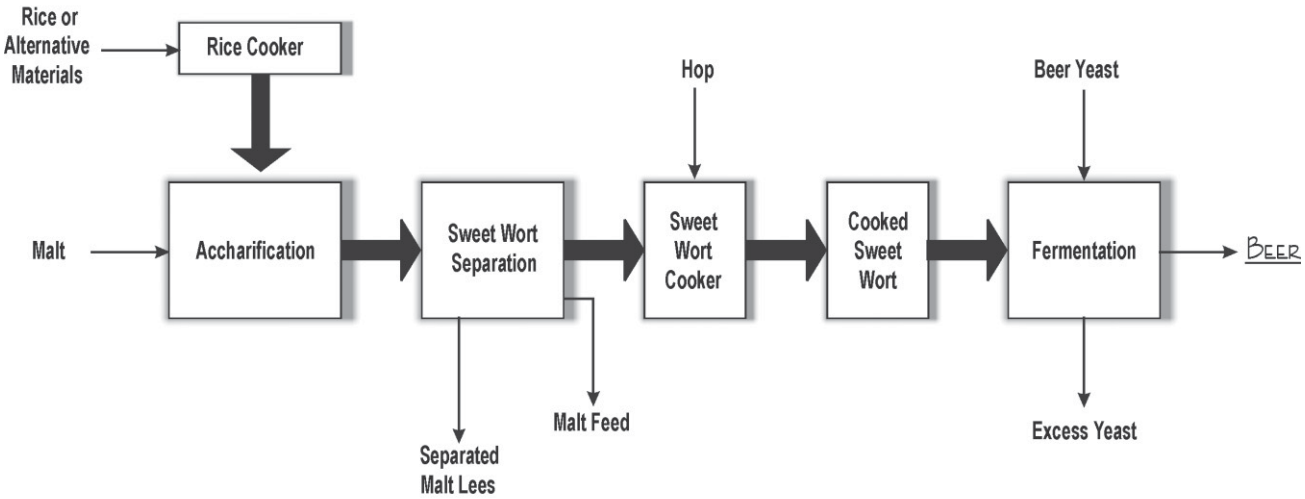
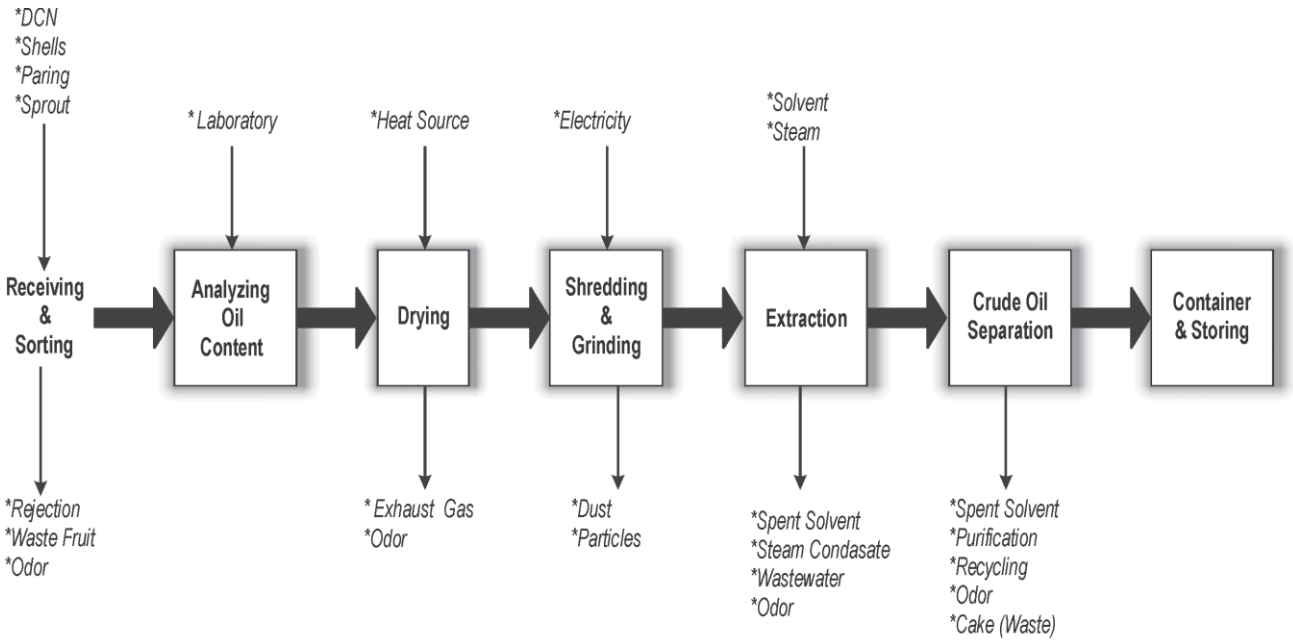
ANNEX 1

