

A PROFORMA FOR ASSESSMENT OF THE LEVELS OF SANITATION IN FISH PROCESSING ESTABLISHMENTS

T. S. GOPALAKRISHNA IYER AND M. K. KANDORAN

Central Institute of Fisheries Technology, Cochin-11

Over the past 15 years of its development, the fish processing industry in India has shown considerable improvement in maintenance of hygiene during handling of the raw material, processing and marketing of the finished product. This is best manifested in the lowering of upper limits of bacterial loads in factory environs and in processed products (Pillai, 1971). Finished products having counts above 5.0×10^6 /g. of prawn are seldom met with at present compared to its frequent occurrence about 10 years back (unpublished-data). More care and attention is given by the processors in recent years in the scientific cleaning and sanitizing of utensils and equipments, chlorination of water supp-

lies, personnel hygiene and the like. However, the necessity of a sanitation score form was strongly felt as a ready reckoner to help scientists and technologists to evaluate the hygienic status of the processing units.

Sanitation Score Forms form part of the day-to-day log sheets in fish processing establishments in Western countries. Based on the conditions available in India, a proforma for assessment of hygienic condition was prepared by this Institute recently. In the preparation of this score sheet, similar forms used in some of the advanced countries like Canada and the U. S. have also been referred. (Parker, 1962; Association of food Industry Sanitarians, 1952).

The Proforma

SANITATION SCORE FORM

Date :	Total marks	—	100
Plant :	Marks scored.	—	

	Total marks	Marks scored	Guidelines for scoring	
			Marks.	
A) <i>Cleanup-Utensils.</i>				
1. Tables	3	{	Perfect	3
2. Basins	3		Good	2
3. Freezing trays	3		Fair	1
4. Tubs	3		Poor	0

*Gopalakrishna Iyer and Kandoran: A Proforma for assessment of the Levels of Sanitation
in Fish Processing Establishments*

	Total marks	Marks scored	Guidelines for scoring	Marks.
				Marks.
B) Cleanup-General				
1. Floor	2			
2. Wall	2	{	Good	2
3. Ceiling	2		Fair	1
4. Drainage	2		Poor	0
5. Wash basins	2			
C) Control measures				
1. Rodent control	3	{	Perfect	3
2. Fly control	3		Good	2
3. Bird control	3		Fair	1
			Poor	0
D) Water				
1. Source of water	4	{	Municipal water	4
			Tube well water	3
			Well water	2
			Others	1
2. Chlorination	5	{	Chlorinated to the extent required	5
			Chlorinated but not adequate	3
			Not chlorinated	0
E) Ice.				
1. Clear and apparently clean	2	{	Clear and clean	2
			Clear only or clean only	1
2. Kept on raised platforms in a separate room other than the processing hall.	3	{	Kept on raised platforms in a separate room	3
			Kept in a separate room	2
			Kept on a raised platform	1
			Both not satisfied	0

	Total marks	Marks scored	Guidelines for scoring
			Marks.
F) <i>Lighting</i>	3	{	Good 3
			Fair 2
			Poor 1
G) <i>Ventilation</i>	3	{	Good 3
			Fair 2
			Poor 1
H) <i>Disposal of waste</i>	3	{	Perfect 3
			Fair 2
			Poor 1
I) <i>Toilets</i>			
1. Kept clean always	1		
2. Disinfected daily	1	{	The specified mark is given if the condition is satisfied.
3. Contents discharged about 100 yards away	1		
4. Fitted with self closing doors & screened to effectively exclude flies.	1		
J) <i>Personal hygiene</i>			Marks.
The workers			
1. Wash and disinfect their hands from elbow-down before starting the work	3	{	Perfect 3
			Less perfect 2 & 1
			Not satisfactory 0
2. Try to maintain hygiene	2	{	Perfect 2
a) during work			Less perfect 1
b) after each absence from the workspot.			Not satisfactory 0
3. Free from any visible injury or disease	2	{	If satisfied 2
			Otherwise 0
4. Wear clean head dress in the proper way	1	{	Allot the mark if satisfied.

Gopalakrishna Iyer and kandoran: A Proforma for Assessment of the Levels of Sanitation
In Fish processing Establishment

	Total marks	Marks scored	Guideline for scoring.	Marks
5. Wear clean aprons	1	{	Allot the mark if satisfied.	
6. Do not sneeze or spit during working	2	}		-do-
K) Employee habits				
1. Silent work	2			
2. Gloves, gumboots, scissors, aprons, water hoses, knives etc. are kept in an arranged form when not in use.	2	{	Perfect	2
		{	Less perfect	1
		{	Not satisfactory	0
3. Proper usage of waste bin, wash basin etc.	2			
L) (i) Mode of peeling	2	{	If peeld on tables	2
		{	If peeling is done on floor	0
ii) Containers used	2	{	Only metallic or Polythene containers are used.	2
		{	Containers made of wood/bamboo are used.	0
M) Condition of factory premises	3	{	Perfect	3
		{	Less perfect	2 & 1
		{	Not satisfactory	0
N) Instructions / Advisory posters	3	{	Present	3
		{	Some more can be installed	1 - 2
		{	Not available	0
O) Supervision	5	{	Excellent	5
		{	Good	3 & 4
		{	Average	2 & 1
		{	Poor	0

	Total marks	Marks scored	Guidelines for scoring	Marks
P) Sanitation of the factory assessed by bacterial count (From previous records).	10		Excellent Good Average Poor	10 7 - 9 4 - 6 1 - 3

Comments:-

Date:.....

