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Campden & Chorleywood Food Industry Development Institute Hungary

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Provision of Services and Supply of Equipment and Parts

related to the

Integrated Programme for ERITREA, Component IV B: Food/Fish Sector

UNIDO Project No. XA/ERI/03/619

Contract No. 2003/193

Final Report

compiled

by

Margit Bleszkán

SUMMARY

The project has been successful in assessing the current food inspection and quality control system as well as the assessment of the regulations related to food safety in comparison with the relevant international requirements.

There were undertaken meetings with representants of Eritrean Standards Institute (ESI), Ministry of Agriculture, and Ministry of Health to assess the current situation regarding food legislation in Eritrea.

There was found that Eritrea does not appear to have any food legislation that defines the offence of selling food, injurious to health and provides for the defence of Due Diligence, nor anything similar to the Food Safety regulation. The liaison between the different ministries interested in food legislation is covered through the Standards Board, which seems to be uncertain, but all ministries are represented.

There is no Food Manufacturers Federation that might provide a concerted and practical response to proposed legislation from the industry to which the legislation would be applied.

There were organised visits to government laboratories, which are limited in modern instrumental equipment available for analysis. Therefore one of the objectives of this project was to purchase and delivery of the equipment. The Fisher Scientific UK was selected as supplier, which causes a lot of problems regarding the delivery of the equipments.

There were carried out visits to food manufacturing companies and was found that the quality of premises and standards of companies varies considerably.

There were organised training sessions for appropriate staff of ESI regarding the requirements for the competence of testing and calibration laboratories and the EFSIS Standard for companies supplying food products.

The staff members of the cannery attended a presentation about the Good Manufacturing Practice in the manufacture of canned foods and representatives of the government departments associated with food safety attended a presentation on the UK Food Safety Act 1990, which was followed by a subsequent discussion on the formation of a working party to develop food safety legislation in Eritrea.

The terms of reference, including the list of equipment to be purchased is included in Appendix 1.

CONTENTS

Appendices:

1. INTRODUCTION

The two missions undertaken in Eritrea (22-28 February and 10-17 May) represent a small part of an on-going project sponsored by UNIDO to strengthen the security of food supply, and to raise the perception of food safety and quality issues, and their means for attainment in Eritrea.

It is recognised that operation to internationally acceptable food safety standards would not only benefit the domestic population in Eritrea but would also open opportunities to participate in world trade and provide much needed foreign currency.

Campden & Chorleywood Food Industry Development Institute Hungary were contracted to undertake this mission and the task was further sub-contracted to Mr. Les Bratt who prior to his nominal retirement in 2003 had worked for the parent Campden & Chorleywood Food Research Association in the UK since 1984.

The two missions were hosted by the Eritrean Standards Institute (ESI). The first involved primarily a schedule of meetings and visits organised by ESI with government establishments and with manufacturing enterprises in order to gain understanding of the current state of food legislation and enforcement in Eritrea and the physical state and management understanding in food processing factories with respect to food safety and quality issues.

As a result of the first visit a set of recommendations was developed that was used in conjunction with ESI to define the programme for the second visit. This included a meeting with the Chief Environmental Health Officer to understand the role of his department in the enforcement of food safety, and importantly a meeting and training session on the UK Food Safety Act for representatives of all relevant government departments concerned with food safety issues. It is intended that this initial meeting will lead to the establishment of a working party with the task of developing and implementing appropriate primary food legislation in Eritrea.

In addition training sessions were provided to personnel from the ESI on the ISO 17025:2000 Standard (General requirements for the competence of testing and calibration laboratories), and on the EFSIS (European Food Safety Inspection Service) Standard. A training course was also provided to the Barcan Canning Factory on the subject of GMP in the production of canned foods.

Recommendations are provided subsequent to the second visit particularly with respect to the legislation working party mentioned above and also with respect to the development of a laboratory system compliant with the requirements of the ISO 17025:2000 Standard for the ESI laboratory.

It had also been intended to check on the successful installation of a range of laboratory equipment ordered within the scope of this project. This was not possible however due to the delayed delivery of the equipment from Fisher Scientific UK.

2. PARTICIPATING INSTITUTES

1.1 Eritrean Standards Institute (ESI)

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The ESI was established in 1995 by Proclamation No. 75/1995. It is an autonomous statutory standardisation body having separate judicial status. The Institution is the sole organ for Standardisation, Quality Assurance and Metrology.

The proclamation No.75/1995, among other things, empowers the ESI to:

- Prepare compulsory Eritrean Standards (ES) related to products, practices and processes in all economic sectors and follow implementation of the same
- Affix a standards mark to products that conform to ES
- Examine or test products to ensure conformity to ES
- Maintain national etalons and certified reference materials and operate their dissemination through the provision of calibration services
- Inspect and certify the conformity of measuring instruments to ES and seize those that do not conform
- Establish a documentation centre and libraries pertaining to standardisation, quality assurance and metrology
- Collect fees and charges for the services it renders.
- ESI is a subscriber member of ISO and a full member of IEC and CODEX.

The structure of ESI comprises six departments:

- Standards department
- Quality Assurance department
- Metrology department
- Testing department
- Technical service department
- Finance and Administration department

The apex organisation of the ESI is the Standards Board constituted by representatives of eight Ministries, the University, the National Chamber of Commerce, and the General Manager of the Institution. The Minister of Trade and Industry is the Chairman of the Board. The General Manager is secretary of the Board and he is responsible for the operations and administration of the institution, subject to the general direction of the Board.

There are 12 technical committees one of which is concerned with Food and Agricultural standards.

The ESI has currently 17 technical and 10 supporting staff. There are three persons dedicated as Quality Assurance Officers to the food and drinks industries. The Laboratory Manager and staff are concerned with food analyses, together with other industries of interest to the work programmes of the Institution.

2.2 CAMPDEN & CHORLEYWOOD FODD INDUSTRY DEVELOPMENT INSTITUTE HUNGARY

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Campden & Chorleywood Food Industry Development Institute Hungary is a unique and industrially focussed independent food technology and information centre. Based on Budapest the t organisation is a wholly owned subsidiary of the Campden & Chorleywood Food Research Association (CCFRA) of the UK, following the successful acquisition of Development and Quality Institute for Frozen Food Industry (HFI) from Mirelite Foreign Trade Plc.

CCFRA and HFI have worked closely together since 1989 in providing an increasing range of new services with the support of 3 UNIDO funded projects to meet the needs of the Hungarian food and drinks industries. HFI was the first organisation to provide HACCP consultancy services and public training courses relating to GMP/GHP and HACCP in Hungary, and is recognised as a leading service organisation with respect to the management of food safety. Other services are based on food technology, legislation services, product development, consumer and market information, product and process specification, sensory evaluation, microbiology, business services and assistance in access to European R & D programmes.

The Campden & Chorleywood Food Industry Development Institute Hungary has major international expertise. It has participated in several international (EUREKA, PHARE, UNIDO, COPERNICUS, WORD BANK, bilateral) R & D and food safety management projects.

1991-1992	Training programme for improving quality of frozen food products (TN/HUN/90/905)
1992-1994	Training and advisory programme for improving the quality and marketability of frozen food products including the development of an integrated HACCP and ISO 9002 model system at a frozen food manufacturer (TF/HUN/90/914).
1995	Group Training Programme on Management of Quality in the Food Industry organised by Hungarian Office for Standardisation
1995-1997	Guidelines for Good Manufacturing Practice for the Hungarian Food Industry (TF/HUN/94/919)

1999	Seminar on management of food safety in fruit and vegetable processing industry, US/RAF/99/066
2000-2002	HACCP and ISO 9000 training and advisory programme for improving the quality and marketability of food products in Harghita County, Romania (US/ROM/00/068)
2002-2003	HACCP and GHP Training and Advisory Programme for strengthening capacity of support institutions and food processing industries in Trans-Carpathian Region of Ukraine (US/UKR/029)
2003	Study tour in Hungary for Ethiopian participants
2004	Study Tour of HACCP Implementation in Eastern Europe organised for Georgian participants sponsored by World Learning funded by The United States Agency for International Development

Campden & Chorleywood Food Industry Development Institute Hungary has sub-contracted to undertake the work Mr. Les Bratt, who earlier was the main contact between the institute and the parent company in UK. Appendix 2 contains the CV of Mr. Les Bratt.

3. PROGRAMME OF WORK UNDERTAKEN

The programme of work undertaken within this project has included two missions in Eritrea and purchasing of equipments listed in Appendix 1.

The two missions were carried out by Mr. Les Bratt between 22-28 February and 10-17 May.

The programme of the first mission was the following:

23. February: Introductory meetings,
Visits: ESI Laboratories, Central Laboratory of Ministry of Health, Veterinary Laboratory of Ministry of Agriculture

24. February Visit to Barcan Canning Factory
Visit to Asmara Dairy
Visit to Ministry of Fisheries Quality Assurance Office Asmara

25. February Participate and provide a presentation in seminar organised by Mr Iskinder for senior managers of food companies on food safety and quality.
General meeting with UNIDO programme Officer

26 February Visit to Elabered Estate

27 February Visit to Fish Control Laboratory

28 February Visit Erifish Factory
Meeting with Dr. Shetty at Fish Control Laboratory.

The programme for the second mission was arranged on the basis of recommendations from the first mission and in discussion with Mr. Abraham Kubrom and Mr. Mussie Govani of ESI. The programme established comprised the following.

11. May Meeting with Dr. Tekesta Araya, Chief Environmental Health Officer at the Ministry of Health to understand the responsibilities of this department in the enforcement of food safety issues.

12 May Presentations/training sessions at the ESI on the ISO 17025.2000 Standard, General requirements for the competence of testing and calibration laboratories, and the EFSIS Standard for companies supplying food products.

13. May Training session at the Barcan Cannery on Good Manufacturing Practice in the manufacture of canned foods.

14. May Presentation on the UK Food Safety Act 1990 and subsequent discussion with representatives of government departments concerned with the development and enforcement food safety legislation.

17. May Final meeting with Mr Kubrom, Manager ESI and Mr Govani, Laboratory Manager of ESI, to discuss proposed recommendations.

4. SEMINARS AND TRAINING SESSIONS UNDETRAKEN

4.1 Seminar for senior managers of food companies on food safety and quality on 25th February 2004

Mr. Iskinder had organised a seminar for senior managers of food processing companies. Previous contact had generally been with lower managers or technicians and it was thought appropriate to provide some familiarisation in quality management and food safety systems to top managers in order to foster their support in implementation.
The seminar was opened by Mr. Tadesse Weldeyohanes, Director General of the Department of Industry. This was followed by presentations by Mr. Iskinder and Mr. Les Bratt. There were 20 attendees and following the presentations a reasonable amount of discussion took place.
The list of participants and the slides of Mr. Bratt presentation are included in Appendix 3.

4.2 Training on ISO 17025:2000: general requirements for the competence of testing and calibration laboratories and in EFSIS standard for companies supplying food products on 12th May 2004.

Presentations on the requirements of the two standards were provided to appropriate staff of ESI. The ESI laboratory has a project proposal for the building of a new laboratory complex within the next two years and it is planned that the laboratory would seek certification against the ISO 17 025 standard. There is no reason why development of the management and technical systems should not begin in the near future and indeed would help in the smooth change of the new laboratory when available.
The slides of the presentations and the lists of participants are included in Appendix 4.

The EFSIS Standard is important in that it contains practical details considered important by the major British retail and trading organisations in the safe production of foodstuffs. The corresponding relevant legislative document is the European Food Hygiene (General) Directive, but in drafting legislation for Eritrea it is useful to work with the Directive as framework, and also seek practical details from the EFSIS standard.
The slides of the presentations and the lists of participants are included in Appendix 5.

4.3 Good Manufacturing Practice in the manufacture of canned foods, The Barcan Cannery on 13th May

During the initial mission to Eritrea concern was felt at the lack of instrumentation and record keeping at the Barcan cannery during the production of heat sterilised foods. Canning is a "special" process in that it is impossible from looking at a can as to whether the contents have been properly sterilised or not. In consequence it is vital

that the can be identifiable by suitable code marking, and that there are records providing evidence of satisfactory processing for each code.

The training session was attended by 34 members of the cannery staff, including both production and laboratory personnel. Copies of the slides used together with names of attendees are provided in Appendix 6.

4.4 Presentation on the UK Food Safety Act 1990 and subsequent discussion on the formation of a working party to develop food safety legislation.

A presentation on the UK Food Safety Act 1990 was provided to representatives of those government departments most closely associated with food safety. Persons attending the meeting were

Dr. Abraham Tesfaselasse	MoH Head of Port Health/Quarantine
Robel Zekristos	MoH Environmental Health Department
Dr. Tesfaalem Tekleghiorghis	MoA Head of Central Laboratory
Abraham Kubrom	Manager ESI
Mussie Govani	Laboratory Manager ESI
Alem Araia	Quality Assurance Officer ESI

The slides used in the presentation are included in Appendix 7.

The Food Safety Act is the primary legislation used in the UK with regard to the process of enforcement. It provides the authority for the inspection of premises and defines the nature of offences, the possible penalties, the means for appeal and so on. It is used in conjunction in the UK with the Food Hygiene Regulations that define the operating standards to be used by food manufacturers and distributors.

The presentation was received with interest and the personnel attending were also interested to hear of the individual developments within the departments represented at the meeting. The Ministry of Agriculture representative indicated that his department is currently preparing draft legislation with respect to the manufacture of milk and meat products. The Port Health Department are currently operating against WHO standards and the Environmental Health Department is drafting food safety legislation as mentioned above. The ESI is in progress of producing numbers of product standards some of which are already legal documents. It is believe however that a consensus existed to take part in a working party to further develop food safety legislation so that it fully represents the appropriate inputs of all involved departments.

5. VISITS TO ERITREAN FOOD COMPANIES

5.1 The Barcan Food Cannery

Contact: Ms. Almaz Abraha, Finance and Administration Manager
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The Barcan canning factory is an old cannery, now operating as a private company in the production of canned foods predominantly for the Eritrean army. Products include canned meat with vegetables, lentils, foulmesdames, tuna and tomato concentrate. The factory employs 400 people and retorting capacity comprises 6 vertical, steam, 4-basket autoclaves. Equipment generally is old and in relatively poor condition but there has been some recent investment in two new Comaco filler seamer complexes, each with 4 seaming heads. Cans are purchased from Elsa in Greece and are received as "flats" and are reformed prior to filling and use. The factory was not operating at the time of this visit.

It was critically noted that although temperature-recording cabinets are fitted to the retorts, they are not functional and are not used. Thermometers are visibly in poor condition and there are no temperature records of any sort maintained to indicate compliance with the scheduled process temperature. Only pressure is recorded. This is despite having Ministry of Agriculture personnel permanently on site presumably to ensure compliance with Good Manufacturing Practice.

The Barcan cannery has been included in two previous UNIDO sponsored missions, and is mentioned in the previous reports of Gerold Haberli and Isabel Ibacache, and Iskinder Berhane and Ghidey Francesco.

There clearly was some attempt to write some procedures as part of a Quality Manual in 2001 but these are very limited and there seems to be no current activity. Crucially the company has no written procedures for the critical operations relating to double seam control or retort operation.

Mr. Iskinder found, when attempting to provide training on the concept of HACCP, that because companies had little concept of quality systems, it was preferable as an initial step to concentrate on basic Good Hygienic Practice in order to provide a basis of technical knowledge before progressing again to the principles of HACCP. It is also vital that in order to implement a HACCP system, a company should be familiar with the technology used in the manufacture of their products. It would seem in view of the absence of temperature measurement that this cannot be assumed with the Barcan cannery. The company is currently participating in a further period of training provided by Mr Iskinder.

5.2 Asmara Dairy

The Asmara dairy processes some 26,000 litres of milk, 7 days per week. It also produces some cheese although production of yoghurt has now ceased. The company supplies to some 2000 outlets.

Premises are old and cramped and less than ideal. However plant deployed is to a reasonable standard, fabricated from stainless steel, subject to CIP cleaning and from European manufacturers. There has been recent investment in French vertical, form-fill-seal machinery for packaging milk in plastic sachets instead of in glass bottles, as hitherto.

Milk delivered to the factory is subject to inspection for fat content, pH and density by personnel from the Regulatory Service of the Ministry of Agriculture. They do not check for antibiotic residues or do any microbiological analyses on a routine basis.

The company is actively participating in the current GMP (essentially GHP) training programme provided by Mr Iskinder and Ms Ghidey.

5.3 Elabered Estate

Contact: Morgan Hoff, General Manager
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The estate farm is positioned some 68 km to the Northwest of Asmara on the road to Keren. The estate was founded in 1958 by an Italian entrepreneur, became nationalised following the war of independence, and is now again operating as a private sector agricultural enterprise. The farm is a manifestation of considerable environmental planning and foresight.