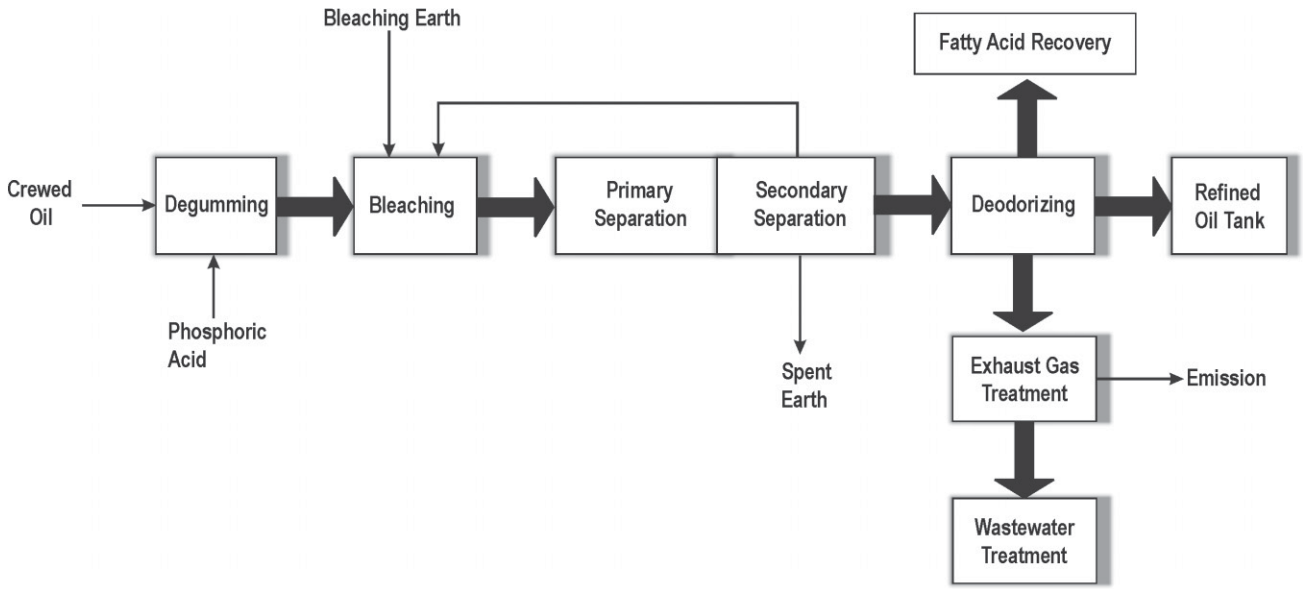
Beer Brewing Process Chart



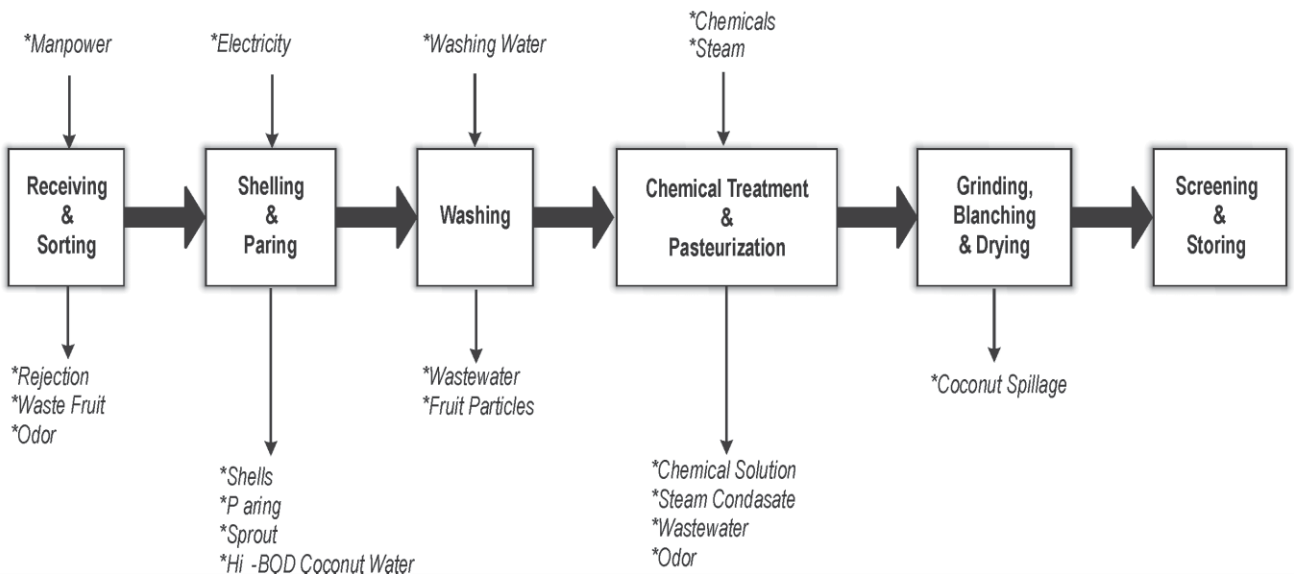
Coconut Crude Oil Extraction