.....
(Signature)

Every aspect of sanitation which may directly or indirectly influence the quality of the end product has been duly considered in the preparation of this proforma.

I) *Cleanup*:- Cleanup is the vital part of any sanitation programme and for this reason about 25% of the total marks have been allotted to this particular criteria alone. Before starting and after finishing each day's work, all the utensils and equipments used for processing may be washed free of slime using a suitable detergent followed by disinfection (Iyer & Choudhuri, 1965).

II) *Rodent, Bird and Fly control measures*:- Adequate importance is also given to rodent, bird and fly control measures, the failure of which is in many cases traced out to be the major source of contamination to the processed product with faecal indicator organisms. Tightness of the roof-wall joint, self closing doors, fly proof nets etc. are advocated.

III) *Water & ice*:- Chlorination of the water supply is another point of stress in the proforma. Chlorination of a resi-

dual level of 10 ppm is recommended in all stages of processing. storage of ice blocks on raised platforms (6" height) in separate insulated rooms is recommended so as to minimise bacterial contamination.

IV) *Personal hygiene and employee habits*:- Personal hygiene is another important factor to be considered in protecting the processed food material from organisms of public health significance. Before starting work, all those who have to handle the food material, food ingredients or surfaces coming in contact therewith shall wash their hands from elbowdown using soap followed by disinfection using Chlorine of 200 ppm strength. The process may be repeated each time they leave the processing hall and return for work again or at any other time their hands become otherwise contaminated. Workers may also wear clean overalls and head dresses. Spitting, sneezing, smoking and chewing inside the processing hall may be prohibited.

V) *Ventilation, lighting and waste disposal*:- The proforma also insist adequate

ventilation and lighting in the processing hall. Disposal of waste may be quick and complete.

VI) *Toilets*:- There may be sufficient toilets situated away from the processing hall. Toilet rooms may have self closing doors screened effectively to exclude flies. Toilet rooms may be cleaned and disinfected daily. Wash basins, detergents and sanitizers may be provided in the toilet rooms.

VII) *Other factors*:- The proforma discourages the use of containers made of wood. Storage of prawn on floor of the processing hall is also equally discouraged. Importance is also given to the quality of supervision, condition of the factory premises and instructory/advisory posters. Separate marks have been allotted to the performance of the factory based on the microbial quality of water and ice

used in the factory and to the bacterial load on the surfaces of utensils and equipments.

TRIAL TESTS

In order to test the efficiency of this score form, a few random surveys of some of the processing units located in this area have been carried out and the results compared well with the grading arrived at from separate bacteriological data collected from the same premises. (Table 1).

Trial tests have given clear indication that a factory can easily score 65-70 marks when the minimum hygienic conditions are satisfied.

Keeping a daily record of the hygienic conditions of the processing unit using such proforma will give the processor an idea about the hygienic conditions and this will be helpful in effecting further improvements.

TABLE I COMPARISON BETWEEN SANITATION SCORE OF A FACTORY AND THE BACTERIAL QUALITY OF THE PRODUCTS PROCESSED IN THE SAME PREMISES.

Factory	Marks scored out of 100	Bacterial quality of the processed product.				
		% showing counts less than 9.9×10^3 /g	% showing counts between 1.0×10^4 - 9.9×10^4 g	% showing counts between 1.0×10^5 to 5.0×10^5 /g.	% showing counts between 5.1×10^5 - 9.9×10^5 /g	% showing counts above 1.0×10^6 /g.
A	83	40	53	7	0	0
B	70	30	57	13	0	0
C	55	0	0	60	21	19
D	50	0	10	40	20	30

REFERENCES

- Pillai, V. K., 1971. Bacteriological standards for fresh fishery products. *Sea Food Export Journal*, 3 (1) p. 61.
- Parker, M. E., 1962. 'Food Plant Sanitation' Reinhold publications, London.
- Association of Food Industry Sanitarians, Inc., 1952. Sanitation for the Food

preservations Industries. Mc Graw-Hill Book Company, New York.

- Iyer, T. S. G. & Choudhuri, D. R. 1965 Investigations on sanitational aspects (Microbiological) of prawn processing factories. *Fishery Technology*, 2 (1) pp. 131-138.