The farm is located at an elevation of 1600 metres and has year round sunshine and a mid temperature of 20°C. The farm covers 1200 hectares of which 300 hectares are suitable for arable crops. The farming activities include the production of milk and butter from a dairy herd of some 650 cattle (350 milking at any one time), rearing of some 1500 Landrace pigs, growing of salad crops, vegetables (tomatoes, onions, peppers, chillies, green beans and various varieties of lettuce) and fruits (mangoes. lemons, oranges, limes and mandarins).

Success of the estate is due to the very comprehensive and integrated approach to environmental management. Water is collected in 7 main dams through a 10km diversion canal from the main river Ansaba and from the neighbouring catchments in the mountains. When all dams are at full capacity, around 25 million cubic metres of water is available for irrigation, which is distributed through an underground network of canals and pipes 236km long. The farm uses modern low volume drip irrigation and sprinkler systems for its production.

The farm is subject to official veterinary inspection, from Ministry of Agriculture personnel, on 3 days each week. The Department of Research of the Ministry also provide assistance, as required, with regard to the application of agricultural chemicals.

The dairy is spacious and maintained in reasonably good condition. Processing equipment is manufactured from stainless steel, subject to CIP cleaning and generally of Italian origin. Exceptions are the Elopak machines used to fill milk into cardboard cartons. All milk is pasteurised and homogenised. Average production per day is 3,500 litres.

The estate has been successful in developing export markets to Saudi Arabia for both salad crops and for milk. Salad crops are air-freighted daily under chilled conditions.
The Estate has been officially inspected and approved by ESI and is permitted to use the Eritrean Standard Mark on product packaging.

The Estate has participated in the previous visits and training initiatives of UNIDO sponsored personnel. Comment has been made by both Mr. Haberli and Mr. Iskinder of the need for proper functioning of the test laboratory. Although a laboratory is present it is not staffed and there does not appear to be any routine measurement of milk density, pH or fat content. Personnel from the Estate are continuing to participate in the continuing programme of Mr. Iskinder with regard to GHPs.

5.4 Erifish Factory, Massawa.

Contact: Temesghen Hagos, Factory Manager

Erifish is involved in the processing and export of refrigerated and frozen fish and fishery products. The establishment has been approved by the Competent Authority for export to EU destinations for its compliance with the sanitation and health requirements in its production line.

The company has developed and implemented both Quality Manual and HACCP Manual, both of which have been officially approved by the Competent Authority.

The company specialises in high value fish such as Red Snapper, Grouper and Emperor Fish and also crustacea such as prawns and lobsters.

Erifish have a number of their own fibreglass vessels and these too now have Quality Manuals including codes of practice for the following operations:

Fishing Vessel Maintenance Practice
Good Water Control Practice
Good Cleaning and Disinfection Practice
Good Personal Hygiene
Good Fish handling, Storage and Treatment Practice.

6. VISITS TO LABORATORIES AND MEETINGS

6.1 Introductory meeting during the first mission

Introductory meetings were held on the morning of 23rd February at both the headquarters office of UNIDO and at the premises of the ESI.

Personnel met at the UNIDO building were:

Ms. Mimi Louise Girardin Groenbach, UNIDO Programme Officer
Mr. Zerayacob Tesfazgy, National Programme Co-ordinator PMU - Integrated Programme for Eritrea Ministry of Trade and Industry.
Eng. Abrham Kubrom, General Manager ESI

In addition introduction was made to:

Mr. Tadesse Weldeyohanes, Director General, Department of Industry, Ministry of Trade and Industry.

The overall plan for the week was discussed and the decision made that it would be beneficial to travel to Massawa in order to see the Erifish Company and also the Fish Control Laboratory and also that Mr. Bratt could provide a presentation at the meeting planned for senior managers of food companies on Wednesday 25th February on the importance of food safety and quality. Importantly Mr. Zerayacob Tesfazgy stated that there was currently no overlying food legislation existing in Eritrea and that the role of the various ministries having interests in food safety and quality were not fully defined.

A further introductory session was held at the premises of the ESI. Mr Kubrom provided introductions to members of the ESI staff who were to accompany Mr. Bratt during the series of planned visit. These were:

Mr. Mussie Govani, Heat of ESI Laboratories
Mr. Alem Araia, Quality Assurance Officer
Mr. Kibrom Tesfaslassie, Quality Assurance Officer.

In addition a tour was made of the premises of the ESI.

6.2 Eritrean Standards Institute (ESI)

The official status and the structure of ESI were presented during the description of the participating institution (2.1).

One of the ESI activities is to prepare compulsory Eritrean Standards related to products, practices and processes in all economic sectors and follows implementation of the same. The preparation, approval and subsequent implementation of Eritrean Standards follow a defined number of stages:

1.	Standards Plan	Standard Board
2.	Draft Standards Preparation	ESI Staff

3.	Draft Standards Review	Technical Committee
4.	Circulation for Comments and Opinions	Stake Holders
5.	Discussion of Comments	Technical Committee
6.	Approval of Final Draft	Standards Board
7.	Approval for publication	Ministry of Justice

ESI has published a number of generally product related standards for the food industry, a few of which have been approved as legally binding standards.

Approved but not published standards are the following:

- Cereal and Cereal Products
- Gum Arabic
- Milk and Milk Products
- Tea
- Non Alcoholic Beverages

Approved, published and being implemented standards are the following:

- Salt
- Raw Hides and Skin
- Pulses
- Oil seeds
- Edible Vegetable Oil
- Fresh Fruits and Vegetables
- Processed Fruit and Vegetables
- Beer
- Ethanol

The standards manual also includes standard analytical methods for the parameters specified within the individual standards.

During 2004 it is planned to draw up further standards for Fish and Fish Products and for Drinking water.

It is noted that the standard for Processed Fruit and Vegetables also includes standards of a general nature including:

- Processed Fruits and Vegetables Code of Hygienic Practice and,
- Pre-packaged Food General Standards for Labelling.

6.3 The Central Laboratory of the Ministry of Health

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There are two adjacent laboratories. The larger of the two is responsible for clinical testing whereas the smaller laboratory is concerned with the microbiological and

chemical testing of food materials. (Some of the food microbiological work is also carried out in the clinical laboratories).
Within the food laboratory there is a staff of five people. The capabilities of the laboratories are somewhat limited to basic wet chemistry by the equipment available. It is hoped to obtain HPLC equipment in the not too distant future.

The laboratory is not yet accredited but is receiving some help in this respect from an Italian agency.

The Central Laboratory is not a proactive department. Samples are received, analysed and any subsequent actions are initiated by the relevant political authorities.

6.4 The Veterinary Laboratory of the Ministry of Agriculture

Contact: Dr. Tesfaalem Tekleghiorgs
P. O. Box 1162, Asmara, Eritrea
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Fax: +291 1 127508
e-mail: tesfu_t@yahoo.com

The veterinary department has some 30 or so personnel, half of which are deployed in slaughterhouses, meat, dairy and food processing plants (including the Barcan Canning Factory) and the rest in the veterinary laboratory. Currently factories pay for analyses carried out on their behalf but not yet for control and enforcement services. This is likely to change in the future.

The Veterinary service is currently in process of setting up quarantine facilities at border posts including airports, and seaports for the inspection of imported products of animal origin. Legislation is being developed but is not yet complete.

The premises of the veterinary service are old, in poor condition, and date back to the days of Italian occupation. There is a project funded by the African Development bank however that is aimed to provide new laboratory premises and which will include the provision to manufacture animal vaccines for local use.

One further practical problem is that there are no training opportunities for Veterinary Officers in Eritrea. It is currently only possible to study for a Diploma in Animal Health.

6.5 The Fish Processing Quality Control Laboratory Massawa

Contact: Mr. Giorgis Zekristo, Quality Assurance Manager
Dr. Shetty T. Seetharam, Fish Quality and Safety Assurance Manager
Ministry of Fisheries
P.O. Box 123, Massawa, Eritrea
Tel: +291 1 552 668

e-mail: ts_shetty@yahoo.com

The Fish Quality Control Laboratory was established in 2001 as a result of a project for Pilot Export of Marine Products funded by the Agency for French Development, Djibouti. The laboratories are built to a good standard, have been operational since September 2001 and have fulfilled a major requirement of the Competent Authority of the Ministry of Fisheries of Eritrea in meeting compliance with the requirements the European Union For export to Europe. The laboratory is situated at Ghibi, a fish-landing centre, at Massawa.

An audit was made in December 2003 as a preliminary activity to seeking certification to the ISO 17025 Standard. The audit was conducted by Ulla Jensen under a UNIDO programme and a report with recommendations, listing areas for improvement, issued. It is now planned to seek full certification during 2004. The exact timing of this is dependent on the delivery and installation of certain items of microbiological testing equipment.

The laboratory currently has a staff of 3 persons and this is likely to rise to 5 in the near future.

Chemical analyses are typical and include TVBA, TMA and Histamine, the latter being carried out by thin layer chromatography. Microbiological analyses include testing for TPC, Total Coliforms, Salmonella, and E-Coli. Proficiency testing is undertaken in a programme organised by the Central Science Laboratory in the UK.

Testing outside of the competency of the laboratory is contracted to external organisations such as the Chemiphar Laboratory in Uganda.

The laboratory has its own comprehensive Quality Manual.

6.6 The Competent Authority

Contact: Mr. Zeray Seyoum, Post harvest and Standards Unit

The Ministry of Fisheries in Eritrea have been successful in effectively translating the European Directive 91/493/EEC on the "laying down the health conditions for the production and the placing on the market of fishery products" into Eritrean legislation. Operation to this Directive has been a major factor in being able to satisfy the European authorities that the Fish Inspectorate and Quality Control Division is a suitable Competent Authority. Eritrea is now on the Approved List No.2 and it is hoped that later this year that the status will move to List No.1. This move is dependent on all fish processing units meeting the requirements of the European Union (13 in Massawa, 2 in Asmara + 2).

The Competent Authority is required to visit and inspect each plant at least every two weeks. Each plant is required to have both a Quality Manual and HACCP plan and these are subject to official approval by the Competent Authority. There is also a monthly check of the hygiene conditions within processing establishments including

microbiological swab testing. All material for export is sampled by the Competent Authority and is subjected to relevant analyses before permission for despatch.

The Competent Authority will shortly move into new offices in Massawa.

6.7 Meeting with Dr. Tekesta Araya, Chief Environmental Health Officer

Dr. Araya explained that his department was part of the central government of Eritrea within the Ministry of Health. The department has responsibility for the inspection of all food supply organisations and are currently using an inspection proforma based on CAC/RCP 13-1976 revision 1, 1985. The department has the power to confiscate food materials judged to be unsafe and to prosecute the persons concerned.
They are currently developing a Food Safety Act which it is hoped will become a legislative document and an early draft form has been completed. It was not available for inspection at this meeting.

There is one other senior Environmental Health Officer together with Dr. Araya, but there are inspectors based geographically in each of the 6 zones of Eritrea.

Further officers are being trained at the School of Health and Technology. The course takes 3 years with an intake of 36 students each year. The first intake will qualify later this year.

Dr. Araya confessed that he was unaware of any initiative being taken by other government departments with the development of food safety legislation but would welcome the opportunity to become involved in a working party aimed to provide a common approach to such development and to more clearly define the roles of the various government departments. His priorities he stated were, "Food Safety Policy, Food Act and Regulation.

7. PURCHASING OF EQUIPMENT

The purchasing details of the equipments were the following:

Fisher Scientific UK was advised to be the equipment supplier by UNIDO. There was realised that the ESI had contact with this supplier earlier.
The order of equipment was made on 13. December 2003 based on the offer no. 5879108 dated on 26/11/03. There was no received any acknowledgement until 16/01/04, when the coordinator of the project started to find out the reason. The proforma invoice arrived on 16. January when the contractor has transferred the money

The Eritrean counterpart asked some changes in specification of the autoclave on 13. February 2004 due to three-phase supply at ESI. Fisher accepted the changes, which caused that the autoclave not arrived to Fisher together with the other equipment.
Fisher confirmed on 18. March 2004 that all existing equipment would be shipped out of the autoclave. After the normal shipping time the Eritrean partner and the contractor too asked about the shipment, when the earlier contact person were not available. After some days of investigation the contractor realised that the equipment are still at Fisher. The contractor made an official complaint to the Fisher and at the end the items were started to be delivered on 23 (by plane) and 29 May 2004 (by vessel).
The items delivered by plane has been arrived, the contractor has been received the invoice on 30 June 2004. The autoclave and the refrigerator arrived later to the Port Massawa, but Fisher made several mistakes regarding the shipping documents.
Finally the original invoices has been arrived to Campden & Chorleywood Hungary on 23 August 2004. The copies of the invoices are included in appendix 8.

8. FINDINGS, COMMENTS

8.1 Eritrean Standards Institute (ESI)

The testing department is in process of building up its laboratory capabilities. The premises being in an old building, not designed for the purpose, are not ideal but there are plans for the establishment of new buildings in the near future. Currently there is an adequate wet chemistry laboratory, an instrument laboratory containing a recently received atomic absorption spectrometer, a balance room and space is being made available for the installation of a microbiology laboratory. In a separate building there is a testing laboratory specifically for the civil engineering industry capable of testing concrete and similar materials. The department uses the laboratories of other institutions as necessary, for example, the Central Laboratory of the Ministry of Health, Laboratory of the Ministry of Agriculture, and the Laboratory of the Ministry of Fisheries.

The metrology department is currently limited in application to legal metrology.
It is important for certain sectors of the food industry however that they have access to traceable calibration services for thermometers. Temperature measurement is a critical factor for a number of food processing operations and the Institution should be in a position to provide for such industrial need.

There are a number of practical limitations and constraints to the functioning and development of the ESI. Apart from the current premises the major shortcomings across virtually all departments are the needs for additional trained staff, computers and reference books and materials.

8.2 Eritrean legislation

One of the problems is that Eritrea has been relatively isolated with limited contact to the major trading countries or organisations across the world. Knowledge and understanding of the manner of legislation and acceptability of food safety and quality systems is consequently limited. Currently there is a great deal of information on food legislative issues available via the internet and the availability of more computers with internet connection would be extremely beneficial to the workings of the ESI.
A further problem is that there has never been any food technology of food science courses available at the University in Eritrea. Consequently there is limited understanding of certain key food processing operations, crucial when introducing documents which set legal standards aimed to provide assurance of food safety.

Eritrea does not appear to have any top level food legislation similar to the UK Food Safety Act 1990 that defines the offence of selling food, injurious to health, and provides for the defence of Due Diligence, nor anything similar to the Food Safety (General Food Hygiene) regulations 1995. This latter regulation is derived from the European Community Directive 93/43/EEC. The ESI have included a Code of Hygienic Practice within the proposed standards for Processed Fruits and Vegetables but this has yet to be formally approved and issued (appendices 9 and 10).

The manner of liaison between the different ministries interested in food legislation seems uncertain. In principle such liaison should be covered through the Standards Board in which all ministries are represented.

There is no Food Manufacturers Federation that might provide a concerted and practical response to proposed legislation from the industry to which the legislation would be applied.

8.3 Standard of Processed Fruits and Vegetables

A copy of the Eritrean Standards for Processed Fruits and Vegetables was briefly examined. It contains standards for a number of product categories, associated methods of analyses, together with a Code of Hygienic Practice and a standard for Pre-packed Food-General Standards for Labelling. It could be argued that these two subjects are sufficiently important in their own right to be published as stand alone documents. The Code of Hygienic Practice should not just apply to processed fruits and vegetables but should be extended as necessary to all food and drinks products. It is considered that much of the contents would be common to all categories.

The following comments were made:

- The Standards are generally written in good English and presumably have been copied at least in part from other national or international standards.
- It would be preferable to issue the Code of Hygienic Practice and labelling Standard as separate documents, applicable to all categories of food products.
- There are noted technical inaccuracies, perhaps symptomatic of occasional limited understanding in certain aspects of food technology. In the standard for canned fruits and vegetables in section 8 there are references to pH values of medium or low acid foods. The pH value of medium or low acid products, such as carrots, asparagus, peas, corn, shall be not lower than 5.4. the pH value of tomato products, excluding tomato ketchup, shall not be lower than 3.8. in reality it is necessary to distinguish between low acid foods with a pH above 4.5 and which in consequence will support the growth of Clostridium Botulinum and acid foods that will not. In the case of processed tomato products it is important to ensure, by the addition of acid if necessary, that the pH is practically maintained below 4.3 (if above, and with insufficient pasteurisation, microbial action could raise the pH to be above 4.5). the figures quoted in the standard are irrelevant. Also in the same section 8, the final paragraph is technically incorrect. As such they may well contain the spores of Clostridium Botulinum, but because of the low pH, these spores are incapable of outgrowth into vegetative cells.
- The Standard "Canned Fruits and Vegetables, Tests for Keeping Properties" is inappropriately named. It should be called Incubation Testing. Canned foods have long shelf life lives and keeping properties, including the reaction between the container and the contained food may not be determined by short time incubation testing. The temperatures specified for the incubation of low or medium acid products are slightly unusual. 37 ^{0} C and 55 ^{0} C would be more usual, when looking for the possibility of under sterilisation. 25 ^{0} C would also be a preferred temperature for the incubation of acid products.