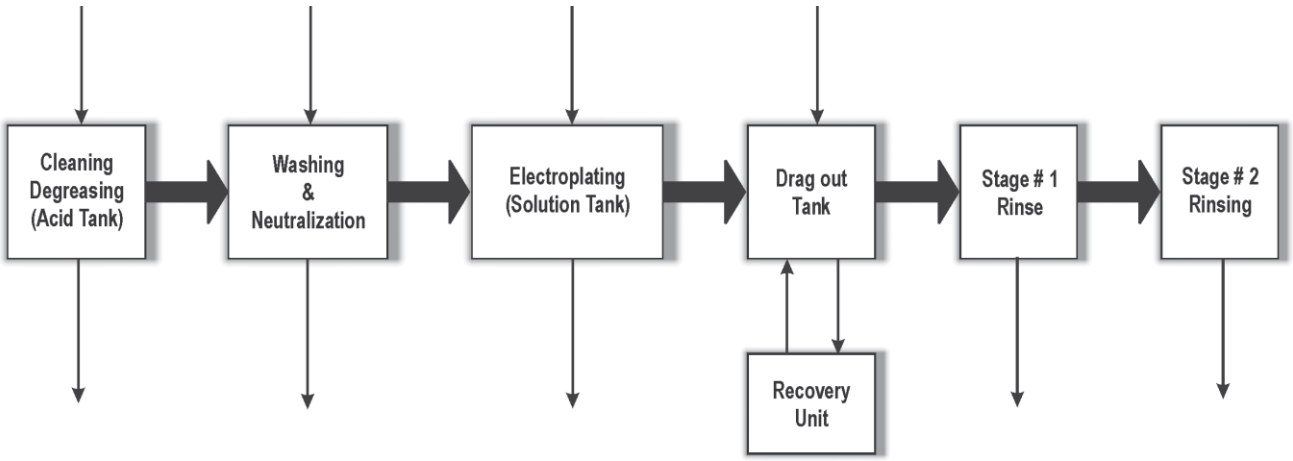
Coconut Oil Refining Process Chart



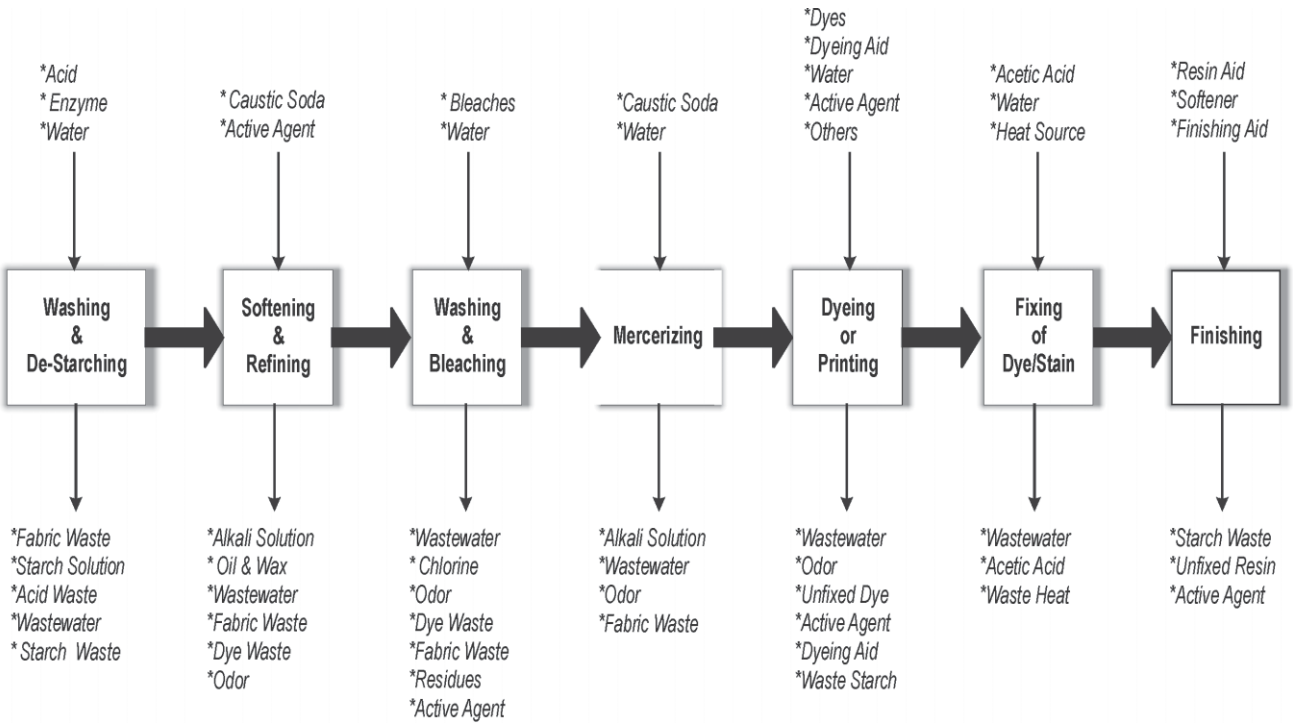
Desiccated Coconut (DCN) Production



