



Appendices

- A Wastewater Discharge Regulations in Egypt**
- B Decision Tree for Reducing Waste in Food Production at Edfina Company for Preserved foods**
- C Example of Decision Tree to Identify Critical Control Points (CCPs)**
- D ISO 9000 and its Application to HACCP Systems the Integrated Approach**

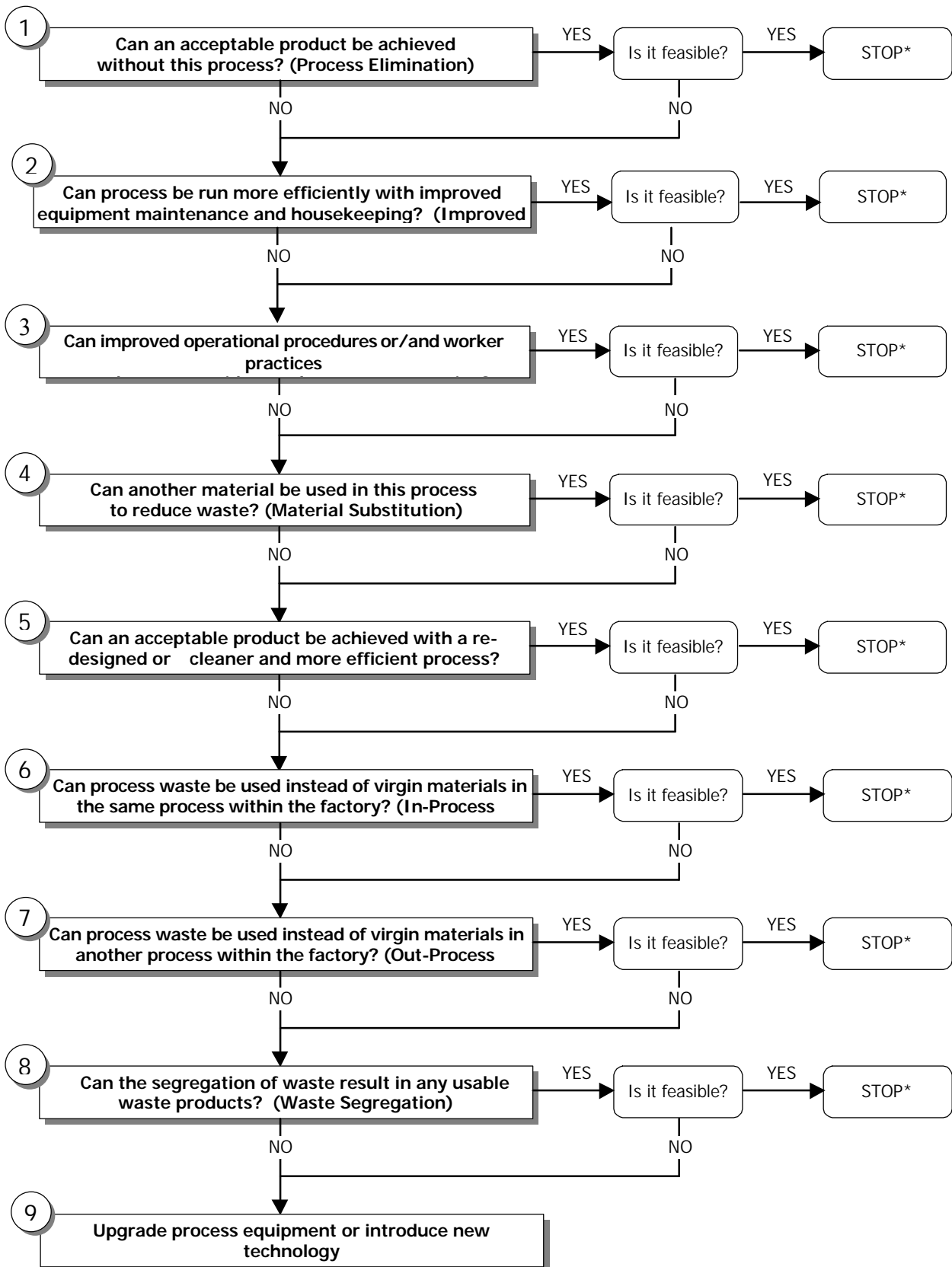
Appendix A

Wastewater Discharge Regulations in Egypt

Parameter ppm or mg/L (unless otherwise noted)	Law 4/94: Discharge to Coastal Environment	Law 93/62 Discharge to Sewer System (as modified by Decree 9/89)	Law 48/82			
			Underground Reservoir & Nile Branches/ Canals	Nile (Main Stream)	Non Potable Surface Water	
					Municipal	Industrial
BOD (5 day,20	60	<400	20	30	60	60
COD (Permanganate)	n/a	350	10	15	40	50
COD (Dichromate)	100	<700	30	40	80	100
pH (units)	6-9	6-10	6-9	6-9	6-9	6-9
Oil & Grease	15	<100	5	5	10	10
Temperature ()	10 C>temp of receiving body	<40	35	35	35	35
TSS Total Suspended Solids	60	<500	30	30	50	60
SS Settable Solids (ml/l)	n/a	n/a	n/a	n/a	n/a	n/a
TDS Total Dissolved Solids	2000	2000	800	1200	2000	2000