- The Standard "Processed Green Peas, General Requirements" preludes the use of dried peas in manufacture. In fact the terminology Processed Peas refers exclusively to canned peas manufactured from dried peas. Fresh peas or frozen peas, when canned are called simply canned peas or canned garden peas.
- The fruit contents quoted in the standard for Jams (Fruit Preserves) and Jellies, appear unnecessarily high if there is only to be one category of jam. 40 % would be more normal with perhaps a further category Extra Jam having the higher fruit content of 45 %.

In conclusion there would seem to be reason for ensuring that the Eritrean Standards are subject to external review as necessary by somebody conversant with the technologies and products involved.

8.4 Inspection services of ESI and other laboratories

There are 3 separate government laboratories in Asmara concerned with the analysis of food and drink products, those of ESI, Ministry of Agriculture and the Ministry of Health. All of these are situated in somewhat elderly premises and are somewhat limited in modern instrumental equipment available for analysis. None of these laboratories are accredited and the prospect of accreditation in the near future is somewhat remote.

There would seem to be some conflict of interest between enforcement of standards or legislation and apparently assisting in routine quality control. The personnel of Ministry of Agriculture carry out the physical and documentary inspection of consignment and the further detailed chemical and microbiological examinations are carried out by ESI. The Ministry of Health is responsible for carrying out inspections of food manufacturing premises to ensure that they are operating under hygienic conditions.

ESI carries out inspection of food manufacturing premises in order to ascertain that products comply with the relevant standards. The ESI may authorise the use of the Eritrean Standard Mark for companies that comply with the relevant standards. The ESI also plans to inspect food products imported into Eritrea for compliance with the local standards. Such inspections would be carried out whist the material is in quarantine at the port of entry.

The Veterinary Department of the Ministry of Agriculture has officers permanently deployed at abattoirs, meat plants dairies and also the Barcan canning factory. It would seem relevant that veterinary officers should be present with respect to issues of animal health and welfare but the presence in the canning factory is less certain. There would seem to be some conflict of interest between enforcement of standards or legislation and apparently assisting in routine quality control. For example, Ministry of Agriculture personnel undertake incubation testing at the cannery and the measurement of pH, density and fat content at the Asmara dairy.

The Ministry of Agriculture is in process of establishing quarantine areas for all imported food materials at ports of entry into the country. It is understood that

inspection by Ministry of Agriculture personnel will be limited to physical and documentary checking of each consignment and that any further detailed chemical or microbiological examination will be undertaken by ESI.

The Ministry of Health is also responsible for carrying out inspections of food manufacturing premises to ensure that they are operating under hygienic conditions. There would appear to be some duplication of role with that of the ESI and some rationalisation would appear appropriate.

ESI has a metrology department but the current scope of work is limited to statutory compliance of weights and measures. It is vital for the food processing industry that there is capability available for calibration of critical instruments such as thermometers used in heat sterilisation and pasteurisation operations.

8.5 Fish Inspectorate and Quality Division

The fisheries sector is well organised. The European Directive 91/493/EEC has been effectively adopted into Eritrean Law, the Fish Inspectorate and Quality Division has been accepted by the European Union as the Competent Authority, and the fish quality control laboratory in Massawa, will be seeking certification against ISO 17025 later this year. All of the fish processing factories have developed Quality Manuals and HACCP Manuals and it is also hoped that Eritrea will move from being a list 2 supplying country, to a list 1 supplying country later this year. Quality Manuals have also been developed and introduced into certain fishing vessels.

8.6 Food Manufacturing Companies

The quality of premises and standards of commercial companies varies considerably. The Erifish factory at Massawa and the Elabered Estate operate to good standards and benefit in that they have both developed export businesses. On the other hand the Barcan canning factory and the Asmara Dairy would require considerable physical improvement to meet with international requirements.

Previous programmes to provide training to food manufacturing companies in relation HACCP have proved difficult due to the lack of prior knowledge of Quality Systems and Good Manufacturing (Hygienic) Practices. In consequence Mr. Iskinder is now concentrating in the provision of training on GHP's prior to reopening the approach to HACCP. It is believed that personnel are keen to learn and to apply systems within their own companies.

There must also be concern at the apparent lack of knowledge with regard to the critical nature of certain food operations, possibly due to the lack of formal opportunity for food technology/science training in Eritrea. The canning factory was operating without any record being made of temperatures during thermal processing, this despite the presence of personnel from the Ministry of Agriculture.

9. RECOMMENDATIONS

9.1 Development and Introduction of Primary Food Safety Legislation

It is important that primary food legislation is developed and implemented as soon as possible and that such legislation should be acceptable to all of the relevant government departments and also to the industries that will be subject to its requirements.

There are two specific items of legislation required. The first, equivalent to the UK Food Safety Act 1990, defines the manner of inspection and enforcement of food safety and hygiene standards, the second provides the standards against which food manufacturing and distribution operations are required to meet. One possible approach could be to develop a Standard for Operation of Food Companies based on a simplified version of the EFSIS/BRC (European Food Safety Inspection Service/British Retail Consortium) Standard. This includes six elements: HACCP System, Quality System, Factory Environment, Product Control, Process Control and Personnel matters. An advantage in this approach is that companies could ultimately develop systems acceptable to the major world trading organisations.

It is also vital that there should be clear understanding and consensus between the various government departments on the responsibilities of each with respect to the various items of food legislation. A forum should be established between all of the interested ministries to plan future food legislation and to ensure that the roles of the individual ministries are clearly defined. Such roles would include introduction of legislation, enforcement, advice to food manufacturing companies, commissioning of research, certification, training and chemical, microbiological and physical analyses and so an.

At a meeting held on 14th May attended by representatives of the Eritrean Standards Institute, Ministry of Agriculture, Department of Environmental Health, and the Port Health/Quarantine Department it became apparent that various departments were working independently and without reference to each other in the development of items of food legislation. Such independent actions are liable to lead to unnecessary overlap or conflict between the resulting legislative documents.

The personnel present appeared willing to consider the establishment of a legislation working party in order to progress the development of appropriate food safety legislation and in a manner that allows all of the relevant parties input into the process.

It is recommended therefore that a working party be drawn up under the chairmanship of the Chief Environmental Health Officer, whose department appear to have already a document in draft form akin to the UK Food Safety Act. The Manager of ESI as the convenor of this initial meeting should approach Dr. Tekesta Araya, the CEHO with such a proposal.

Other members of the working party should be drawn from the ESI, Ministry of Agriculture, Port Health/Quarantine Department, and the Department of Tourism responsible for hygiene in hotels and catering premises.

In order that such a working party carries appropriate authority it is vital that sanction to form such the working party is gained from the Ministers of the departments concerned.

Meetings of the working party should be scheduled at least monthly in a timetable that seeks to have a completed agreed draft within 6 months.

It is suggested that the draft document currently prepared by the Environmental Health Department is used as a basis for development and should be compared in content with the requirements of the UK Food Safety Act and with any other legal texts that the members of the working party consider appropriate.

In working, written paragraphs should be reviewed by the working party in turn with revisions, omissions and deletions suggested as appropriate.

Individual members may be tasked with writing particular sections but in order to ensure uniformity of style, final editing should be the responsibility of the Environmental Health Department.

In the development and introduction of new food safety legislative documents there may be benefit in the provision of some ongoing guidance and review from suitably qualified, external expert personnel if funding is available for this purpose.

Alongside the development of the Enforcement Document the working party should also consider the development and implementation of a Food Hygiene Regulation. Such a regulation could be based on the European Food Hygiene (General) Directive 93/43/EEC or the derived UK Food Safety (General Food Hygiene) Regulations 1995.

In respect of specific requirements however it is also relevant to consider the content of the EFSIS (European Food Safety Inspection Service) Standard as this contains the commercially acceptable requirements of the major European purchasing organisations. The EFSIS Standard is one standard that meets the requirements of the Global Food Safety Initiative and such reference may be important in providing future opportunities to participate in world trade.

It will also be necessary to decide whether any specific sectoral regulations are required and how they fit in with the general regulations. There is already a regulation for fish products and the Ministry of Agriculture is known to be working on regulations for meat and dairy products. Care must be taken to ensure that there is no incompatibility with the product standards for dairy and meat products prepared by ESI.

A timescale of 1 year would seem reasonable for the completion of a draft version of a Food Hygiene Regulation.

With the proposed introduction of items of food legislation it is also important that there is a due process of consultation with the industries that are likely to be affected by them. Copies should be circulated for comment with a fixed time limit not more

that one month allowed for response. It is important that regulations are realistic in respect of what may be met by industry but without compromise for food safety.

The working party should also consider the provision of training and awareness for personnel from the food industry with relation to the new legislation both at the time of implementation and on a continuing basis. Food hygiene training for food handlers could become a statutory requirement. It may be appropriate that the University is able to provide some assistance in the provision of such training.

9.2 Development of ISO 17025.2000 systems for the laboratory of ESI

There is a need for one accredited laboratory in Asmara that may be used for central reference by both Government Departments and Industry. As the ESI has plans for a new laboratory building it may be appropriate that this becomes such a central accredited facility.

It is recognised that a proposal exists for new and improved premises for the laboratory of ESI. However there is no reason why a programme should not be initiated to develop systems required for compliance with the ISO 17025 Standard. Certification may be a long-term target and the process of certification itself relatively expensive. However there is much that could be done without cost, apart from peoples' time, in ensuring that both management and technical systems are compliant with the standard.

The Standard itself recommends "This International Standard is for use by laboratories in developing their quality, administrative and technical systems that govern their operations".

It is recommended that a member of the laboratory staff be given the task of preparing a programme to develop systems in accordance with the requirements of the standard. Once these are completed and in place, it will be relatively easy to convert them to the new laboratory situation once established.

A further advantage will be that it will also improve the manner of working and disciplines within the existing laboratory.

It is understood that the fish laboratory at Massawa will seek certification to the ISO 17025.2000 Standard in the near future. ESI personnel should endeavour to monitor this process carefully for future reference in terms of the manner of working of the certification organisation and problems encountered.

9.3 Developments at ESI

There is urgent need for the ESI to provide comprehensive calibration services particularly with respect to temperature measurement. The use of reliable control and measurement instrumentation is of vital importance in certain food manufacturing processes such as canning, and the Eritrean industry has currently no access to suitable calibration services. The development of such services should be

undertaken with the intention to meet the requirements of the ISO 17025.2000 Standard.

Additional computers and access to the internet would be beneficial for the staff of the ESI and presumably to other Government Departments as well.

9.5 Food manufacturing Companies

Food safety and quality management training should continue. It is belived sensible to initially continue with Good Hygienic Practice training before continuing to the development of quality systems and the introduction of HACCP. In order to implement HACCP however it is important that companies are aware of the technical hazards of the processes in use. In this respect some formal food technology training would also be beneficial.

APPENDIX 1

Terms of Reference

United Nations Industrial Development Organization

Terms of Reference for

Sub-Contract (SC3)

Within the framework of the food
component of the IP for Eritrea
XA/ERI/03/619

Development of Agro-based Industries

Revised: 05/09/2003

I. Background and justification

1. Background

Eritrea has varied climatic zones with a large variety of crops, livestock and abundant fish resource and food processing plays a key role in the development of Eritrea economy. This gives to this country a huge potential in terms of food production not only to satisfy domestic needs but also to exports food surpluses. However the food production is facing several constraints listed below as identified by the participants of the workshop organized in March' 2000 by MTI in collaboration with UNIDO at the Eritrea National Chamber of Commerce in Asmara are as follows:

- High post harvest losses due to lack of appropriate post harvest technologies (storage/preservation, processing/packaging, transportation and marketing) and resulting in difficult supply of raw materials in sufficient quality and quantity;
- Lack and high costs of transport of raw materials from the production areas to the processing sites as well as of the processed goods to the market places;
- Lack of a food safety and quality assurance system resulting in unsafe and poor quality final products;
- Poor packaging and labelling affecting negatively the marketability of the products and increasing wastages;
- Poor business and management skills due to lack/insufficient training which leads to low productivity and competitiveness;
- Lack of market opportunities, and limited access to market information and marketing;
- Difficult access to finance (credits, investment, etc.);
- Difficult access to modern food processing technology and equipment.

The above situation is a result of adverse conditions the food production in Eritrea had gone through. At the beginning of the 20th century Eritrea had a relatively diversified economy evolving favourably. This trend was disrupted in the 1950s and reversed as from 1974 with the establishment of a military regime and a centralized economy. Until 1991 the continued armed conflicts further damaged the country's production capacity. During the last years Eritrea has been suffering from drought and the last regional conflict that have been the major cause of spread malnutrition and poverty in the country. The food production capacity was reduced including mainly a decrease in agricultural production and in the operation of the food industrial infrastructure. As a consequence around two third the population require emergency food aid for end 2002 and 2003. Presently the most urgent challenges are food security and poverty reduction. Considering the potentials of the country agricultural led industrialization focusing on agro-processing appears the most appropriate solution.

The project strategy will rely on the development of food industry supply chains through the following:

- Establish/strengthen agro-based economic activities in the rural areas through the dissemination of commercial micro and small-scale food processing operations focusing on selected sub-sectors/products (meat, dairy, fruits/vegetables, cereals, fish, animal feed, salt etc.). These activities that would be based on improved food storage, preservation and processing to add value are geared towards employment creation (income generation) and post harvest losses reduction (increase food production).
- Strengthen the capacity of industrial food sector to make it able to absorb the local agricultural production through networking with agro-based rural activities and market outlets.

- Strengthening intra-sector networking and linkages with market outlets.

This is in conformity with the strategy of Eritrea Government, which has given priority to both domestic consumption and exports. For that end, it is essential for the overall improvement of the food-processing sector to achieve competitiveness in the domestic and international markets to facilitate exports. Introduction of Food Safety and Quality Assurance systems, upgrading of skill and technologies, development of new product and product packaging in priority sub-sectors and marketing of products are of utmost importance.

The project will use an integrated approach to address all the issues encountered in a food supply chain
including its horizontal and vertical linkages. Technology inputs will be combined with business development and market access facilitation to ensure profitability and lead in the long run to rural industrialization that is the most sustainable solution for reduced poverty and improved livelihood. The project implementation will be based on full participation of and strong ownership by the beneficiaries and the stakeholders. The clustering/networking approach will be used to the extent possible to achieve a favorable and enabling socio-economic environment and ensure impact for project activities. The project approach relies on capacity building at general, institutional and enterprise levels to ensure sustainability.

2. Main services provided:

Assistance in the reduction of the post-harvest losses - with focus on horticultural products - through the establishment of 12 pilot operations for demonstration and training in post-harvest, micro- and small-scale food processing technologies;

Assistance to national support institutions to upgrade their capacities and capabilities in new and clean food technologies, with focus on fish industry and on horticultural products processing technologies;

Assistance in the establishment of a reliable food safety and quality assurance system through appropriate national coordination and food control regulation frameworks as well as strengthening the capacity of the institutions (R&D and training, advisory services, laboratories, standardization and quality management, etc.)

Assistance to a pilot group of eight food processing enterprises in fish and horticultural products sub-sectors in applying a food safety assurance system (GHP/GMP and HACCP) and upgraded clean food processing technologies through training and advisory services:

A sub-contractor in cooperation with UNIDO will take part in UNIDO's activities toward development and strengthening of the food industrial sector and the support institution in Eritrea through conducting training seminars as well as working out methodological guidance and providing assistance in upgrading food laboratory facilities, identification purchase installation of relevant equipment and training the staff of the identified national counterpart institutions in the appropriate use in accordance with the international standards.

The sub-contractor will provide professional knowledge and experience to the support institution and industrialists and make sure that participants will have enhanced their skills, knowledge and practical experience to be introduced for the efficient

management of the food processing sector of the region and that the laboratory equipment has been improved.

The sub-contractor will assure that the experience gained in the selected institutions and enterprises is applicable in other institutions and enterprises throughout Eritrea.

II. Objectives and results

1. Objectives

The ultimate objective of the project is to contribute to food emergency situation, support poverty eradication and faster economic growth for sustainable food security and improved livelihood by disseminating small-scale agro-processing based economic activities in the rural areas and restoring the capacity of industrial enterprises to increase employment. The assistance will include (i) direct assistance to the rural micro and small-scale farmers/entrepreneurs through the establishment of commercial micro and small-scale agro-processing post harvest operations focusing on selected sub-sectors/products and to industrial enterprises to improve their performance and competitiveness through food technology and safety/quality upgrading and (ii) strengthening horizontal and vertical intra-sector linkages linking agricultural production with industrial and market outlets.