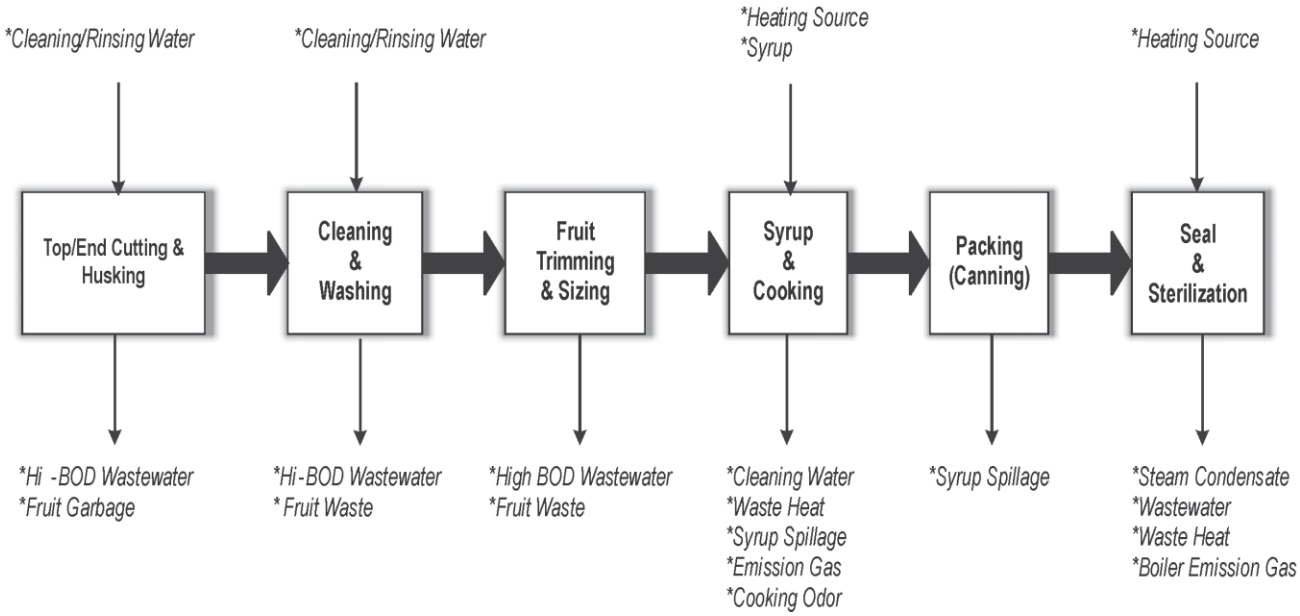
Electroplating with Recovery Unit Process



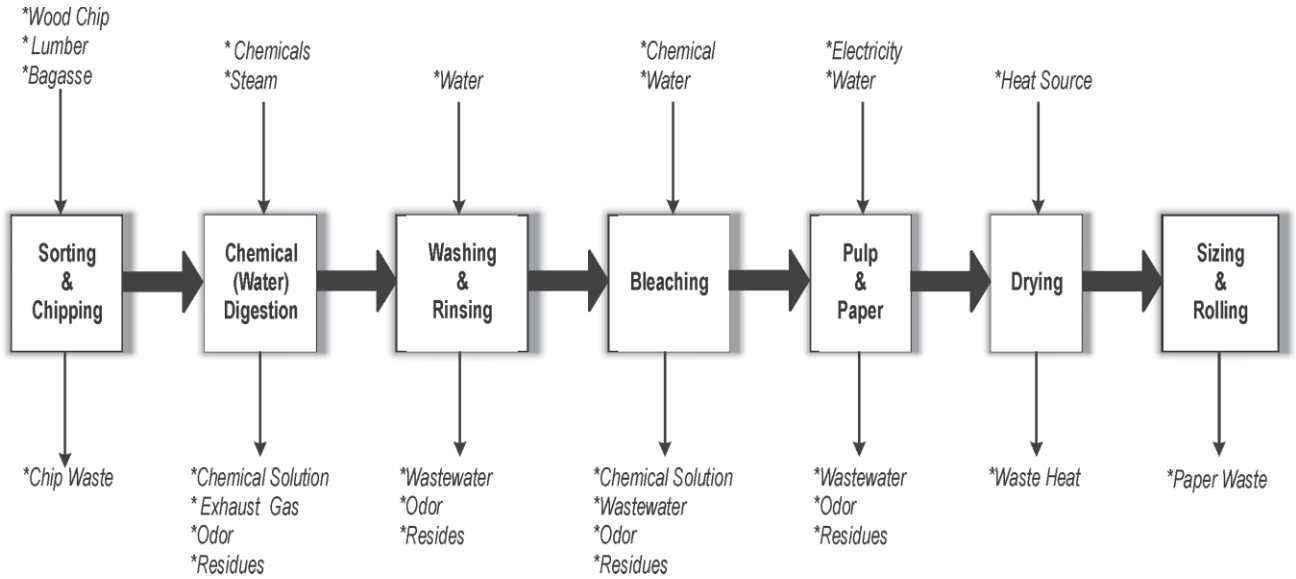
Fabric Dyeing Process (Cotton)