PO ₄	5	30	1	1	n/a	10
NH ₃ -N (Ammonia)	3	<100	n/a	n/a	n/a	n/a
NO ₃ -N (Nitrate)	40	<30	30	30	50	40
Total Recoverable Phenol	1	<0.005	0.001	0.002	n/a	0.005
Fluoride	1	<1	0.05	0.05	n/a	0.5
Sulphide	1	<10	1	1	1	1
Chlorine	n/a	<10	1	1	n/a	n/a
Surfactants	n/a	n/a	0.05	0.05	n/a	n/a
Probable counting for colon group/100 cm ³	5000	n/a	2500	2500	5000	5000
Aluminum	3	n/a	n/a	n/a	n/a	n/a
Arsenic	0.05	n/a	0.05	0.05	n/a	n/a
Barium	2	n/a	n/a	n/a	n/a	n/a
Beryllium	n/a	<10	n/a	n/a	n/a	n/a
Cadmium	0.05	<10	0.01	0.01	n/a	n/a
Chromium	1	Total metals: <10, <50 m ³ /d < 5, >50 m ³ /d	n/a	n/a	Total concentration for these metals should be <1 for all flow streams	
Chromium Hexavalent	n/a		0.05	0.05		
Copper	1.5		1	1		
Iron	1.5		1	1		
Lead	0.5		0.05	0.05		
Manganese	1		0.5	0.5		
Mercury	0.005		<10	0.001		
Nickel	0.1	<10	0.1	0.1	n/a	n/a
Silver	0.1	<10	0.05	0.05	n/a	n/a
Zinc	5	<10	1	1	n/a	n/a
Cyanide	0.1	<0.1	n/a	n/a	n/a	0.1
Total Metals	n/a	Total metals: <10, <50 m ³ /d < 5, >50 m ³ /d	1	1	1	1
Organic Compounds	0	0	0	0	0	0
Pesticides	0.2	0	0	0	0	0
Colour	None	None	None	None	None	None