2. Results:

a. Pilot operations in post harvest , micro and small scale food processing technologies established for demonstration and training purposes.

b. National capacity and capabilities in upgraded and clean food technology created in the support institutions and food processing enterprises.

c. A reliable food inspection system established and a food safety assurance system introduced in pilot enterprises

III. Terms of Reference for the sub-contract

3.1 Contract objectives

The objective of the contract is to provide the services described below in paragraph 3.2.

3.2 Scope of services

The sub-contractor shall provide the following services:

- Assess the current food inspection and quality control system including the identification of the parties involved and their role and activities as well as the assessment of the regulations related to food safety in comparison with the relevant international requirements.

- Conduct awareness raising workshops

- Prepare a proposal for the establishment of a national framework to strengthen the co-operation between the above parties and enhance the smooth implementation of food inspection and quality control in conformity with the international requirements.
- Discuss the proposal including the coordination and framework and the regulation up-dates with various stakeholders in a workshop to be organized to this end and make final recommendations to the Government on the above.
- Purchase and delivery of the equipment listed in Annex 4
- Train institutes staff in appropriate use of the equipment.

3.3 Details of contract sum

Fee (w/days, travel and accommodation of experts, and visual aids and documentation for participants):
Local organizational and miscellaneous costs:
Equipment
Total:

3.4 Reporting

A progress report has to be delivered upon finalisation of the field mission.
A draft final report latest by mid of April 2004 and the final report upon finalisation of the subcontract latest by 30 April 2004.
The reports have to be delivered in English language in three hardcopies and one data file using MS Word.

3.5 Requirements

The subcontractor should possess:

a) A high level of technical and academic experience as well as practical experience in implementation of international projects;

b) Knowledge of the international requirements for a well acknowledged food safety system

In order to achieve a complete implementation of all activities to obtain the results specified in this document and to fulfil the project's objective, the sub-contractor should perform all works as required.

The sub-contractor should allocate the following resources:

- **Human resources:**

Qualified food experts with experience in developing national food safety and quality control systems meeting international requirements in 2 split missions and home based work totalling 2 months

- **Other resources:**
  a) Preparation of visual presentation aids and written technical documents;
  b) Generally, all expenses necessary to achieve the objectives of the projects.
  c) Working language: English,

3.6 Duration of contract and contract implementation

The contract shall start beginning December 2003 and be completed after satisfactory performance and acceptance of the above-mentioned services, but not later than 30 April 2004.

NO	DESCRITPTION		QTY	UNIT PRICE
2	Incubator	Incubator Heraeus Function Line B20 general purpose laboratory gravity convection stored programme temperature controller 230V 50-60Hz +5 °C to 70 °C 233L	1	1752.75
3	Colony counter	Colony counter Leica Darkfield Quebec automatic 230V 50Hz	1	1191.3
4	Binocular- microscope	Microscope Leica DME Achromatic system	1	1180.85
5	Refrigerator	Refrigerator Labcold RLHF13141 fan circulated 230V 50-60Hz 372L	1	964.25
7	Autoclave	Autoclave Astell Scientific Swiftlock front loading 415V 50Hz 3 phase 100 °C to 138 °C (0.2bar to 2.4 bar) 200L	1	10314.15
8	Steam bath	Water bath Memmert WBU45 with digital multifunctional microprocessor PID control,boiling stage,integral digital timer and overheat safety device but without cover and circulation pump 230V 50-60Hz 2800W 45L 10 °C to 95 °C	1	942.65
		Total:		16345.99
		Shipment:		2200
		Insurance:		360
				18905.99

APPENDIX 2

Les Brett' Cv

Curriculum Vitae

1. **FAMILY NAME:** BRATT

2. **FIRST NAMES:** Les

3. **DATE OF BIRTH:** 24th December 1942

4. **NATIONALITY:** British

5. **MARITAL STATUS:** Married

6. **EDUCATION:**

City University, London
- BSc (Honours), Chemistry, Class 2, Division 1

Selhurst Grammar School
- 'A' level GCE passes in Chemistry, Physics, Mathematics
- 'O' level GCE passes in Chemistry, Physics, Mathematics, Biology, English Language, English Literature, German, Latin, History

7. **LANGUAGE SKILLS:**

	Reading	Speaking	Writing
English (mother tongue)	5	5	5
German	1	1	1

8. **MEMBERSHIP OF PROFESSIONAL BODIES:**
- Fellow of the Institute of Food Science and Technology
- Professional Member of the Institute of Food Technology (past Chairman and Councillor for the British Section)
- Member of the Institute of Packaging

9. **OTHER SKILLS:**
- ISO 9000 Lead Assessor trained
- European Food Safety Inspection Services (EFSIS) Evaluator
- RIPHH HACCP Examination, Pass with Honours

10. **PRESENT POSITION:**
- Consultant Food Technologist

11. **YEARS WITH THE FIRM:**
- Since March 1st 2003

12. **KEY QUALIFICATIONS:** See below.

13. **SPECIFIC EASTERN COUNTRIES EXPERIENCE:** See below.

14. PROFESSIONAL EXPERIENCE RECORD:

June 1984 to February 2003

Campden & Chorleywood Food and Drink Research Association, Chipping Campden Glos.GL55 6LD.

Head of Department of Process and Packaging Technology to 1991

- Management of department providing consultancy help, pilot plant facilities and training to numerous sectors of the food industry.

International Business Development Manager to February 2003.

- Identification of funding sources and collaborative R&D programmes of relevance to the Research Association with partners outside the UK
- Initiation of pro-active contacts with food and associated companies
- Participate in numerous aid funded projects as identified below

- Project management of overseas consultancy projects, which include:

2001	Hungary	Phare Short Term Consultant, Europrojekt, Market Implications for Fruit and Vegetable Products, subsequent to European Accession.
1999	Lithuania	Phare Short Term Consultant, Institutional development support for Ministry of European Integration in the Agriculture Sector.
1998-99	Russia	Project Manager of KHF funded project to develop code of Good Manufacturing Practice for fish canning in Russia.
1998	Estonia	Sub-contractor to ADAS to provide training in canning technology, factory inspection and HACCP to Estonian veterinary inspectorate.
1996-97	Hungary	Provider of nine three-day HACCP courses for industry and enforcement authorities, part-funded by the EU PHARE programme
1996	Russia	Organiser of one-week study tour in the UK, visiting industrial and official establishments, for 17 senior food industry personnel from Krasnodar (TACIS project)
1996	Latvia	Sub-contractor to Cranfield University in PHARE/Alimenta funded training course in HACCP, ISO 9000 and total quality management for the food industry in Latvia (one week)
1995-96	Hungary	Manager of UNIDO/Know How Fund funded project for the production of guidelines for good manufacturing practices for the Hungarian food industry
1995	Russia	Project Manager of a privately-funded contract in Kamchatka, Russia, on a consultancy regarding requirements for, and implementation of, good manufacturing practices in Russian salmon canneries
1994	Russia	Sub-contractor to Linden Consultancy in a TACIS-funded project in Moscow, Russia, on energy costs of food distribution in Moscow (one week)

1992-94	Hungary	Project Manager in UNIDO/Know How Fund funded project on a training and advisory programme for improving the quality and marketability of frozen food products from Hungary - a demonstration project on the design and implementation of HACCP and ISO 9002
1991	Hungary	Project Manager in UNIDO/Know How Fund funded project in Hungary to review the technical needs of the traditional frozen food industry, together with those of the central R&D institute, to provide improved marketability
1988-91	Hungary	Project Manager in World Bank/Hungarian Energy Efficiency Office funded demonstration project concerning energy measuring and conservation at the Globus Canning Factory in Budapest

- Since 1984, short-term consultancies in fish canneries (principally sardines, tuna and salmon) in countries including Morocco, Portugal, Italy, France, Norway, Russia, Thailand, Indonesia, Madagascar and the Maldives, relating to implementation of good manufacturing practices, design and implementation of HACCP/quality systems, and factory audits for product safety and quality.

- Since 1992, involvement in a significant number of consultancy projects in the design and implementation of quality management systems and good manufacturing practices for major companies in Hungary.

From 1984 to1991
England
Campden & Chorleywood Wood Food Research Association, Chipping Campden
Head of Department of Product & Packaging Technology

Responsible for 13 staff (post-graduates, graduates and technicians) and reporting to the Director of the Food Technology Division.

The Campden & Chorleywood Food Research Association is an industrially-based organisation undertaking research programmes funded by both membership subscriptions and by Government, and also supplying consultancy services for the food and drinks industry.

The work of the Product and Packaging Technology Department currently includes:

Contract Work

- New product and process development and packaging evaluation on a confidential basis from idea generation to preparation of market research samples. Work has been undertaken both for multi-national companies and small operations (canned, chilled, frozen, dehydrated foods, drinks).
- Thermal process evaluation and temperature distribution studies for canned foods
- Cannery inspection and improvement of operating procedures
- Factory design and commissioning

- Packaging development and evaluation for manufacturing and domestic use, cans, sterilisable plastics, glass, plastic film
- Training, organisation of scheduled and specifically tailored courses and symposia on a variety of subjects (Introduction to Canning, Product Development, Packaging, etc.)

Contract work has been undertaken both in the UK and overseas (Morocco, Egypt, Saudi Arabia, Holland, Germany, Norway, France).

Research Programme

- Preparation of good manufacturing practice guidelines for operation of continuous in-container sterilising systems
- Preparation of good manufacturing practice guidelines for sterilisable plastics containers
- On-line detection of container faults
- Modified atmosphere packaging of prepared fruit and vegetables
- Uptake of oil during frying
- Evaluation of time-temperature indicators
- Evaluation of safety of cook-chill systems

From 1978 to1984
England
Dornay Foods, King's Lynn
Product Development Manager

Products

- Instant mashed potatoes, rice, canned hot pack and cold pack meats, ethnic foods

Brand Names

- Yeoman, Wondermash, Tyne, Uncle Ben's, Suzi Wan

Activities

- New product development, including ideas generation, raw material and functional ingredient selection, formulation development for cost, performance and legislative obligations, manufacturing trials and specification writing
- Process development, including selection and commissioning of pilot plant, process design and thermal process evaluation of heat sterilised products
- Commissioning of market research and scientific research by external agencies
- Liaison with sister food companies in Holland, Belgium and USA
- Management of development team of graduate technologists
- Development programme planning and discretionary fixed cost budget control of £20k

Development Activities

Included work on:

- Instant mashed potato derivatives
- Canned rice, ethnic rices
- Frozen rice
- Canned ethnic (Suzi Wan) products
- Cold pack meat (and semi-analog meat) products
- Canned hot pack meat products

From 1974 to1977
England
Lyons Tetley Ltd. (Lyons Catering Supplies Ltd.), Market Harborough
Development Project Leader

Products

- Dehydrated soup mixes, dessert mixes, convenience foods

Brand Names

- Lyons, Symingtons, own label

Activities

- New product formulation and process development of assigned projects
- Formulation development of existing products for cost reduction/product improvement
- Thermal process evaluation for heat sterilised products

Development Activities

Included work on:

- Dehydrated savoury and dessert mixes
- Retort pouched products
- Calorie controlled dietetic products
- Bread mixes
- For retail and food service use for both Lyons and own label brands

From 1966 to1974
England
Stratford-upon-Avon Canners Ltd. (DCL Yeast and Food Division), Stratford-upon-Avon
QA/Development Technologist

Products

- Canned fruit and vegetables, preserves, fruit products, Christmas puddings, mincemeat

Brand Names

- Unecol, Sona, own label (food service and retail)

Activities

- Quality control, quality assurance and development activities on complete range of company products

APPENDIX 3

Seminar for senior managers of food companies on food safety and quality

Food Safety and Quality

UNIDO
Food Component XA/ERI/03/619

Les Bratt

Les Bratt(Food Technology)Ltd
25.02.04

LB

Food Safety and Quality

The question of food safety has become a major political issue with very significant economic consequences in case of failure.

Failure may have global impact.

LB

Food Safety and Quality

Incidents relating to food safety

- Salmonella in eggs
- Dioxins in pork products
- BSE
- E.coli in meat products
- Foot and Mouth Disease
- Avian Flu in chickens

LB

Food Safety and Quality

Food Safety is necessary:

- To protect the consumer
- To protect the reputation of the manufacturer
- To provide assurance for unhindered commercial trade
- To meet legislative requirements

LB

Food Safety and Quality

The current approach to food safety in the UK stems from the incident of Botulism in canned salmon from Alaska in 1978.

It was realised that end product testing is unable to provide the necessary assurance of safety. It is statistically ineffective and too late.

LB

Food Safety and Quality

The means for food safety.

- Legislation
- Official Enforcement
- Codes of Good Manufacturing Practice
- HACCP
- Certified Quality Systems
- Accredited Inspection Standards.

LB

Food Safety and Quality

- Food Safety and Quality Systems cannot succeed without the commitment of the top management of the company.
- It is they who authorise the use of resources for the establishment of systems and the financial resources for necessary physical improvement.

LB

Food Safety and Quality

Management Responsibilities:

- Introduction and publicising of a Quality Policy Statement.
- Provision of resources for development of quality and food safety systems
- Moral support and encouragement for teams engaged in production of quality and food safety systems

LB

Food Safety and Quality

Management Responsibilities:

- Organisation of management structure with defined reporting relationships and responsibilities with respect to quality and safety matters.
- Organisation of proper communication channels to ensure that relevant personnel are abreast of quality and safety issues.

LB

Food Safety and Quality

Management Responsibilities:

- Authorisation of all procedures
- To provide a Management Review of the Quality System at scheduled intervals to ensure whether it is functioning satisfactorily or whether change is necessary.

LB

Food Safety and Quality

Management Review Meeting :

Review of Quality Policy

Incidents of non-conformance

Complaints

Review of supplier performance

Training needs

Results of Audits, Corrective actions.

Setting of Quality objectives

LB

Good Hygienic Practice

Good Hygienic Practice is the implementation during the manufacture, storage and distribution of food of all those measures that ensure the minimisation or prevention of contamination of the food from external sources.

LB

Good Hygienic Practice

Sources of Contamination:

- Incoming with raw materials
- From personnel
- From improperly cleaned or maintained equipment
- From poorly maintained factory buildings
- From pests

LB

Good Hygienic Practice

GHPs are generally regarded as pre-requisite measures within a HACCP system, applicable to all manufacturing operations, and forming the basis of a suitable manufacturing environment.

LB

Good Hygienic Practice

Examples of GHPs:

- Cleaning and Sanitation Procedures
- Pest Control procedures
- Personnel Hygiene regulations
- Storage of hazardous materials
- Maintenance procedures to avoid product contamination.

LB

Good Manufacturing Practice

Good Manufacturing Practice is the universally acknowledged method of undertaking a manufacturing operation to ensure product safety, specified quality and legal compliance.

GMPs may be specified in voluntary codes of practice or may be included in legal documents.

LB

Good Manufacturing Practice

Examples of GMPs

- Preparation of tuna for canning
- Double seaming of cans
- Pasteurisation and sterilisation operations
- Freezing of fruits and vegetables.

LB

Quality System

The Quality System is those set of documented procedures that describes the entirety of the company's operations.

A procedure that is not specified on paper will forever be uncertain.

LB

ISO 9001.2000

The ISO 9001.2000 Standard is a means for individual quality systems to be certified as complying with the requirements for an internationally recognised standard.

LB

ISO 9001.2000

ISO 9001.2000 requires:

- Documentation of all procedures
- Implementation of all procedures in practice
- Proof in the form of records that procedures have been properly followed

LB

ISO 9001.2000

Contents of Standard

- Introduction
- Normative reference
- Terms and Definitions
- Quality Management Systems
- Management Responsibility
- Resource Management
- Product Realization
- Measurement, Analysis and Improvement

LB

HACCP

HACCP is a formal process for identifying the critical procedures within a company.

In this way HACCP is entirely compatible with ISO 9001.2000

LB

HACCP

The seven principles are used to define:

- CCPs
- Control Measures
- Critical Limits
- Monitoring Procedures
- Emergency Procedures in case control is lost
- Recording Procedures
- Verification Procedures

LB

HACCP

HACCP

- Management commitment
- Satisfactory identification of CCP's
- Cross referencing between HACCP plan and procedural documents
- Suitable and visible implementation into plant
- Training records against procedures for CCPs

LB

The Benefits

The benefits of Systems:

- Defined, efficient, uniform methods of manufacture
- Reduction of lost time through non-conformance
- Reduction of complaints
- Freedom from prosecution
- Increased opportunities for trade

LB

EFSIS

EFSIS

European Food Safety Inspection Service

LB

EFSIS

EFSIS is an inspection organisation accredited to undertake inspections against the standard of the British Retail Consortium.

