplier guarantee? What risks can be controlled and how? Which risks can be banned out? Which information do we want? Controlinstructions and review procedures have been set up in the same way as above mentioned. Outsourcing of the carcasses-diminution has been one of the main discissions.

* Management of quality

In this part a brief discussion of aspects concerning the management of quality was pointed out. The following areas were taken into account: intensity of review, necessary levels of education and working experience for tasks, responsibility, examination and measurement, end-control and feed-back.

* Hygiene

Hygiene as the most necessary attribute of food-distribution got an important part in the manual. Hygiene criteria were pointed out and laid out in an "hygiene workplan". This plan contained daily, weekly and monthly cleaning and disinfection activities and could be hung up as a poster at the workfloor, where it can be easily seen.

A hygienic control review accompanied the plan. From the control procedure a percentage score was drawn, which could be compared in time and to others. A great deal of attention has been put in making interpretation and feed-back possible.

Conclusions

In the modernization and renovation of zoos there is a lack of attention to hygiene control. It can be concluded that the Total Quality Control concept is able to change the attitude of zoo personnel towards better hygiene standards, resulting in lower risks and possible contaminations of animals, personell and public.

The relatively low budget available for the feeds has a hazardous effect, due to the fact that poorer products have to be accepted as food.

A good Management Information System is important to structure the different and sometimes highly specialized information-streams within the zoo.

If tasks competencies and responsibilities are made clear, total Quality Control makes it for a zoo easy to adjust to a constantly changing environment and will lead to a better effectivity and a higher efficiency.

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