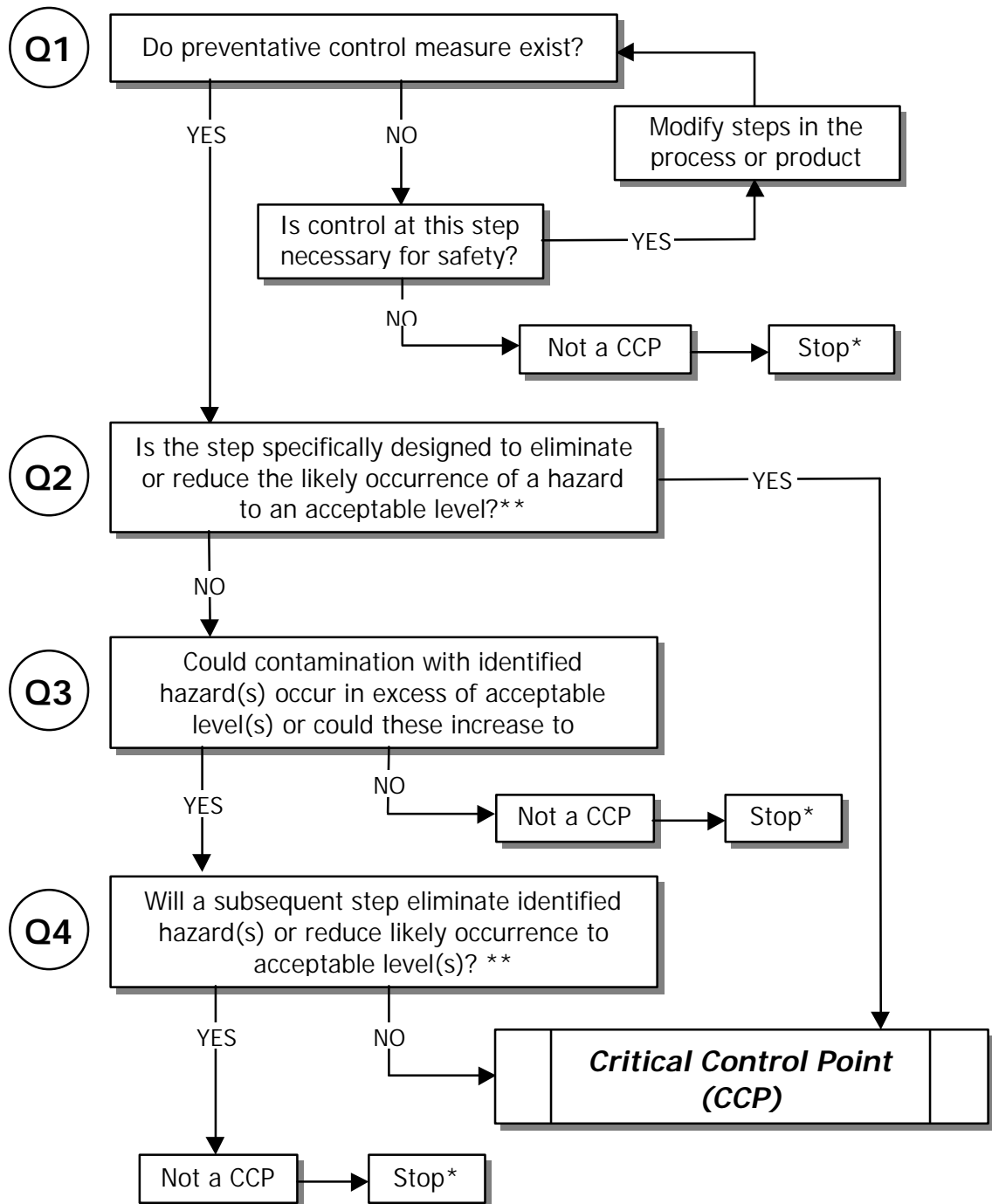
n/a = not available

Appendix B Decision Tree for Reducing Waste in Food Production at Edfina Company for Preserved Foods



* Proceed to the next step in the logic sequence

Appendix C
Example of Decision Tree to Identify CCPs
 (answer questions in sequence)



* Proceed to the next identified hazard in the described process

** Acceptable and unacceptable levels need to be determined within the overall objectives in identifying the CCPs of the HACCP plans