One inspection provides necessary assurance for a multiplicity of customers or potential customers.

LB

EFSIS

Areas for Inspection and compliance

- **HACCP System**
- **Quality Management System**
- **Factory Environment Standards**
- **Product Control**
- **Process Control**
- **Personnel**

LB

List of participants on seminar for senior managers of food companies on food safety and quality on 25th February 2004

Mebrahtom Hagos	Ministry of Agriculture	Meat Inspector
Ghiday Mehary	Ministry of Agriculture	Snr. Lab. Technician
Yohannes Habte	Asmara Brewery	General Manager
Solomon Mihreteab	Min.of Land Water & Env.	Chemist
Mebrat Gebreab	Min of Land Water & Env.	Chemist
Michael Abraha	Min of Land Water & Env.	Water Management
Habte Embaye	Barcan Cannery	Finance and Admin Mgr
Ephrem Gebreamlak	Dept of Environment	Junior Pollution Expert
Gheiwot Fhassione	ERI Life Water	
Kidane Melles	Elabered Estate	Dep. General Manager
Tesfai Bgubar	Red Sea Bottlers	General Manager
Ebenzer Michael	AFICO	Plant Manager
Afeworki Fessehaie	Municipal Abattoir	Manager
Tecle G Michael	Eritrean Grain Board	H/Research and Mgt
Estifanos Kflom	Asmara Dairy	Manager
Rezene Kidane	Asmara Meat and Dairy	Manager
Kiflezion Musael	Santafamiglia Pasta	Manager
Habtu Zerizgh	Meat and Milk	General Manager
Habtay Mehreteab	Alfa Food Products	General Manager
Mauro Raffetto	Raffetto Bakery	Manager

APPENDIX 4

Training on ISO 17025:2000: general requirements for the competence of testing and calibration laboratories

ISO 17025:2000

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ISO 17025:2000

General requirements for the competence of testing and calibration laboratories.

LB

ISO 17025:2000

The most common International Standards used within the food industry are

- ISO 9001.2000 Quality Management System
- ISO 14001.2000 Environmental Management
- ISO 17025.2000 Laboratory Competence
- ISO 22000 Under development

LB

ISO 17025:2000

Company systems are inspected against standards by certification bodies such as SGS, LRQA, DNV, BVQI

The certification bodies are accredited to undertake such inspections by accreditation bodies such as UKAS in the UK.

LB

ISO 17025:2000

The ISO 17025.2000 Standard is organised in 5 sections

- Scope
- Normative References
- Terms and Definitions
- Management Requirements
- Technical Requirements.

LB

ISO 17025:2000

ISO 17025.2000 has been constructed to be compatible with ISO 9001.2000

Much of the logic in the two standards is common.

LB

ISO 17025:2000

1. SCOPE

1.1 Covers testing and calibration using standard methods, non-standard methods and laboratory developed methods.

1.2 Applicable to all organisations, first, second and third party laboratories

1.4 For use by laboratories in developing their quality, administrative and technical systems

1.5 Compliance does not cover safety requirements

1.6 Will comply with relevant requirements of ISO 9001:2000

LB

ISO 17025:2000

Management Requirements

- 4.1 Organisation
- 4.2 Quality System
- 4.3 Document Control
- 4.4 Review of requests, tenders, and contracts
- 4.5 Sub-contracting of tests and calibrations
- 4.6 Purchasing Services and supplies
- 4.7 Service to the client

LB

ISO 17025:2000

Management requirements

4.8 Complaints

4.9 Control of nonconforming testing and/or calibration work

4.10 Corrective Action

4.11 Preventive Action

4.12 Control of records

4.13 Internal Audits

4.14 Management Reviews

LB

ISO 17025:2000

Technical Requirements

5.1 General

5.2 Personnel

5.3 Accommodation

5.4 Test and calibration methods and method validation

5.5 Equipment

5.6 Measurement traceability

LB

ISO 17025:2000

Technical Requirements

5.7 Sampling

5.8 Handling of test and calibration items

5.9 Assuring the quality of test and calibration results

5.10 Reporting of results

LB

ISO 17025:2000

Management Requirements

LB

ISO 17025:2000

4.1 Organisation

- 4.1.2 Responsibility to satisfy the needs of the client, regulatory authorities or organisations providing recognition.
- 4.1.4 Responsibilities of key personnel having involvement or influence on testing shall be defined

LB

ISO 17025:2000

4.8 Complaints

- The Laboratory shall have a policy and procedure for the resolution of complaints received from clients. Records shall be maintained of all complaints and the investigations and corrective actions taken.

LB

ISO 17025:2000

4.9.1 Control of nonconforming testing and/or calibration work

The laboratory shall have a policy and procedures that shall be implemented when any aspects of testing and/or calibration work do not conform to its own procedures or the agreed requirements of the client.

Responsibilities for management of non-conformance shall be designated.

LB

ISO 17025:2000

4.10 Corrective Actions

The laboratory shall establish a policy and procedures and shall designate authorities for implementing corrective actions when non-conforming work or departures from the policies and procedures in the quality system have been identified.

LB

ISO 17025:2000

4.12 Control of Records

- Procedures for identification, collection, indexing, access, storage, maintenance, and disposal of quality and technical records.
- Security and confidentiality
- Legibility and retained to be readily retrievable
- Retention times established

LB

ISO 17025:2000

4.12.2 Technical Records

- Retained records of original observations, derived data, and information
- Staff records (who is doing the work)
- Calibration records
- Sufficient information to determine uncertainties in results.

LB

ISO 17025:2000

4.13 Internal Audits

Internal audits shall be conducted in accordance with a predetermined schedule to ensure that operations continue to comply with the requirements of the standard.

Normally annual schedule

Results and Corrective actions recorded

Verification of corrective actions.

LB

ISO 17025:2000

4.14 Management Reviews

- Conducted by executive management
- Predetermined schedule (once/twice/year)
- Suitability of Policies and procedures
- Reports from managerial personnel
- Outcome of internal audits
- Corrective and preventive actions

LB

ISO 17025:2000

4.14 Management Reviews

- Assessments by external bodies
- Results of inter-laboratory comparisons or proficiency tests.
- Changes in volume and type of the work
- Client feedback
- Complaints.

LB

ISO 17025:2000

Technical Requirements

LB

ISO 17025:2000

5.1 General Technical Requirements

General Factors determining the correctness and reliability of results;

- Human Factors
- Accommodation and environmental conditions
- Test and calibration methods and method validation
- Equipment
- Measurement traceability
- Sampling

LB

ISO 17025:2000

5.2 Personnel

- Assured competence of laboratory staff
- Supervision of trainees
- Qualification by, training, experience and/or demonstrated skills
- Policy and procedure for identification of training needs

LB

ISO 17025:2000

5.2 Personnel

- Current job descriptions for managerial, technical and key support personnel As a Minimum:
- Responsibilities with respect to tests
- Responsibilities with respect to planning of tests and evaluation of results
- Responsibilities for reporting opinions

LB

ISO 17025:2000

5.2 Personnel

- Responsibilities with respect to method development and validation of new methods
- Expertise and experience required
- Qualifications and training programmes
- Managerial duties.

LB

ISO 17025:2000

5.3 Accommodation and Environmental Conditions

- Ensure environmental conditions do not invalidate results.
- Monitor environmental conditions that may affect results
- Effective separation between neighbouring areas in which there are incompatible activities.
- Controlled access to areas affecting quality
- Good Housekeeping

LB

ISO 17025:2000

5.4 Test and Calibration methods, method validation

- Appropriate methods and procedures, including sampling, transport, storage, preparation, testing, including where appropriate measurement of uncertainty.
- Selection of methods to suit needs of client, preferably methods published as international, regional or national standards.

LB

ISO 17025:2000

5.4.5 Validation of methods

- Laboratory shall validate non-standard methods or laboratory developed methods.
- Validation may include procedures for sampling, handling and transportation.

LB

ISO 17025:2000

5.4.5 Validation of methods

Techniques used for validation

- Calibration with reference materials
- Comparison with other methods
- Inter-laboratory comparisons
- Systematic assessment of factors influencing the results

LB

ISO 17025:2000

5.4.6 Estimation of uncertainty

- A calibration or testing laboratory, performing its own calibrations shall have and shall apply a procedure to estimate the uncertainty of measurement for all calibrations and types of calibrations.
- Testing laboratories shall have and shall apply procedures for estimating uncertainty of measurement.

LB

ISO 17025:2000

5.5 Equipment

- Laboratory shall be suitably furnished with all items required for the correct performance of tests
- Equipment and software capable of achieving accuracy required
- Equipment operated by authorised personnel
- Items of equipment uniquely identified

LB

ISO 17025:2000

5.5 Equipment

- Records shall include items of equipment and software used.
- Identity, manufacturer, serial number etc
- Check of compliance with specification
- Current location
- Manufacturers instructions

LB

ISO 17025:2000

5.5 Equipment

- Dates and certificates of calibrations
- Maintenance plan
- Any damage, malfunction, modification or repair to the equipment
- Suspect equipment shall be taken out of service

LB

ISO 17025:2000

5.6 Measurement Traceability

- Laboratory should have an established programme for the calibration of its equipment.
- For calibration laboratories the programme of calibration of equipment shall be designed and operated to ensure traceability to the International System of Units (SI).
- External calibration agencies shall have demonstrated competence.

LB

ISO 17025:2000

5.6.3.1Reference Standards and reference materials

- Reference standards calibrated with full traceability
- Reference standards shall be used for calibration only
- Calibrated before and after any adjustment
- Reference materials traceable to SI units of measurement

LB

ISO 17025:2000

5.7 Sampling

- The laboratory shall have a sampling plan and procedures for sampling when it carries out sampling of substances, materials or products for subsequent testing or calibration.
- Where the client requires deviations from the sampling plan, these shall be recorded.

LB

ISO 17025:2000

5.8 Handling of test and calibration items

- Defined procedures for transportation, receipt, handling, protection, storage, retention and/or disposal of test items, including all provisions to protect the integrity of the test item.
- System for identifying test or calibration items.
- Recording of any identified abnormalities of test materials

LB

ISO 17025:2000

5.10 Reporting of Results

- Test reports shall include:
- Title
- Name and address of the laboratory
- Unique identification of test report
- Name and address of client
- Identification of method used.

LB

ISO 17025:2000

5.10 Reporting of Results

- Description of items tested or calibrated
- Date of receipt of test items
- Reference to sampling plan
- Test or calibration results
- Names of persons authorising the test report or calibration certificate
- Page number and total number of pages

LB

ISO 17025:2000

5.10.4 Calibration Certificates

Shall include :

- Environmental conditions
- Uncertainty of measurement
- Evidence that measurements are traceable.

LB

ISO 17025:2000

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ISO 17025:2000

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LB

Attendees at Training course on ISO 17025.2000

Eritrean Standards Institute

12th May

Mussie Govani, Head of Laboratory
Saba Tekesta
Tedrose Berhane
Daniel Ahferom
Araya Tsegai
Kalie Bekuredngele
Genet Baraki
Michael Isaias
Musgun Syum

APPENDIX 5

Training on EFSIS standard for companies supplying food products

Food Safety and Quality

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Food Safety and Quality

Food Safety is necessary:

- To protect the consumer
- To protect the reputation of the manufacturer
- To provide assurance for unhindered commercial trade
- To meet legislative requirements

LB

Food Safety and Quality

The question of food safety has become a major political issue with very significant economic consequences in case of failure.

Failure may have global impact.

LB

Food Safety and Quality

Incidents relating to food safety

- Salmonella in eggs
- Dioxins in pork products
- BSE
- E.coli in meat products
- Foot and Mouth Disease
- Avian Flu in chickens

LB

Food Safety and Quality

The current approach to food safety in the UK stems from the incident of Botulism in canned salmon from Alaska in 1978.

It was realised that end product testing is unable to provide the necessary assurance of safety. It is statistically ineffective and too late.

LB

Food Safety and Quality

The means for food safety.

- Legislation
- Official Enforcement
- Codes of Good Manufacturing Practice
- HACCP
- Certified Quality Systems
- Accredited Inspection Standards.

LB

Food Safety and Quality

UK Food Safety Act
Defence of Due Diligence

Section 21: provides for a defence if defendants can prove to a court that they took all reasonable precautions and exercised due diligence to avoid committing an offence.

LB

Food Safety and Quality

It is this defence of Due Diligence that has led to the widespread practice whereby retail or trading organisations audit their suppliers.

Such audits may be carried out directly or under a 3rd party audit scheme such as the EFSIS/BRC system.

LB

Food Safety and Quality

MAFF the Ministry of Agriculture, Fisheries and Food represented the interests of both the producers (farmers) and the consumers.

This was considered to be a compromising situation, particularly when dealing with incidents such as the BSE crisis.

LB

Food Safety and Quality

UK Food Standards Agency

The FSA is an independent food safety watchdog set up by an Act of Parliament in 2000 to protect the public's health in relation to food.

LB

Food Safety and Quality

- The FSA although a Government agency, is independent in that it does not report to a specific minister.
- The FSA is free to publish any advice that it issues.
- Led by a board appointed to act in the public interest and not to represent particular sectors.

LB

Food Safety and Quality

- Current Chairman is Sir John Krebs an internationally acknowledged zoologist from Oxford University.
- FSA is accountable through Health Ministers.
- Represents UK interests within EU food legislative bodies and within Codex

LB

Food Safety and Quality

- Provides information to the public and Government from farm to fork, nutrition and diet.
- Protects consumers through effective food enforcement and monitoring.
- All Board meetings are held in public and minutes are freely available.

LB

Food Safety and Quality

- The making of legislation is the function of central government.
- Responsibility for enforcement is shared between central and local government bodies.

LB

Food Safety and Quality

- Enforcement is primarily (but not solely) the responsibility of the 499 local authorities in the UK, and more specifically Environmental Health Officers and Trading Standards Officers.
- The FSA is also an enforcement authority in its own right.

LB

Food Safety and Quality

- The FSA (acting through its executive agency, the Meat Hygiene Service) is the enforcement authority in respect of about 1700 licensed premises in the UK producing meat for sale for human consumption. Such premises include Slaughterhouses, Cutting Plants and Cold Stores.

LB

Food Safety and Quality

- The FSA also audits and standardises the performance of all of the local authorities with respect to the enforcement of food legislation.

LB

Food Safety and Quality

DEFRA: Department of Environment, Food and Rural Affairs.

- Provides marketing help to food and drink industries
- Also has two executive agencies-The Pesticides Safety Directorate and the Veterinary Medicines Directorate- carrying out surveillance of residues.

LB

The Inspection Specialists

EFSIS

The British Retail Organisations required a common standard against which all of their suppliers could be assessed.

The benefit for the manufacturer is that one inspection may be used to provide necessary assurances to a number of customers.

EFSIS

Much of the logic of the EFSIS/BRC Standard follows that of the ISO 9001.2000 Standard.

EFSIS

Evaluation schemes must be designed to look at the underlying systems within a company to provide assurance that products will be, legal, safe for the consumer, and of specified quality, every day of manufacture.

EFSIS

EFSIS

European Food Safety Inspection Service

EFSIS

EFSIS is jointly owned by

Campden & Chorleywood Food R.A

and

UK Meat and Livestock Commission

This relationship has existed since 1989

EFSIS

- **EFSIS evaluations are held in some 62 countries from Austria to Zambia**
- **Approximately 1500 evaluations per year**
- **61 companies in Thailand**

EFSIS

Advantages to the audited company:

- The EFSIS standard provides an ideal basis for structured quality system in food companies
- Almost universal acceptability in UK and Europe
- Inspections are a positive aid to factory improvement
- Certification provides evidence of standard of operation
- Increased business opportunities, especially for export

EFSIS

Evaluations are currently undertaken against

EFSIS standard, Issue 5, June 2002

Incorporating the requirements of

BRC Standard, Issue 3, April 2002

EFSIS

Inspection companies such as EFSIS are approved by UKAS to undertake evaluations against the BRC Standard under the requirements of the

EN45004 Standard.

EFSIS

- **The EFSIS Standard contains all of the requirements of the BRC Standard plus a number of additional requirements and recommendations**

EFSIS

The Administrative details covering the Evaluation are included in the EFSIS Protocol, accompanying the Standard.

EFSIS

EFSIS Inspectors must be qualified:

- **5 years minimum appropriate experience**
- **Passed Lead Assessor examination**
- **Passed RIPH HACCP examination**
- **Subject to witnessed audits**

EFSIS

- **EFSIS Audits may be commissioned by either the manufacturer or by the purchaser of the food material.**
- **The commissioning organisation however owns the report and the Certificate and is able to use them as appropriate.**

EFSIS

The EFSIS Inspection comprises:

- Commissioning of the Evaluation
- Opening Meeting, Confirmation of Scope
- Review of Quality System Documentation
- Site visit
- Closing meeting including discussion on the non- conformances identified.