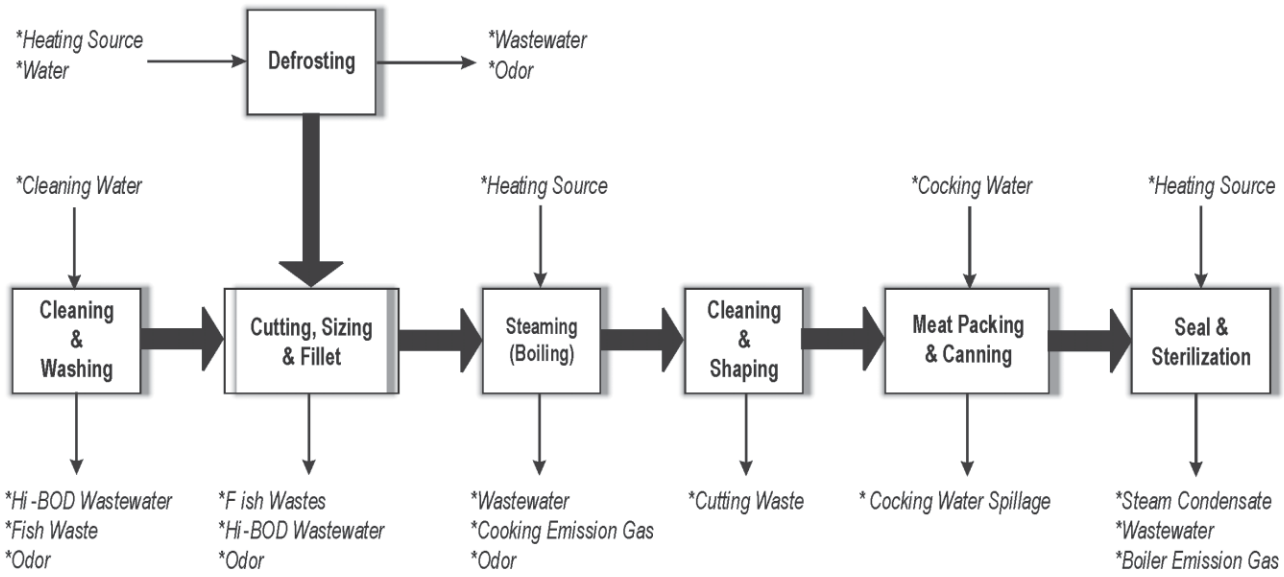
Pineapple Canning Processing



Pulp & Paper Production



Tuna Canning Processing



ANNEX 2

FACILITY BASELINE DATA WORKSHEET

INSTRUCTIONS: Please fill up all the necessary information. Provide estimates if data required are not available. Attach additional sheets if necessary.

WORKSHEET 1	GENERAL INFORMATION	Page 1 of 3

Firm: _____
Address: _____
_____
_____
_____

Industry Sector: _____
Industry Code _____
Telephone (Plant) _____
Telephone (Main Off.) _____
Fax Number: _____

Contact Person(s)/Designation (Include staff involved in decisions on environmental management)
_____
_____
_____

FACILITY BACKGROUND

Size of facility (area) _____
Production Capacity _____
No. of employees _____
Average labor cost _____
No. of shifts per day _____

Year operations started _____
Actual Production Capacity _____
Operating days per year _____
Operating hours per day _____

With Corporate Policy for Environment ☐ Yes ☐ No (If yes, pls. write down)

COMPLIANCE HISTORY AND OTHER NECESSARY INFORMATION

Please attach the following:

(1) PCO's latest quarterly report
(2) Waste characterization data (e.g., BOD analyses)
(3) Brief process description
(4) Process flow diagram
(5) Process equipment layout
(6) Vicinity map/ Plant location

WORKSHEET 2	PRODUCTION PROCESS INFORMATION	Page 2 of 3

PARTICULARS	CONSUMPTION RATE	UNIT COST	ANNUAL COST
RAW MATERIALS			
WATER CONSUMPTION			
Process Water			
Steam generation			
Cooling Water			
Boiler Make-up Water			
Wash Water			
General Cleaning			
ENERGY CONSUMPTION			
PRODUCTS (include by-products)			

WORKSHEET 3	WASTE GENERATION AND MANAGEMENT	Page 3 of 3

TYPES OF WASTE	VOLUME OF WASTES GENERATED (Specify Unit)	EXISTING WASTE MANAGEMENT PRACTICES	TREATMENT OF DISPOSAL COST
SOLID WASTES			
LIQUID WASTES			
GASEOUS EMISSIONS			

Waste Minimization Efforts And Future Plans

Please enumerate your current waste minimization efforts and future plans for expansion. (Include source reduction of wastes, material substitutions, process and product modifications, and on-site recycling projects. (Attach additional sheet if necessary)

Please identify specific pollution concerns or areas that you feel require immediate attention.

ANNEX 3

COMPANY WASTE MINIMIZATION OPTION PLANNING WORKSHEET

Company: _____
Sector : _____

A. Process Flow Diagram (Please illustrate.)

B. Waste Minimization Option and Identification

Manufacturing Process	Environmental Issues (e.g. Air, Water, Toxic & Hazardous Waste)	Waste Minimization Options	Potential Pollution/ Reduction Targets	Expected Costs (e.g. no cost, low, medium or high)
1				
2				
3				
4				

EMPOWER-Waste Minimization Pilot Project
Waste Minimization Implementation Monitoring Checklist

Annex 4

Company : _____
Location : _____
Key Contact Person : _____

Recommended Waste Minimization Options	Implemented		Date Implemented	Estimated Savings (raw materials, utilities)	Implementation Cost (capital and operation & maintenance cost)	Remarks

Annex 5

Small Group Activity is an Effective Tool to Increase Workers' Sensitivity

Workers' sensitivity would be increased through small group activities to identify problems within a plant/company and think out measures to solve the problem. The problems to be identified through the small group activity are relevant to the six duties at the workplace:

- P=productivity improvement
- Q=quality improvement
- C=cost reduction
- D=delivery shortening
- S=safety securing
- M=moral upgrading

ll the members of the company (from the owner and executive officers to operators at the plant) are expected to engage in the small group activity, but main players are those who are working at the production line and handling raw materials and final products. The small group activity is a tool not only to improve and make operations more efficient but also to develop human resources by mutual stimulation through exchange of knowledge and know-how among the workers. Through the small group activity, each member of the company tries to identify losses and defects happening around him/her from the six duties point of view, which makes it possible to institutionalize finding and implementing effective solutions.