Appendix D

ISO 9000

ISO 9001 Clause		HACCP Application
4.1	Management responsibility	<ul style="list-style-type: none"> ■ The quality policy should include specific references to using HACCP in managing food product safety. The policy will demonstrate management commitment to company employees, clients and regulatory agencies. ■ Responsibility and authority within the HACCP System must be defined. ■ Verification of the effectiveness of the System is periodically, at least annually, done by the management. Results of audits, customer complaints, status of training, status of the HACCP System should be discussed within the management's overall responsibilities and duties.
4.2	Quality System	<ul style="list-style-type: none"> ■ A quality product is invariably a safe product. and HACCP itself is a Quality System. ■ This clause specifically considers all activities which could impact on the Quality of the product and ensures that all quality aspects are consistently documented.
4.3	Contract review	<ul style="list-style-type: none"> ■ This is relevant to Supplier Quality Assurance with regard to the relationship between the purchaser (i.e. factory) and the provider (i.e. supplier). ■ All requirements should be clearly specified and the supplier must meet the requirements. ■ Some raw materials may be Critical Control Points and it will be essential to have tight control over their supply.
4.4	Design control	<ul style="list-style-type: none"> ■ The design control clause is included in ISO 9001 and not included in ISO 9002 (i.e. the system that food companies usually apply) ■ The HACCP process ideally starts as early as possible, at the product concept stage (i.e. design of product and processes). Control through a Quality Management System would be beneficial because design control should include a hazard analysis and risk assessment at the concept stage to assure a safe design during processing. ■ HACCP is more oriented to ISO 9002.
4.5	Document control	<ul style="list-style-type: none"> ■ All HACCP documents need to be controlled, reviewed, signed and dated by a designated authorized personnel. ■ Each HACCP document must have a unique reference number for cross referencing with other documents (e.g. log sheets). ■ When changes to the HACCP Plans are made newer issues must be shelved and circulated and obsolete documents must be invalidated. ■ Uncontrolled copies should be avoided and be clearly marked Uncontrolled. ■ Control of artwork and package design should be reviewed, signed and dated.
4.6	Purchasing	<ul style="list-style-type: none"> ■ Purchasing covers everything from raw materials to subcontractors. Everything purchased should be clearly specified through written specifications. ■ Control of suppliers/subcontractors should be through specifications, assessment and records, including equipment servicing/calibration, hygiene and pest control.
4.7	Control of supplied products	<ul style="list-style-type: none"> ■ This applies to ingredients and packaging materials which are supplied for processing into products. ■ It is essential that this is included in the hazard analysis and HACCP assessment and that as much information as is needed is available.

ISO 9001 Clause		HACCP Application
4.8	Product identification and traceability	<ul style="list-style-type: none"> ■ It is fundamental within the HACCP System to be able to trace lots of raw materials or products in the event of a CCP failure. This is essential for control procedures of diversions. ■ A written recall system (i.e. plan) must be maintained in order to minimize the effect of any failure by being able to carry corrective actions including withdrawal of defective product. ■ Also raw materials used without a supplier certificate that ensures that specifications are met should be traceable in order to allow a recall at a later stage if necessary (also see 4.6).
4.9	Process control	<ul style="list-style-type: none"> ■ This is the heart of HACCP. It is essential to include several key control areas in the different factory processes along the production line where HACCP is being applied. Control should be applied in areas such as: ■ Buildings - including all facilities from raw material storage areas, through process and dispatch. ■ Plant and equipment - including process capability, preventative maintenance, hygienic design and cleaning and process layout for cross-contamination risk. ■ Personnel - including training, health screening, hygienic practices. ■ Waste materials - must be clearly identified, segregated and safely disposed. ■ Computer failure - in the case of HACCP control or documentation through computers, contingency plans should be in place to assure control is not lost in case of malfunction. ■ Environmental control - including atmospheric conditions and ground water (particularly if used as process water).
4.10	Inspection and testing	<ul style="list-style-type: none"> ■ Raw materials - that are CCPs should not be used until confirmation of conformance has been received. ■ Finished products - should be held until confirmation that all CCPs have met conformance in full. ■ Records - of all inspection and test results should be reviewed and maintained. ■ Personnel - carrying out testing should be trained and qualified appropriately. Routine assessment and questionnaires may be done for verification.
4.11	Inspection measuring test equipment	<ul style="list-style-type: none"> ■ Effective control of CCPs relies on accurate measurements, test methods and equipment. Monitoring and verification activities at CCPs must be performed using equipment of known accuracy and accurately calibrated on a regular basis. ■ Failure to effectively monitor and verify the activities due to improper calibrated and maintained equipment will peril the effectiveness of the HACCP system. ■ All measuring equipment should be status marked so as to make it clear to all personnel what is calibrated and what is to be used for general guidance only. ■ Equipment must be maintained and stored correctly in-between calibration in order to avoid damage. ■ Records of calibrations should be maintained.
4.12	Control of Inspection and test status	There should be a clearly defined method for identification of the inspection and test status of any raw material, product, or equipment to prevent it from being used inadvertently.