EFSIS

The duration for a typical Evaluation of a company is about 10 hours, four of which involves the tour of the site and the remainder, the review of the Quality System Documentation.

EFSIS

Non Compliances raised may be:

CRITICAL

MAJOR

MINOR

and Recommendations.

EFSIS

- **Certificates of Conformity against the EFSIS Standard are not issued if there are outstanding non-compliances.**
- **In general non-compliances should be cleared within 28 days.**
- **Corrective actions taken against critical non-compliances must be personally verified by EFSIS.**

EFSIS

Following the Evaluation:

- The Evaluator writes the Evaluation Report
- Details of Corrective Actions taken, as necessary are received
- The Report and the Corrective Actions taken are reviewed by a Certification Manager who then makes the recommendation of certification
- The Company is notified

EFSIS

- Certificates of Conformity are issued at:
- EFSIS Foundation Level
- EFSIS Higher level

- The period of validity of the certificate is dependent on the type of food material and the level of certification.

EFSIS

The EFSIS Audit Report is in 4 sections

- Evaluation Details
- Evaluation Summary - Overview of Performance against Standard
- Non-Conformances and Recommendations
- Detailed Evaluation Report

EFSIS

The EFSIS Standard
contains 36 requirements
arranged in 6 major sections
against which a company is audited.

EFSIS

Areas for Inspection and compliance

- HACCP System
- Quality Management System
- Factory Environment Standards
- Product Control
- Process Control
- Personnel

EFSIS

HACCP

EFSIS

HACCP

- Management commitment
- Satisfactory identification of CCPs
- Cross referencing between HACCP plan and procedural documents
- Suitable and visible implementation into plant
- Training records against procedures for CCPs

EFSIS

Quality Management System

EFSIS

Management Organisation

Does the company have designated individuals, with defined job descriptions, who are responsible for undertaking all necessary tasks relating to GMPs and GHPs

EFSIS

Quality System

- The Quality Policy statement provides insight into the stated values of the top management of the company.
- How is customer satisfaction measured.
- How is the policy transmitted to, and understood by, the workforce
- What continuing mechanisms reinforce the Quality Policy during the working year

EFSIS

Quality System

- Are there detailed procedures and works instructions that describe and specify the operations of the factory
- Are working documents available for reference wherever required
- Are documents subject to controlled circulation

EFSIS

Traceability System /Recall Procedure

- Is there a traceability system that is adequate to service a recall procedure should this be required.
- How often is the recall procedure tested
- Who has designated responsibility for crisis management. Who may initiate a recall.

EFSIS

Complaint Handling

- Does the company have procedures for the management of customer complaints.
- Are complaints fully analysed and necessary corrective actions implemented
- What is the overall incidence and type of complaints received
- Does the company have a quantitative objective to reduce complaints

EFSIS

Internal audits

- How does the company organise the administration of internal audits.
- Does the audit schedule fully verify the proper application of procedures and operating conditions, and how often.
- Are identified corrective actions suitably implemented.
- Are auditors trained and independent of the area under investigation.

EFSIS

Factory Environment Standards

EFSIS

Are the premises and plant designed, constructed and maintained to control the risk of contamination and to comply with all relevant legislation

EFSIS

- Linear Process Flow to provide segregation between successive operations and prevent contamination
- Sufficient working space
- Suitable measures for removal of waste materials
- Suitable location for laboratories

EFSIS

Is the fabrication of the factory suitable for the intended purpose.

- Protected entrances
- Staff facilities, manner of personnel entry
- Materials of construction for walls, floors, and ceilings
- Suitable provision of services and drains
- Elimination/protection of glass

EFSIS

Is equipment suitably designed, deployed and maintained for the intended purpose.

- Constructed of suitable materials
- Designed and deployed to be easily cleaned
- Properly maintained according to documented schedule of preventive maintenance.
- Suitably cleaned after maintenance.

EFSIS

Are appropriate standards of hygiene and housekeeping maintained at all times.

- Cleaning according to defined schedules and procedures
- Do cleaning procedures minimise any risk of contamination
- How is the efficacy of cleaning validated
- Where are cleaning materials stored

EFSIS

Pest Control

- Who is responsible for pest control
- How have they been trained
- What is the scope of activities
- How are treatments/inspections reported
- How are corrective actions implemented
- Who is responsible for the EFK's

EFSIS

Waste Disposal

- Are there adequate systems for the collection, collation, and disposal of waste material.
- Are hazardous waste materials suitably removed from the factory
- Are external waste containers controlled to prevent attraction of pests.

EFSIS

Staff Facilities

- Suitable entrance procedure to operational areas (including high care areas as required)
- Suitable hand washing facilities where needed
- Suitable toilet accommodation
- Suitable canteen facilities

EFSIS

Is the site located and maintained to prevent contamination of the products manufactured.

- Are there any neighbouring activities which threaten contamination
- Are buildings surrounded by clear space and planted areas kept to a minimum
- Are planted areas well maintained
- Is outdoor storage minimised.
- Is the site secure

EFSIS

Are appropriate facilities and procedures used to control the risk of foreign body contamination

- Control and storage of chemicals.
- Glass breakage procedure/Glass register.
- Elimination/avoidance of wood.
- Use of metal/foreign body detectors

EFSIS

Metal detectors.

- Defined procedures for use and testing
- Action of metal detector
- Test pieces used, responsibility for tests
- Investigation of suspect material
- Procedure in the event of metal detector failure when tested

EFSIS

Product Control

EFSIS

- Is New Product Development undertaken according to a documented protocol.
- Are responsibilities for, Product Safety, Product Quality and Legal compliance fully defined.
- Are all new products included within a relevant HACCP plan.
- How is shelf life evaluated.

EFSIS

Is product packaging legally compliant and suitable for the intended use.

- Are there specific problems relating to the use of packaging materials and how are these managed
- Are procedures used to check compliance with specification
- Is packaging suitably stored and protected prior to use

EFSIS

How is non-conforming product handled

- How is NCP identified
- Where is NCP located
- Who is responsible for resolution
- What documentation is completed
- Who specifies corrective actions
- How are corrective actions implemented.

EFSIS

Laboratories.

- Are laboratory facilities appropriate
- Are staff suitably trained
- Are recognised methods used
- Are there procedures to check reliability of results
- Is the laboratory accredited.

EFSIS

Process Control

EFSIS

- Is the company able by reference to records able to demonstrate that all processes are operated in accordance with defined procedures and that all products meet their specifications.
- Are all finished products subject to positive release.

EFSIS

Temperature control

Are all temperatures critical to food safety and quality:

- Specified
- Controlled
- Monitored
- Recorded

EFSIS

All all temperature measuring instruments:

- Of suitable specification
- Suitably calibrated
- Maintained in good working condition
- Properly located

EFSIS

Personnel Issues

EFSIS

Personal Hygiene Regulations

- Are the hygiene regulations appropriate to the operations of the factory
- How are the employees made aware of the hygiene regulations
- How is observance of the regulations monitored

EFSIS

Medical Screening

- Are all employees subject to medical screening prior to the offer of employment
- Are all visitors to processing areas required to sign a declaration of suitable health
- Are employees required to notify the company in case of exposure to infectious disease

EFSIS

Protective clothing

- Does the company issue suitable protective clothing for the operations of the factory
- Are there suitable arrangements for laundering and issue of protective clothing
- Are there suitable locker arrangements for storage of private clothing and other items.
- Is there a defined procedure for putting clothing on

EFSIS

Training

- Are personnel properly trained with respect to the application of GHP's
- Is training against documented procedures
- Is training fully recorded in personal files

EFSIS

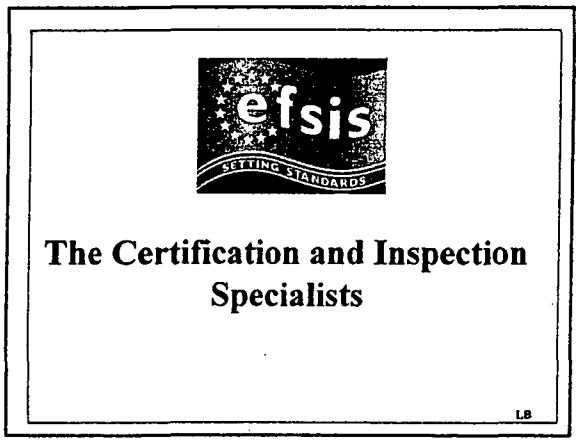
Advantages to the audited company:

- The EFSIS standard provides an ideal basis for structured quality system in food companies
- Almost universal acceptability in UK and Europe
- Inspections are aid to factory improvement
- Certification provides evidence of standard of operation
- Increased business opportunities

EFSIS

Eritrea

A Standard such as the EFSIS/BRC Standard could be used as a basis for the development of a regulatory standard to be used by food manufacturing companies in Eritrea.


efsis
SETTING STANDARDS
The Certification and Inspection Specialists
LB

Training course on EFSIS (European Food Safety Inspection Service) Standard

Eritrean Standards Institute

Wednesday 12th May

Attendees

Mussie Govani
Alem Araia
Habtom Fesehaye
Kalie Bekuredngele

APPENDIX 6

Training on GMP in the manufacture of canned foods, the Barcan Cannery

GMP in Canning

Les Bratt

Les Bratt(Food technology)Ltd

LB

GMP in Canning

Canning is the most important form of food preservation in the world today

- It provides distribution of food worldwide from the point of production to consumption
- Does not require refrigeration
- Provides livelihood for millions of people
- Provides foreign earnings for many countries

LB

GMP in Canning

- The heat sterilisation of foods in hermetically sealed containers has been commercially used for 200 years
- The technology is well understood and documented
- Manufacturing companies need to strictly observe Good Manufacturing Practices if the health of consumers and financial security are to be protected.

LB

GMP in Canning

Benefits of canned food

- Convenience in use, food is already cooked.
- Does not need refrigerated storage
- Well understood by the consumer
- Long shelf life
- Nutritious
- Robust form of packaging, not easily damaged

LB

GMP in Canning

Technical objectives of the canning process are;

- Destruction of enzymes that could cause chemical deterioration
- Commercial sterility
- Preparation of the food by cooking.

LB

GMP in Canning

Commercial Objectives of the Canning Process

- Compliance with Specification
- Customer Satisfaction
- Efficient Manufacture, optimum use of time and materials
- Right First Time
- Beneficial relationships with supplier companies

LB

GMP in Canning

Commercial Sterility

- The destruction of all vegetative microbial cells
- The destruction of all microbial spores capable of outgrowth under the designed conditions of storage of the product.

LB

GMP in Canning

Spore forming microorganisms.

- Certain microorganisms form spores, a hibernation state, capable of outgrowth into vegetative cells under suitable growth conditions.
- Spores are considerably more difficult to kill by heat than vegetative cells
- The most heat resistant, pathogenic, spore forming organism is Clostridium Botulinum.

LB

GMP in Canning

Spore forming microorganisms.

- Thermal processes for most Low Acid Canned Foods (pH above 4.5) are scheduled to ensure the destruction of the spores of Clostridium Botulinum.
- If LACF products are to be distributed and stored in very hot climates, it may also be necessary to increase the process requirements to also kill the spores of thermphillic microorganisms.

LB

GMP in Canning

Spore forming microorganisms.

- Thermophiles are spore forming microorganisms with an optimum growth temperature of 55C.
- They do not cause food poisoning but may cause commercial spoilage of canned foods.
- They are normally inactive at temperatures below 50C.

LB

GMP in Canning

Acid categories of canned foods

- Foods with a pH less than 4.5 will not support the growth of pathogenic microorganisms. The only organisms of concern are yeasts, moulds, and acid tolerant bacteria. In principle relatively low, pasteurisation, heat treatments, at temperatures of about 100C, are all that is necessary to achieve commercial sterility.

LB

GMP in Canning

Acid categories of canned foods

- Acid foods, pH 3.7 or less, most fruits
- Medium acid, pH 3.7-4.5, tomatoes, some fruits such as lichees, mandarins, guavas
- Low acid canned foods, pH above 4.5, majority of products containing vegetables, meat or fish.

LB

GMP in Canning

Metabolism of microorganisms

As a result of their metabolism on food material microorganisms may;

- Produce gas
- Change the pH of the food material
- Produce sensory changes in the food, discolouration, off flavours

The absence of gas however does not necessarily mean that the product is sterile

LB

GMP in Canning

Measure of Sterilisation

We need a measure of the effectiveness of sterilising processes so that:

- We can estimate the effectiveness of microbial destruction
- We may compare different processes (times and temperatures)

LB

GMP in Canning

Measure of Sterilisation

- We use a quantity known as the Fo number.
- If food is exposed to 121.1C (250F) for 1 minute it is subject to sterilisation of Fo=1.
- During sterilisation food inside a can is subject to constantly changing temperatures as it heats up and cools down.

LB

GMP in Canning

Measure of Sterilisation

- We need to be able to calculate the relative killing effect for 1 minute at any temperature compared to 1 minute at 121.1C
- The parameter used is known as the lethal rate, L.
- L = 10^(T-Tref)z Tref=121.1C, z=10C

LB

GMP in Canning

Measure of Sterilisation

- We may measure the temperature at the coldest point inside a can during the thermal process at minute intervals, calculate the lethal rates, and add them up to give the total Fo, sterilisation value for the overall process.

LB

GMP in Canning

Measure of Sterilisation

- By convention LACF are processed to an Fo value greater than 3. This provides for 14 decimal reductions of the possible spore population of clostridium botulinum.
- In commercial practice LACF are normally processed to Fo values greater than 5.

LB

GMP in Canning

Measure of Sterilisation

The D value, Decimal Reduction Time of Clostridium Botulinum at 121.1C is 0.23 minutes.

If 100,000 spores are heated for 0.23 minutes at 121.1C then 10,000 spores will remain.

After another 0.23 minutes, then 1000 spores will remain.

LB

GMP in Canning

Measure of Sterilisation

- It is vital to realise that the relationship between temperature and microbial death is logarithmic. A small change in process temperature may result in a large change in effectiveness of the thermal process applied.
- Hence it is also vital that temperatures are properly controlled and recorded.

LB

GMP in Canning

Generic CCPs of the Canning Process

- Raw Material related matters
- Double Seaming
- Sterilisation
- Cooling and post process hygiene.

LB

GMP in Canning

Generic CCPs of the Canning Process

Raw Material related matters:

- Generic foreign materials associated with crops
- Pesticide residues
- Antibiotic residues

Control measures depend upon, adequate specifications, good understanding with the supplier, and raw material testing.

LB

GMP in Canning

Generic CCPs of the Canning Process

Double seaming

The major cause of spoilage of canned foods relates to post process contamination, to which poor double seam control is a major contributing factor.

LB

GMP in Canning

Generic CCPs of the Canning Process

Double seaming control measures

- Competent can supplier
- Positive approval of cans and ends before use
- Seam measurement, against specification, at defined intervals and by trained personnel

(Actual overlap, % BHB, Freespace, Tightness rating).

- Proper Seamer maintenance by trained personnel

LB

GMP in Canning

Retorting, Critical factors in process specification.

- Time and temperature
- Can size, manner of loading retort crates
- Food composition, specification of recipe, size of pieces
- Drained weight, net weight
- Initial temperature
- Rotation speed

LB

GMP in Canning

Retort Instrumentation

- Master Temperature Indicator, MTI (Mercury in Glass or Platinum Resistance Thermometer of appropriate specification). (Calibrated 6 monthly)
- Temperature recorder chart
- Pressure gauge
- One reference clock in retort area.

LB

GMP in Canning

Retort Control

- Temperature controller with by-pass valve on steam inlet line
- Suitable venting arrangement to remove air from retort, and with permanent steam bleeds
- Three way valves on compressed air and cooling water inlets, to prevent accidental leakage during sterilisation

LB

GMP in Canning

Retort process

- Venting process defined as a result of temperature distribution testing (Equipment review annually and revalidation every 3 years)
- Thermal process defined as a result of heat penetration testing (Revalidation every 2 years)

LB

GMP in Canning

Retort procedure

- Loading checks and procedure
- Venting
- Sterilisation
- Cooling
- Unloading
- Drying and final cooling

LB

GMP in Canning

Retort procedure

- It is vital that all retort operations are fully documented
- Fully recorded
- Carried out by trained/qualified personnel
- Independently verified and approved

LB

GMP in Canning

Retort procedure

- Emergency procedures should be available in case of deviation from scheduled operating conditions during sterilisation.
- The temperature control should normally be between -0.5C and +1.0C of the set value.

LB

GMP in Canning

Cooling

- Primary cooling in steam retorts is by the introduction of chlorinated water
- There should be at least 20 minutes contact time between the water and chlorine to provide sanitation
- Free residual chlorine should be present at the end of the cooling cycle.