What Is the Small Group Activity?

After the World War II, the concept of quality control (QC) was introduced to Japan from the USA. At the beginning, the quality control in Japan was practiced mainly by owners and limited number of engineers using the statistical analysis methods as in the USA. Later on (around 1995), plant workers and their leaders started holding meetings to discuss quality control; it was the start of the company-wide quality control with participation of all the members and sections of the company. The discussions were named QC Circle and systematically organized in April 1962, which is considered to be the emergence of the small group activity. Around the same time, the Union of Japanese Scientists and Engineers issued a bimonthly magazine titled "Work Front and QC," which introduced examples of practical QC activities and relevant statistical analysis methods. The magazine played an important role in disseminating the significance of the QC activity and augmenting the QC movement.

It is true that the very low labor turnover supported by the Japanese unique practice of lifetime employment enabled the QC activities to flourish in Japan. The QC activities were originally aiming at improvement of product quality and have been evolved into those covering a wide range of issues such as productivity improvement, cost reduction, safety and sanitation, environmental problems, and vitalization of working environment and extended to service and customer satisfaction. According to the definition of QC Circle by the Union of Japanese Scientists and Engineers,

QC Circle is a small group that voluntarily carries out QC activities within the same workplace or section. The small group conducts self- and mutual-development as a part of company-wide QC activities and continuously manages and improves the workplace with the participation of all the workforce using QC tools. The basic philosophy of the QC Circle is 1) to contribute to radical reform and development of the company, 2) to create lively and worthy workplace by paying full respect to humanity, and 3) to make it possible for everyone to prove her/himself and maximize her/his potential.

QC Circle activities are defined as those not ordered by the company but conducted voluntarily by the workers as the place where they can express themselves and achieve self-fulfillment. In light of this definition, the QC Circle is called as “Voluntary Management Activity” and “Thinking Group” in the iron and steel sector in Japan.

Organizational Arrangement to Promote the Small Group Activity

All the relevant parties from the top management to a plant worker as a “Team” must act with strong commitment to conduct the small group activity. The most important factor is commitment and action of the operators directly engaged in the production. Therefore it is necessary to provide the working environment and the system that would encourage the workers to consciously find problems and solve or find ways to solve these problems by themselves. Before starting the small group activity, the following preparation is necessary.

(1) Top decision making on the introduction of the small group activity. Success of the small group activity relies on the determination, strong support, and leadership of top executives. It is the top executive that expresses strong commitment on the promotion of the small group activity and implements measures to create lively workplace with respecting humanity and working worthy environment and for every worker to achieve self-fulfillment. Top executives are expected to actively attend company-wide presentations and meetings for mutual development.

(2) Setting up of small groups. Small groups to discuss improvement of productivity and environmental performance are formed according to the organizational structure of the company. It is desirable for a small group to be composed of workers who have the same job rotation because meetings are to be held frequently. It is better to keep the number of the small group members equal to or less than ten (10).

(3) Selection of leaders. A leader is selected for each small group. The leader is in charge of managing the small group activity. She or he is responsible for planning and promoting the small group activity to solve problems (improvement of productivity and environmental performance) and at the same time act as a member of the small group.

(4) Appointment of promoters. Line managers are in charge of promoting the small group activity. They are responsible for achieving the production target; therefore, they are in the best position to guide selection of themes for and give an advice on the small group activity. The promoters are expected to attend and support presentations held by the small groups within the production line. Line managers are considered as middle managers within the corporate structure, but they are the main promoters of the small group activity.

(5) Appointment of facilitators. Production managers are in charge of assisting the small group activity. They are responsible for coordinating all the small groups and managing the relationship between the small groups and the secretariat.

(6) Setting up of secretariat. Secretariat is in charge of managing the small group activity. It is responsible for keeping records of the small groups, themes discussed by the groups, and progress on the discussions and assisting the president or owner of the company to promote the small group activity. Secretariat is also charged with identifying needs of each small group, arranging relevant trainings, and providing necessary information. It is desirable to set up an independent secretariat, but when the capital size of the company or the number of the employees is small, a representative of the facilitators can be the secretariat.

Steps to Conduct the Small Group Activity

The real aim of the small group activity is to change all the workers' mind-set. The small group activity is a tool to orient the vector of each worker/staff's job/task to the objective that the company is pursuing through reviewing current operations. What issues the owner or the top executives select and how they show their commitment to tackle the issues are the crucial factors to set the direction of the small group activity. The small group activity enables all the workers to see their practices and take actions from the point of view related to the important issues of the company, which are presented by the owner or top executives.

The small group activity is conducted with the following steps:

(1) Setting the theme. As the first step of the small group activity, hold a meeting to brainstorm the issue presented by the owner or top executives. Select the theme that is relevant and important to their operation after each member of the group understands the reason why it should be selected as the theme of the small group activity.

(2) Identifying the current situation. Share information about the facts and events related to the selected issue that members experienced and/or know. Identify the gap between the ideal and the current situations.

(3) Setting the target. Set the objective target to realize the ideal situation and plan on schedule for the group activity.

(4) A**nalyzing cause and effect of the theme**. Conduct a collection of the information relevant to the theme and an investigation to quantitatively identify the current situation and then analyze cause and effect of the problem.

(5) Preparation and implementation of the improvement plan. After identifying the causes or presumed causes, prepare and implement a concrete plan to eliminate the causes by all the members of the small group.