ISO 9001 Clause		HACCP Application
4.13	Control of non conforming product	<ul style="list-style-type: none"> ■ The HACCP control charts will define the responsibility for control procedures to include who will take the corrective action(s) in the event of a deviation, the control measure and what to do with the affected product (i.e. rework, recycle, reject, dispose). ■ Procedures must be developed to ensure that all non-conformities at a CCP are recorded. This will enable trends to be analyzed and for the system to be evaluated and refined. ■ Verification of a non-conforming product that has been brought back into specification must be done through testing again to confirm conformance (also see 4.10).
4.14	Corrective action	<ul style="list-style-type: none"> ■ Control lost at a CCP must be regained by identifying the underlying cause in order for the problem to be permanently resolved and not repeated. ■ The corrective action taken in the event of any problem arising must be the right corrective action. Unidentified hazards may arise if the wrong corrective action is taken. ■ The effectiveness of any corrective action must be verified for confirmation. ■ All corrective actions must be recorded.
4.15	Handling, storage, packaging and delivery	<ul style="list-style-type: none"> ■ The following issues are very important in a HACCP system and may be an important factor in its effectiveness: ■ Improper Handling and storage of a raw materials or product. ■ Contamination risks posed by food contact surfaces. ■ Hygiene and pest control. ■ Use of unsuitable packaging (e.g. unable to withstand distribution). ■ Control of artwork (usage instructions, ingredients and nutritional data). ■ Storage and distribution temperatures. ■ Stock rotation. ■ Shelf-life.
4.16	Quality records	<ul style="list-style-type: none"> ■ HACCP records will need to be retained in a controlled manner. They may form part of a due diligence defense required by a regulatory inspector or a client as demonstration of the effective management of food safety. ■ Quality-related records will form part of the Quality Management Plan which includes product and raw material specifications, the HACCP Plans, process control records including CCP log sheets, Standard Operating Procedures, etc. ■ A Quality Management Plan must be verified annually. ■ Retention time of quality records must reflect both statutory regulations and product shelf-life. Three years as a minimum for those records that demonstrate system management.
4.17	Internal quality audits	<ul style="list-style-type: none"> ■ Process Flow Diagrams must be audited as part of the verification. ■ The HACCP System itself should be regularly audited by members of the HACCP Team in order to assess whether it is working, correct, and applicable. ■ Check lists may form part of the Internal audit. Non-compliance must be documented and corrected, allowing continued improvement of the HACCP System. Verification is important for the sustainability of the HACCP system ■ Auditors must be trained and independent of the department being audited and records of audits must be kept.

ISO 9001 Clause		HACCP Application
4.18	Training	<ul style="list-style-type: none"> ■ Effective HACCP relies on the participation of knowledgeable and trained people across a wide range of disciplines. ■ It is important that future training needs are considered on an ongoing basis as the factory HACCP and food safety management continues to develop. ■ Training issues may include management aspects, system development, emerging food safety issues, new processes and skills or awareness activities. ■ Training documents and manuals should be available for all members of staff and include all types of training.
4.19	Servicing	Equipment may be a source of hazards if not cleaned and maintained correctly. Servicing of equipment must be documented and controlled. This needs to be considered together with the servicing frequency.
4.20	Statistical techniques	<ul style="list-style-type: none"> ■ The construction of the HACCP Control Chart requires sampling regimes at each CCP to be documented. ■ If decisions of conformance are being based upon results of sampling and testing then it must be ensured that schemes are mathematically based i.e. the use of statistical sampling plans. ■ Other relevant statistical techniques include process capability assessment and statistical process control during CCP monitoring.