LB

GMP in Canning

Cooling

- When cans are removed from the retort it is vital that they are not subject to manual handling and are allowed to cool and dry in a clean dedicated area with restricted access.

LB

GMP in Canning

Cooling

- For leaker spoilage to occur 3 things are necessary
- A seam defect (temporary or permanent)
- Source of contamination (peoples hands)
- Water to provide microbial transport

LB

GMP in Canning

Canning is a Special Process

Canning is a "Special Process". It is impossible to tell by looking at a can to know whether the food has been sterilised or not. Hence it is vitally important to be able to properly identify each can and to have comprehensive records of manufacture.

LB

GMP in Canning

Records

- Records should include
- Raw Material testing and acceptance
- Seam measurements
- Retort operator's log sheet. Should include cross reference between MIG and recorder chart temperatures, and chlorine check after cooling
- Traceability coding

LB

GMP in Canning

Retort operator's log should include:

- Operator's name
- Date
- Product
- Can size
- Number of crates
- Can codes
- Scheduled process time and temperature

LB

GMP in Canning

Retort operator's log should include:

- Time of steam on
- Time sterilisation temperature is reached
- Time cooling is commenced
- Time unloading takes place
- Temperature of Mercury thermometer and chart recorder (twice during the retort cycle)
- Pressure
- Free residual chlorine in cooling water during cooling

LB

GMP in Canning

Traceability Coding

- Ideally coding should be put onto cans at the time of seaming and should identify
- The product
- Factory
- Seaming line
- Retort
- Time and date of manufacture

LB

GMP in Canning

Les Bratt

Les Bratt(Food technology)Ltd

LB

List of participants on training course in Good Manufacturing Practice in Canning held at the Barcan Cannery, Asmara on 14th May2004

Yodit Tesfay
Senait Yebio
Yehdega G/Luul
Yeweiniweha G/Michael
Azieb Mihreteab
Bokrezion W/Silassie
Fissehaye Kifleyesus
Lemlem Haile
Tsehainesh Alemayo
Luule Ande
Ruta Abun
Biniam Tesfay
Saba Mebrahtu
Sara G/Negus
Silas Michael

Andom W/Michael
Baghu Tsegay
Haile T/Huney
Birikti Tewolde
Haimanot Eyobe
Fukurzghi Haile
Tsighe Mebrahtu
Himan Kinfe
Dehab Baire
Shimondi B/Michael
Mehari T/Michael
Salih Ali
Hawa Said
Freweini Emhazion
Ghidey G/Zion

APPENDIX 7

Presentation on the UK Food Safety Act 1900

UK Food Safety Act 1990

Les Bratt

Les Bratt(Food Technology)Ltd

LB

UK Food Safety Act 1990

The Main Provisions of the Food Safety Act came into being on 1st January 1991. The Act covers Great Britain and provides the framework for all food legislation.

LB

UK Food Safety Act 1990

The Food Safety Act is organised in 4 Parts

LB

UK Food Safety Act 1990

Part I, Preliminary

- Meaning of "food" and other basic expressions
- Extended meaning of "sale" etc
- Presumptions that food intended for human consumption
- Ministers having function under the act
- Food authorities and authorised officers
- Enforcement of Act

LB

UK Food Safety Act 1990

Arrangement of Sections

Part II : Main Provisions

- Food Safety
- Consumer Protection
- Regulations
- Defences
- Miscellaneous and supplemental

LB

UK Food Safety Act 1990

Part III Administration and Enforcement

- Administration
- Sampling and analysis etc
- Powers of entry and obstruction
- Offences
- Appeals

LB

UK Food Safety Act 1990

Part IV Miscellaneous and Supplemental

- Powers of Ministers
- Protective provisions
- Financial provisions
- Instruments and documents
- Amendments of other Acts
- Supplemental

L.B

UK Food Safety Act 1990

Section 1.(1) In this Act "food" includes-

- Drink
- Articles and substances of no nutritional value which are used for human consumption
- Chewing gum and other products of a like nature and use
- Articles and substance used as ingredients in the preparation of food or anything falling within this subsection

L.B

UK Food Safety Act 1990

Section 1.(2) In this Act "food" does not include-

- Live animals or birds, or live fish which are not used for human consumption while they are alive.

L.B

UK Food Safety Act 1990

2-(1)and(2) Extended meaning of sale

- Food does not have to be necessarily purchased to fall within the terms of the Act
- It may be offered in the course of business
- It may be offered as a prize or reward
- It may be provided as part of entertainment etc.

L.B

UK Food Safety Act 1990

4.-(1) The Minister

- In this Act the "Minister" means
  The Minister of Agriculture Fisheries and Food
- The "Ministers" means
  The Minister of Agriculture Fisheries and Food acting jointly with the Secretary of State for Health

L.B

UK Food Safety Act 1990

5-(1) Food Authorities and authorised officers

- Enforcement is primarily (but not solely) the responsibility of the 499 local authorities in the UK, and more specifically Environmental Health Officers and Trading Standards Officers.

L.B

UK Food Safety Act 1990

Part II Main Provisions, Food Safety

- Any person who renders any food injurious to health by means of any of the following operations, with intent that it shall be sold for human consumption, shall be guilty of an offence.

LB

UK Food Safety Act 1990

Part II Main Provisions, Food Safety

- Adding any article or substance to the food
- Using any article or substance as an ingredient in the preparation of the food
- Abstracting any constituent of the food
- Subjecting the food to any other process or treatment

that renders the food injurious to health

LB

UK Food Safety Act 1990

Part II Section 8-(1) Selling of food not complying with food safety requirements

- Section 8 sets out the offence of selling, or possessing food for sale that does not comply with food safety requirements. This is food that ;
- Has been rendered injurious to health
- Which is unfit for human consumption
- That is so contaminated as to be unfit for human consumption

LB

UK Food Safety Act 1990

Part II Section 8-(1) Selling of food not complying with food safety requirements

- Section 8 also states that if any part of a batch of food does not comply with food safety requirements the whole batch is presumed not to comply, unless the contrary is proved.

LB

UK Food Safety Act 1990

Section 9-(1) Inspection and seizure of suspected food

- Section 9 gives enforcement officers powers to inspect any food intended for human consumption and to detain and seize food suspected of not complying with food safety requirements.
- It allows a Justice of the Peace to condemn food when he is satisfied that food safety requirements are not met

LB

UK Food Safety Act 1990

Section 9-(6) Destruction of suspected food

- If a Justice of the Peace orders the destruction of suspected food the costs associated with the destruction or disposal are to be defrayed from the owner of the food.

LB

UK Food Safety Act 1990

Section 10, Improvement Notices

- If an authorised officer of an enforcement authority has grounds for believing that a proprietor of a food business is failing to comply with the regulations relative to his business, he may serve an "improvement notice"
- A time limit will be specified
- Failure to carry out the required improvements will constitute an offence.

LB

UK Food Safety Act 1990

Section 11, Prohibition Orders

- If the proprietor of a food business is convicted of an offence under any regulation to which this section applies and

  if the court by which he is so convicted is satisfied that the health risk condition is fulfilled with respect to the business,

  The court shall order the appropriate prohibition

LB

UK Food Safety Act 1990

Section 12, Emergency Prohibition Orders

- The authorised officer of an enforcement authority has the power to make emergency prohibition where there is considered to be an imminent risk of injury to health

LB

UK Food Safety Act 1990

Section 13, Emergency Control Orders

- Section 13 gives Ministers powers to make emergency control orders prohibiting commercial operations in relation to food, food sources, or contact materials when there is an imminent risk of such food causing such injury to health.

LB

UK Food Safety Act 1990

Consumer Protection

- Section 14. Any person who sells to the purchaser's prejudice any food which is not of the nature or substance or quality demanded by the purchaser shall be guilty of an offence.

LB

UK Food Safety Act 1990

Consumer Protection

- Section 15. Any person who labels food which falsely describes the food or is likely to mislead as to the nature or substance or quality of the food

  shall be guilty of an offence.

LB

UK Food Safety Act 1990

Defences

- Section 20 enables an enforcement authority to "by-pass" the immediate offender and to prosecute the real offender (i.e. where the offence is due to the act or default of some other person).

LB

UK Food Safety Act 1990

Defences

- Section 21provides for a defence if defendants can prove to a court that they took all reasonable precautions and exercised due diligence to avoid committing an offence

LB

UK Food Safety Act 1990

Defences

- Section 22 provides a special defence for businesses which publish an advertisement in good faith.

LB

UK Food Safety Act 1990

Miscellaneous and supplemental

- Section 23. A food authority may provide, whether within or outside their area, training courses in food hygiene for persons who are or intend to become in food businesses, whether as proprietors or employees or otherwise

LB

UK Food Safety Act 1990

Miscellaneous and supplemental

- Section 23. A food authority may contribute towards the expenses incurred under this section by any other such authority, or towards expenses incurred by any other such person in providing such courses.

LB

UK Food Safety Act 1990

Administration and Enforcement

Section 27- Every authority.... shall appoint public analysts, for the purposes of this act within the authority's area.

- Public Analysts shall have such qualifications prescribed by regulations made by the Ministers
- Such other qualifications as the Ministers may approve

LB

UK Food Safety Act 1990

Administration and Enforcement

Section 29- defines the manner in which authorised officers may obtain samples of food, either by purchase or by taking from the food premises which they are authorised to enter.

LB

UK Food Safety Act 1990

Administration and Enforcement

Section 30-If analysis of a food sample is required the enforcement officer shall submit the sample to a public analyst or alternatively if it is required that the food be examined it should be submitted to a food examiner.

LB

UK Food Safety Act 1990

Administration and Enforcement

Section32- sets out who may enter premises to enforce the Act and explains what they can do while on premises. It also makes unauthorised disclosure of information obtained when using such powers an offence.

LB

UK Food Safety Act 1990

Administration and Enforcement

Section33- Makes it an offence to intentionally obstruct a person enforcing this act or to provide false or misleading information.

LB

UK Food Safety Act 1990

Administration and Enforcement

Section34- Time limit for prosecutions. No prosecution for an offence under this Act which is punishable under section 35(2) shall be begun after the expiry of :

- 3 years from the commission of the offence
- One year from is discovery by the prosecutor

Whichever is the earlier

LB

UK Food Safety Act 1990

Administration and Enforcement

Section35-Sets out penalties for offences. For most offences a Crown Court may impose a prison sentence of up to 2 years and/or unlimited fines.

Magistrate's Courts may generally impose a fine of up to £5000 and a prison sentence of up to 6 months. For the most serious cases Magistrate's Courts may impose a maximum fine of £20,000.

LB

UK Food Safety Act 1990

Administration and Enforcement

Section 36- Provides that someone in authority in a corporate body (Director, Manager Secretary etc) is liable for prosecution where they are proved to have acted negligently or consented to the alleged offence.

LB

UK Food Safety Act 1990

Administration and Enforcement

Sections 37-9 Provide for appeals against the decisions of an enforcement authority to serve an improvement notice, and to refuse certificates under sections 11(6) or 12(8).

Appeals are made to a Magistrate's Court.

LB

UK Food Safety Act 1990

Part IV Miscellaneous and Supplemental

Section 40- For the guidance of food authorities, the Ministers or the Minister may issue codes of recommended practice as regards the execution and enforcement of this Act and of regulations and orders made under it. Any such code shall be laid before parliament after being issued.

LB

UK Food Safety Act 1990

Les Bratt

Les Bratt(Food technology)Ltd

LB

The roles of Government Departments in the control of food safety

- Inspection of food premises (manufacturing and catering) with respect to hygiene of operation
- Veterinary control of live animals
- Veterinary control of abattoirs
- Veterinary control of primary meat cutting operations
- Examination of food products and processes against defined standards
- Border controls for foodstuffs/animals entering the country
- Official approval for export of goods leaving the country
- Provision of calibration and analytical services

LB

UK Food Safety Act 1990

LB

APPENDIX 8

Copies of invoices regarding the equipment supplied by Fisher Scientific UK

INVOICE RECHNUNG FACTURE FACTURA فاتورة

Seller (name, address, VAT reg no.)	Invoice number	Sheet No.
GB 606 7467 27-000 FISHER SCIENTIFIC UK BISHOP MEADOW ROAD LOUGHBOROUGH LEICESTERSHIRE LE11 5RG U.K.	5879108	1 OF 2
	Invoice date (tax point) 19/05/2004	Seller's reference 5879108/RE
	Buyer's reference XA/ERI/03/619	Other reference BMK

(c) SITPRO 1992

Consignee VAT no.	Buyer (if not consignee) VAT no.
UNDP - ERITREA P O BOX 5366 ASMARA ERITREA	CAMPDEN & CHORLEYWOOD 1107 BUDAPEST SZALLAS U 21 HUNGARY TEL 3614331470 F: 1480

BANKERS :NATIONAL WESTMINSTER BANK PLC
15 BISHOPGATE, LONDON EC2P 2AP
A/C 95408096 SORT CODE 50 00 00
Swift Code : NWBKGB2L
IBAN NO :GB61NWBK50000095408096

Country of origin of goods	Country of destination
GERMANY/USA	ERITREA

Terms of delivery and payment
CIF ASMARA ERITREA
(INCOTERMS 2000)
PREPAYMENT WITH ORDER

Vessel/flight no. and date	Port/airport of loading
AIRFREIGHT	UK
Port/airport of discharge	**Place of delivery**
ASMARA	

Shipping marks; container number	No. and kind of packages; description of goods	Commodity code	Total gross wt (Kg)	Total cube (m3)
AS CONSIGNEE,P.NO XA/ERI/03/619 & UNIDO NO 2003/193 2 PALLET CASES / LABORATORY EQUIPMENT DIMS: 1@ 99X94X130 & 1@ 122X76X102 CMS CASE NOS 1 & 3			384.00 Total net wt (Kg) 227.00	3.46

H S Code	Cat Code	Description + P.O. Number	Quantity	Unit price	Amount
84211991	ING-200-030K XA/ERI/03/619	INCUBATOR B 20 FUNCTION LINE SERIAL NO 40358310 25125993/01	1	1752.7500	1752.75
90189090	CNW-380-F XA/ERI/03/619	COLONY COUNTING AUTO DARKFIEL	1	1191.3000	1191.30
90119000	MIC-110-010S XA/ERI/03/619	Microscope DME Achromatic	1	1180.8500	1180.85
90321030	BLM-105-010R XA/ERI/03/619	Water bath WBU45	1	942.6900	942.69

Invoice total
GBP 6273.04

PROVISON OF SERVICES AND SUPPLY OF
EQUIPMENT AND PARTS RELATED TO THE
INTERGRATED PROGRAMME FOR ERITREA
COMPONENT IV B: FOOD/FISH SECTOR

DESPATCHED BY AIRFREIGHT VIA
GEOLOGISTICS 20/05/04

AWB NO 020 6435 5292
FLIGHT / DATE LH8281/23 LH652/26
ETA 26.05.04 2215 HOURS

FLIGHT DETAILS TO ANITA NEEDHAM OF
FISHER SCIENTIFIC UK

Name of signatory
SALLY WHILES

Place and date of issue
LOUGHBOROUGH 19/05/2004

Signature

It is hereby certified that this invoice shows the actual price of the goods described, that no other invoice has been or will be issued, and that all particulars are true and correct.