(6) Measurement and evaluation of the effect of taking actions. Measure the effect of taking actions to eliminate the causes and evaluate the results by comparing the effect with the target.

(7) Standardization. To prevent reoccurrence of the cause, standardize operations and train the relevant workers on the standardized operations.

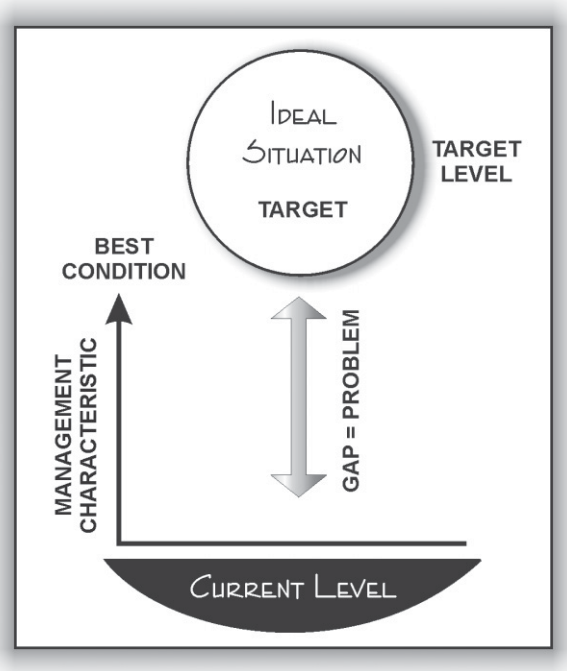
(8) Setting the next direction. Discuss whether the issue has been completely solved, if not, specify what aspect of the issue should be tackled further, and set the direction of the small group activity for the next stage.

Types of Problems and Steps On How to Solve Problems

A problem is the discrepancy (gap) between the target or ideal situation and the reality, and there are two types of the problems as follows.

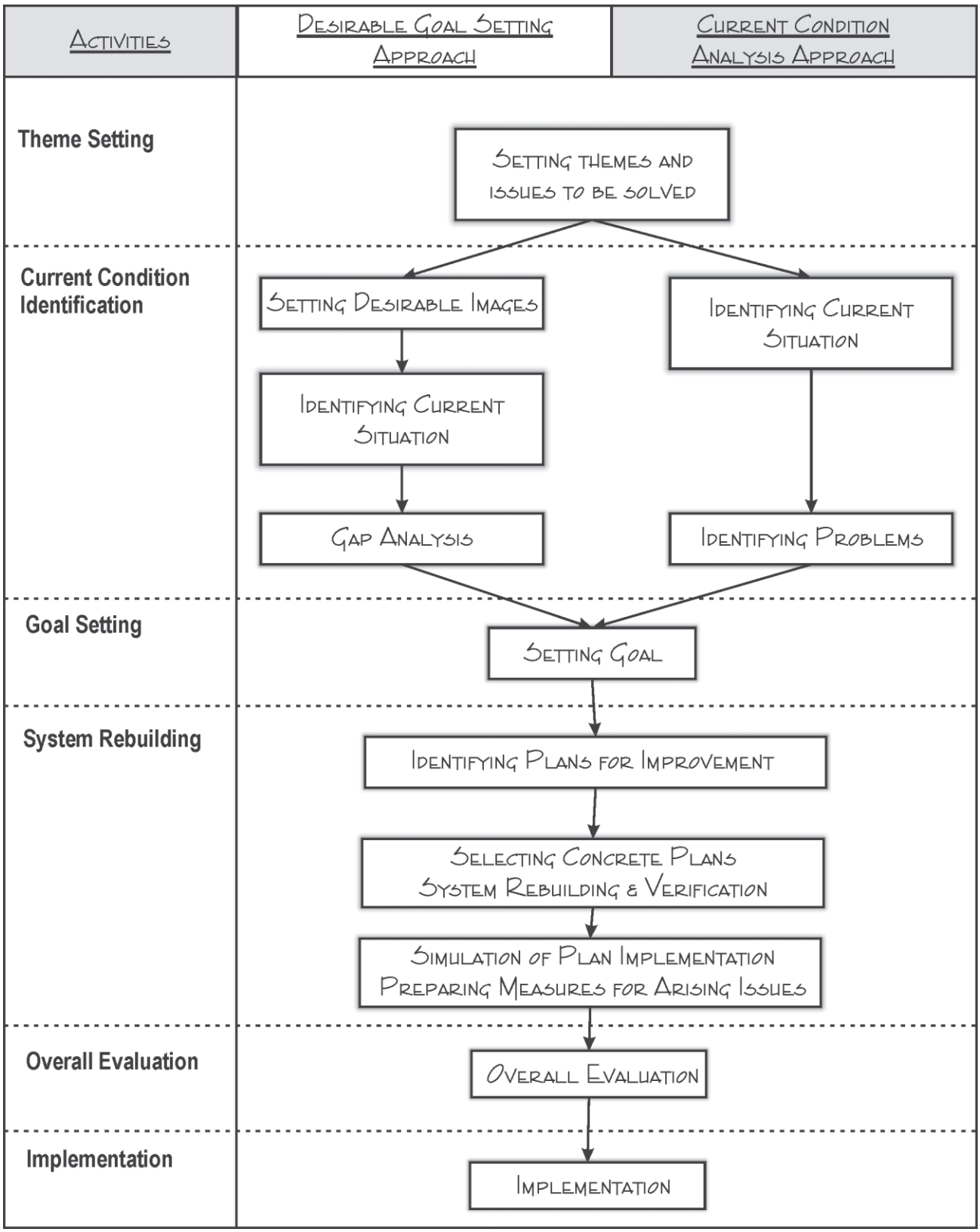
a. Actualized problems (problems whose causes are required to be identified)Abnormal conditions that have happened while normal operations are performed. Example: Facility break down, Emergency, Generation of defects, Delaying of delivery

b. Potential problems (problems that are identified as discrepancy/gap when a target is set). Potential problems are not the problems at present. Once target or ideal situation is set, the gap between the reality (current situation) and the target (ideal situation) becomes the problem.