INVOICE CONTINUATION SHEET

Seller (name, address, VAT reg no.)	Invoice number	Sheet no.
FISHER SCIENTIFIC UK BISHOP MEADOW ROAD LOUGHBOROUGH LEICESTERSHIRE LE11 5RG U.K. GB 606 7467 27-000	5879108	2 OF 2
	Invoice date (tax point) 19/05/2004	Seller's reference 5879108/RE
	Buyer's reference XA/ERI/03/619	Other reference BMK

Consignee VAT no.	Buyer (if not consignee) VAT no.
UNDP - ERITREA P O BOX 5366 ASMARA ERITREA	CAMPDEN & CHORLEYWOOD 1107 BUDAPEST SZALLAS U 21 HUNGARY TEL 3614331470 F: 1480

H S Code	Description	Quantity	Unit price	Amount
	FREIGHT COST	1	1025.4500	1025.45
	INSURANCE	1	180.0000	180.00

INVOICE RECHNUNG FACTURE FACTURA فاتـــورة

Seller (name, address, VAT reg no.)	Invoice number	Sheet No.
GB 606 7467 27-000 FISHER SCIENTIFIC UK BISHOP MEADOW ROAD LOUGHBOROUGH LEICESTERSHIRE LE11 5RG U.K.	5879108A	1 OF 1
	Invoice date (tax point) 21/05/2004	Seller's reference 5879108A/RE
	Buyer's reference XA/ERI/03/619	Other reference BMK

(c) SITPRO 1992

UNIC

Consignee VAT no.	Buyer (if not consignee) VAT no.
UNDP - ERITREA P O BOX 5366 ASMARA ERITREA	CAMPDEN & CHORLEYWOOD 1107 BUDAPEST SZALLAS U 21 HUNGARY TEL 3614331470 F: 1480

BANKERS :NATIONAL WESTMINSTER BANK PLC
15 BISHOPGATE, LONDON EC2P 2AP
A/C 95408096 SORT CODE 50 00 00
Swift Code : NWBKGB2L
IBAN NO :GB61NWBK50000095408096

Country of origin of goods	Country of destination
UK	ERITREA

Terms of delivery and payment
CIF MASSAWA - ERITREA
(INCOTERMS 2000)
PAYMENT WITH ORDER

Vessel/flight no. and date	Port/airport of loading
SEAFREIGHT	UK
Port/airport of discharge	**Place of delivery**
MASSAWA	

Shipping marks; container number	No. and kind of packages; description of goods	Commodity code	Total gross wt (Kg)	Total cube (m3)
AS CONSIGNEE,P.NO XA/ERI/03/619 & UNIDO NO 2003/193 ***			484.00	3.69
2 PALLET CASES / LABORATORY EQUIPMENT DIMS: 1@ 82X77X210 & 1@ 88X158X170 CMS CASE NOS 2 & 4			Total net wt (Kg) 316.00	

H S Code	Cat Code	Description + P.O. Number	Quantity	Unit price	Amount
84182151	RFN-110-040K	Refrigerator fan circ 372 ltr	1	964.2500	964.25
	XA/ERI/03/619	Refrigerator Labcold RLHF13141			
84192090	ASB270/230V	ASB270 SWIFTLOCK A/CLAVE 230V	1	6748.3500	6748.35
	XA/ERI/03/619	ASB270 SWIFTLOCK FRONT LOADING			
		FREIGHT COST	1	1174.5500	1174.55
		INSURANCE	1	180.0000	180.00

***PROVISON OF SERVICES AND SUPPLY OF
EQUIPMENT AND PARTS RELATED TO THE
INTERGRATED PROGRAMME FOR ERITREA
COMPONENT IV B: FOOD/FISH SECTOR

DESPATCHED BY SEAFREIGHT VIA
GEOLOGISTICS 24/05/04

B/L NO LAB11460E1
VESSEL / DATE
MSC JOHANNESBURG / 02/06/04
ETA 30/06/04

VESSEL DETAILS TO ANITA NEEDHAM OF
FISHER SCIENTIFIC UK

Invoice total
GBP 9067.15

Name of signatory
SALLY WHILES

Place and date of issue
LOUGHBOROUGH 21/05/2004

Signature P.P.

It is hereby certified that this invoice shows the actual price of the goods described, that no other invoice has been or will be issued, and that all particulars are true and correct.

Fisher Scientific

Griffin

Safety

Sales Invoice

Invoice No. 06874262 Date 25/05/04 Page 1

Your Order Ref. XA/ERI/03/619
Quote Number BMK

Order Entered By KH On 15/10/03 Type NORMAL IMM ALLOC.
Our Customer No. 999960/0399 34 Copy 1 Of 1

Your Account No. 999960

Comments:

Invoice To:
INTL C/CARD & CWO (RESELLER)
CREDIT CARD OR CASH WITH ORDER

For Delivery To:
CAMPDEN & CHORLEYWOOD
1107 BUDAPEST
SZALLAS U 21
HUNGARY
HU

Payment Due By 24/06/04

Line No	Catalogue Number / Description	Quantity	Unit Price	Gross Value	Sales Code	% Discount	Net Value	VAT % Rate
	Our Order Number 5879108- 0 Our Delivery Note No. 265365							
1	ING-200-030K EA INCUBATOR B 20 FUNCTION LINE WORKING SPACE VOLUME 233 LITRES	1	1,752.750	1,752.75	51	.00	1,752.75	17.50
2	CNW-380-F EA COLONY COUNTER AUTO DARKFIELD	1	1,191.300	1,191.30	04	.00	1,191.30	17.50
3	MIC-110-010S EA Microscope DME Achromatic system	1	1,180.850	1,180.85	04	.00	1,180.85	17.50
4	RFN-110-040K EA Refrigerator Labcold RLHF13141 fan circulated 230V 50-60Hz 372 litre	1	964.250	964.25	03	.00	964.25	17.50
5	BLM-105-010R EA Water bath Memmert WBU45 with digital multifunctional microprocessor PID control,boiling stage,integral digital timer and overheat safety device but without cover and circulation pump 230V 50-60Hz 2800W 45 litres +10'C to +95'C serial number_____ Ref: 8	1	942.690	942.69	81	.00	942.69	17.50
	Our Order Number 5879108- 2 Our Delivery Note No. 289686							
1	ASB270/230V EA ASB270 SWIFTLOCK FRONT LOADING AUTOCLAVE 150L SINGLE PHASE 230V Ref: 7	1	6,748.350	6,748.35	04	.00	6,748.35	17.50
	FREIGHT (RESELLERS)						2,200.00	.00
	INSURANCE						360.00	.00
	Construction Industry Scheme (CIS) not applicable							

CONDITIONS OF SALE:
All goods are supplied subject to our current conditions of sale, copies of which are available on request, and included in all our catalogues.

Next time, make it easy on yourself - Select, Order and Pay via E-commerce Register NOW See www.fisher.co.uk

All Remittances to:
Finance Department
Fisher Scientific UK Limited
Bishop Meadow Road
Loughborough, Leics, LE11 5RG
Tel: (01509) 231166 (Griffin (01509) 233344)
Fax: (01509) 231893
Vat Registration No: GB 606 7467 27
Bank: Barclays Bank PLC Sort Code 20-07-71 Acc No. 00309222
IBAN No. GB22 BARC 2007 7100 3092 22 Swift code BARCGB22

12,780.19	SUB TOTAL	15,340.19
	VAT	— — —
	TOTAL	15,340.19 GBP

020 EMA 6435 5292 U 020 - 6435 5292

Shipper's Name & Address	Shipper's account Number	Not negotiable Air Waybill Issued by
FISHER SCIENTIFIC LTD (RE ACCOUNTS) Bishop Meadow Road LOUGHBOROUGH Leicester LE11 0RG		Lufthansa Cargo AG Langer Kornweg 34 i D-65451 Kelsterbach Member of IATA.

Copies 1, 2 and 3 of this Air Waybill are originals and have the same validity.

Consignee's Name & Address	Consignee's account Number
UNDP - ERITREA P O BOX 5366 ASMARA ERITREA	

IT IS AGREED THAT THE GOODS DESCRIBED HEREIN ARE ACCEPTED IN APPARENT GOOD ORDER AND CONDITION (EXCEPT AS NOTED) FOR CARRIAGE SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF. ALL GOODS MAY BE CARRIED BY ANY OTHER MEANS INCLUDING ROAD OR ANY OTHER CARRIER UNLESS SPECIFIC CONTRARY INSTRUCTIONS ARE GIVEN HEREON BY THE SHIPPER, AND SHIPPER AGREES THAT THE SHIPMENT MAY BE CARRIED VIA INTERMEDIATE STOPPING PLACES WHICH THE CARRIER DEEMS APPROPRIATE. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIER'S LIMITATION OF LIABILITY. SHIPPER MAY INCREASE SUCH LIMITATION OF LIABILITY BY DECLARING A HIGHER VALUE FOR CARRIAGE AND PAYING A SUPPLEMENTAL CHARGE IF REQUIRED.

Issuing Carrier's Agent Name and City	Accounting Information
GeoLogistics Ltd Hawthorn Road, Castle Donington. DERBY DE74 2QR	AGENTS REF KFL30795E5
Agent's IATA Code: 91-4 7049/009 0 — Account No.:	MAY5029CP
Airport of Departure (Addr. of first Carrier) and requested Routing: East Midlands EMA-FRA-ASM	SHPRS REF 5879108/RE

to	By first Carrier	to	by	to	by	Currency	CHGS Code	WT/VAL PPD	WT/VAL COLL	Other PPD	Other COLL	Declared Value for Carriage	Declared Value for Customs
FRA	LUFTHANSA AG	ASM	LH			GBP		X		X		N V D	6273.05 GBP

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Asmara	LH8281/23	LH652 /26	XXXXXXXXXX

INSURANCE - If carrier offers insurance, and such insurance is requested in accordance with the conditions thereof, indicate amount to be insured in figures in box marked 'amount of insurance'

Handling Information

Notify:- UNDP - ERITREA P O BOX 5366 ASMARA ERITREA
ERITREA 2 PALLET(S)

SCI

CT Coding: C AT/1/E

No. of Pieces RCP	Gross Weight	kg/lb	Rate Class / Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (incl. Dimensions or Volume)
2	225.0	K	F	359.5	1025.45	1025.45	LABORATORY EQUIPMENT 99X94X130CMS 122X76X102CMS 359.5 vol kg
2	225.0					1025.45	

GeoLogistics Ltd
as agents for issuing carrier
Certify this consignment was despatched:
FLIGHT LH 8281 DATE 23.05.04
AWB 020 6435 5292
SIGNATURE [signature]

Prepaid	Weight Charge	Collect
1025.45		
	Valuation Charge	
	Tax	
	Total other Charges Due Agent	
	Total other Charges Due Carrier	
Total prepaid 1025.45		Total collect
Currency Conversion Rates: GBP		cc charges in Dest. Currency
For Carrier's Use only at Destination	Charges at Destination	Total collect Charges

Other Charges

Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations.

GeoLogistics Ltd
Mandy Maibaum - EMA
Signature of Shipper or his Agent

20-05-2004 Derby
Executed on (Date) at (Place) Signature of Issuing Carrier or its Agent

020 - 6435 5292

ORIGINAL 3 (FOR SHIPPER)

BILL OF LADING

TRANSAFRICA LINE

SHIPPER/EXPORTER
FISHER SCIENTIFIC UK
SHOP MEADOW ROAD
DUGHBOROUGH
EICESTER
LE11 5RG

CUSTOMS

EXPORT REFERENCES
LAB11460E1

CONSIGNEE
UNDP - ERITREA
P O BOX 5366
ASMARA
RITREA

FORWARDING AGENT---REFERENCES
GEO LOGISTICS LTD HAWTHORN ROAD
CASTLE DONNINGTON DERBY
DE74 2QR UNITED KINGDOM.

POINT AND COUNTRY OF ORIGIN

NOTIFY PARTY

CARRIERS AGENT AT DESTINATION
FENKELNAV & MARITIME TRANSPORT SERVICES PLC
P.O.BOX 178
MASSAWA, ERITREA
Tel: 00 291 1552265
Fax: 00 291 1552864
Email: FENKEL@GEMEL.COM.ER

★PRECARRIAGE BY	★PLACE OF RECEIPT
PORTING CARRIER (VESSEL) SC JOHANNESBURG	PORT OF LOADING ANTWERP
PORT OF DISCHARGE MASSAWA	PLACE OF DELIVERY

ONWARD INLAND ROUTING

RRIER RECEIPT

PARTICULARS FURNISHED BY SHIPPER

MARKS AND NUMBERS	NO. OF PKGS/DESCRIPTION OF PACKAGES AND GOODS	GROSS WEIGHT KGS	MEASUREMENT M3
NDP-ERITREA RITREA P.NO.XA/ERI/03/619 UNIDO NO 2003/193 ASE NOS 2 & 4 ART LOAD CONTAINER NO. WECU5610155 AL NO.161058	2 CASES SAID TO CONTAIN: LABORATORY EQUIPMENT FREIGHT PREPAID NOTICE: -CONSIGNEE RESPONSIBILITY TO CONTACT AGENT AT DESTINATION SHOWN ON BILL OF LADING. -FREE TIME AT DESTINATION 2 HOURS FOR UNLOADING AFTER THAT AS PER TRUCKING COMPANY TARIFF.	484.00 KGS	3.69 CBM

SHIPPED ON BOARD 02/06/2004 MSC JOHANNESBURG

SDICTION AND LAW CLAUSE
contract evidenced by or contained in this Bill of Lading is governed by the law of England and any claim or dispute thereunder or in connection herewith shall be determined by the Court in England and no other Court

Excess Value Declaration Refer to Clause 11 (4) & (5) on reverse side

FREIGHT CHARGES PAYABLE AT ORIGIN BY SHIPPER

RECEIVED in apparent good order and condition except as otherwise noted the total number of containers or other packages or units enumerated below (contents and condition of contents, measurement, ght, quantity, brand, quality and value unknown, any reference in this B/L to these particulars is for the purpose of calculating freight only) for transportation from the place of receipt or the port of loading, chever applicable, to the place of delivery or the port of discharge, whichever applicable, subject to the terms hereof. One of the Bills of Lading must be surrendered duly endorsed in exchange for the ds or delivery order. Any dispute under this Bill of Lading must be settled by arbitration in Manchester, England.

OCEAN FREIGHT

HER

MANCHESTER 02/06/2004
PLACE AND DATE OF ISSUE

For CLAUSES SEE THE REVERSE

COPY NOT NEGOTIABLE

NUMBER OF ORIGINAL Bs/L
3
Three

BILL OF LADING NO.
MJ001909

PPLICATION FOR COMBINED TRANSPORT ONLY

APPENDIX 9

The UK Food Safety Act 1900

a court that they took all reasonable precautions and exercised due diligence to avoid committing an offence. The defendant is deemed to have satisfied this due diligence defence in certain circumstances. **Section 22** contains a special defence for businesses that publish an advertisement in good faith.

PART III: Administration and Enforcement

Section 32 sets out who may enter premises to enforce the Act and explains what they can do while on the premises. It also makes unauthorised disclosure of information obtained when using such powers an offence.
Section 33 makes it an offence intentionally to obstruct a person enforcing the Act or to provide false or misleading information. **Section 34** provides time limits for prosecutions.

The UK Food Safety Act 1990

Some of the more relevant provisions of the act are as follows:

The Key provisions

PART 1: Preliminary

Section 1 defines "food" and other basic expressions used in the Act such as food business, "food premises" and "food source". **Section 2** extends the meaning of sale to include food supplied in the course of business and **Section 3** sets out presumptions applying to food and food ingredients, for instance that food commonly used for human consumption found on certain food premises is presumed to be intended for sale.

PART II: Main Provisions

Section 7 describes the offence of rendering food injurious to health and **Section 8** sets out the offence of selling or possessing for sale food that does not comply with food safety requirements. This is food that has been rendered injurious to health, which is unfit for human consumption or is so contaminated that it would not be reasonable to expect it to be used for human consumption. **Section 8** also states that if any part of a batch of food does not comply with food safety requirements the whole batch is presumed not to comply, unless the contrary is proved.

Section 14 makes it an offence to sell food which is not of the "nature or substance or quality" demanded by the purchaser and **Section 15** creates an offence of falsely describing, advertising or presenting food.

General Enforcement Provisions

Section 9 of the Food Safety Act gives enforcement officers powers to inspect any food intended for human consumption and to detain and seize food suspected of not complying with food safety requirements. It allows a Justice of the Peace to condemn food when he or she is satisfied that food safety requirements are not met. **Section 10.**
Provides for improvement notices to be issued where food hygiene or food processing regulations have been contravened. **Section 11** provides for prohibition orders to be issued by courts where there is a risk of injury to health and the proprietor of the food business has been convicted of an offence under food hygiene or food processing regulations. **Section 12** provides emergency prohibition powers for use by authorised officers where there is imminent risk of injury to health. **Section 13** gives Ministers powers to make emergency control orders prohibiting commercial operations in relation to food, food sources or contact materials where there is an imminent risk of such food causing such injury to health.

Defences

Section 20 enables an enforcement authority to by-pass the immediate offender and to prosecute the real offender. **Section 21** provides for a defence if defendants can prove to

APPENDIX 10

The Food Safety (General Food Hygiene) Regulations 1995

The Food Safety (General Food Hygiene) Regulations 1995

The regulations aim to ensure common food hygiene rules across the European Community, as set out in the Food Hygiene Directive (93/43/EEC).

The regulations apply to all types of food and drink and their ingredients. Some businesses however-generally those involved with manufacturing foods of animal origin, such as dairies, or wholesale fish markets, follow their own specific regulations.

The regulations include provisions for

Identifying and Controlling Food Hazards

Basic Hygiene Requirements

Basic Requirements for Food Businesses

General Guidance

Supplies of Raw Materials

Quality of Water in Food

Personal Hygiene of Food Handlers

Preventing Food Contamination

Training and Supervising Food Handlers

Temporary and Occasional Food Businesses

Industry Guides to Good Hygienic Practice.

There is a series of detailed schedules relating to, General requirements for food premises, Specific requirements in which food is prepared or processed, Transport requirements, Equipment requirements, Food waste requirements, Water supply, Personal Hygiene, Provisions applicable to foodstuffs, and Training.