There are two approaches to solve problems as indicated below. In the past, the Current Situation Analysis Approach was mainly used to solve problems, and it has been effective in removing factors that cause the problem. However, there is increasing the number of the cases in which such approach is not considered to be appropriate when the problem is potential, multilayered or complex. In these cases, the Desirable Goal Setting Approach can provide better answers. The difference between the two approaches is only a step to set “desirable image,” but results obtained through the approaches are significantly different.

Steps to Solve Problems



Measures to Vitalize the Small Group Activity

The small group activity is not only the activity for making the business more rational and efficient but also provides opportunities for workers to experience exciting moments of achieving self-fulfillment by attaining and augmenting skills to solve problems and actually solving the problems. It is ideal that workers' achievement of self-fulfillment encourages them to further tackling other problems/issues. Realization of this ideal, equal to reforming workers' mind-set, vitalizes the small group activity.

As measures to vitalize the small group activity, the followings are integrated into the small group activity system:

- Presentation and exchange of experiences
- Incentive scheme
- Seminars and trainings
- Public relations

Presentation and exchange of experiences

Holding meetings for presentations on the process and results of the small group activities and for exchange of experiences in and know-how of the small group activity management with other groups in the corporate or other business entities would encourage small group activity members to make further efforts. Usually, the meetings for presentations are held at the production unit, the manufacturing plant, the region, the company-wide levels. Excellent groups of the lower level are advanced to the next level meetings, and the best performer (group) is awarded with the presidential recognition at the company-wide level meeting.

Incentive scheme

An incentive scheme such as giving cash award to the small groups whose process to achieve the target is excellent or unique, whose results are outstanding, or whose activities are influential to other groups would motivate workers to engage in the small group activity. The groups who showed excellence in their small group activities and/or made best recommendations for improvement can be awarded with the presidential recognition. Many companies provide these best groups with travel abroad opportunities paid by the company to exchange their experiences with those who are in other branches instead of cash award.

Seminars and trainings

Seminars and trainings on tools for problem solving and methods to manage the small group activity would help workers to enhance their ability to solve problems.

Public relations

PR magazines and journals may be published for disseminating information about the small group activity; these magazines and journals are targeted to those who are in and out of the company.

The secretariat and the facilitator are mainly in charge of planning and implementing the measures to promote the small groups activity.

Tips to Motivate Workers/Staffs Reluctant to Engage in the Small Group Activity

In realty, there are several obstacles to promote the small group activity such as the following:

- Workers are too busy to attend meetings for the small group activity.
- All the members of the small group cannot attend the meeting because some of them have overtime work.
- Senior workers are not actively involved in the small group activity.

To overcome these obstacles, it is important to implement the measures to promote the small group activity. There are cases that the following actions are taken to remove the obstacles.

- Although the normal working hour ends at 17:00, only on Wednesdays regular work is finished at 16:00, and all the workers engage in the small group activity from 16:00 to 17:00. The last one (1) hour is counted as working hour.
- When all the members of the small group cannot attend the meeting because of their regular work, agenda for the meeting is announced in advance, and those who will be absent from the meeting submit their opinion on the agenda prior to the meeting.
- Among the 15 minutes of the daily morning meeting, 5 minutes are allocated to the small group activity. Agenda for the meeting is announced before the meeting, and the discussions are summarized within 5 minutes.
- For those who take evening shift, one (1) hour after the evening shift is allocated to the small group activity and counted as the working hour.

The obstacles are usually observed at the beginning of the small group activity. As the activity level increases, operations are improved, and small groups tend to make time for the small group activity though spontaneous improvement of operation efficiency and reduction of duplicated operations.

. Other Resources

Recommended book on productivity.

GUIDE TO QUALITY CONTROL
by Dr. Kaoru Ishikawa
225 pp., 1986/2nd Revised Edition (15th Printing 2000 with a new cover)
ISBN 92-833-1036-5 (Paper) $15.00
ISBN 92-833-1035-7 (Cloth) $18.50

More books on productivity (by Asian Productivity Organization)
http://www.apo-tokyo.org/catalogue/3library.pub.htm

More about resource productivity (by Business for Social Responsibility)
http://www.bsr.org/BSRResources/WhitePaperDetail.cfm?DocumentID=532

Training courses on productivity improvement (by Development Academy of the Philippines)
http://www.dap.edu.ph/training_courses/Training%20Courses-CQC1.htm

Downloadable QC Tools Training Materials (by FreeQuality)
http://www.freequality.org/beta%20freequal/fq%20web%20site/training.htm

Downloadable QC Tools (by FreeQuality)
http://www.freequality.org/beta%20freequal/fq%20web%20site/tools.htm