CHAPTER IV

RESULTS AND DISCUSSION

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The results of the investigation obtained through the analysis of the data of survey work as well as the experiment work supported by relevant discussion are presented in this chapter. The entire analysis was done on the basis of the three selected localities of the households and on the total sample. The households were divided into three groups according to the localities namely industrial cum residential area, commercial cum residential area and residential area.

The findings of the study are introduced through composite frequency and percentage tables followed by the statistical applications for the testing of hypotheses and relevant discussion pertaining to various objectives of the investigation. The results and discussion are presented under the following sections.

4.1 Socio-economic and demographic characteristics of the respondents.

4.2 Existing quality of micro enviornment in the kitchen and related problems faced by the respondents.

4.3 Extent of exposure of the respondents to media in relation to various aspects of environment.

4.4 Level of knowledge of the respondents regarding the quality of environment.

4.5 Practices followed by the respondents which affect the quality of micro environment in the kitchen.

4.6 Health problems experienced by the respondents and their family members.

4.7 Results of experimental work

4.8 Testing of hypotheses

4.9 Discussion on findings

Section 1

4.1 Socio-Economic and Demographic Characteristics of the Respondents

This section of the chapter deals with the description of information on personal and family characteristics of the respondents and general information of respondent's work environment.

4.1.1 Personal Characteristics of the Respondents

This includes description of age, educational level and occupational status of the respondents (Table 4.1).

Table 4.1 : Personal Characteristics of the Respondents

	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Age of the respondent								
<=30 years	22	44.0	21	42.0	16	32.0	59	39.3
31-45 years	17	34.0	24	48.0	29	58.0	70	46.7
>=46 years	11	22.0	5	10.0	5	10.0	21	14.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean Age	37.12		34.76		36.16		36.01	
SD	10.32		9.53		8.68		9.52	
Educational Level of Respondent								
Illierate	24	48.0	21	42.0	27	54.0	72	48.0
Primary	19	38.0	18	36.0	14	28.0	51	34.0
Secondary	7	14.0	7	14.0	7	14.0	21	14.0
Below graduate			4	8.0	2	4.0	6	4.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Occupational Status of Respondent								
Unemployed	42	84.0	32	64.0	40	80.0	114	76.0
Employed	8	16.0	18	36.0	10	20.0	36	24.0
Total	50	100.0	50	100.0	50	100.0	150	100.0

Age

The mean age of the respondents was 36.01 years. Further, it did not show much variation in the three different groups of localities. Overall, 46.7 per cent of the respondents belonged to middle age group. The age of the respondents ranged from 19 to 60 years (Table 4.1).

Educational Level

On the whole, almost one half (48 per cent) of the respondents were illiterate, whereas, other respondents varied in their educational level. Among these, 34 per cent had primary level education, 14 per cent had secondary level education, whereas, only 4 per cent of them were educated upto below graduate level. A little more than half of the respondents in residential locality were illiterate.

Occupational Status

Occupational status of the respondents showed that out of 150 respondents almost three-fourth of the respondents (76 per cent) were not employed and only one-fourth (24 per cent) of the respondents were gainfully employed outside their home. Eighty four per cent of the respondents in the industrial cum residential area were unemployed and 36 per cent of the respondents in the commercial cum residential area were employed.

4.1.2 Family Characteristics of the Respondents

This includes description of age, educational level and occupational status of the respondent's spouse (Table - 4.2). It also covers information on type of family system, family size and family income (Table-4.3).

Age of the Spouse

The mean age of the respondent's spouse was 39.64 years. The age of the spouses ranged between 25 to 65 years. There was not much variation in the mean age of the spouses in three localities.

Educational Level of the Spouse

Percentage of literacy among spouses was higher compared to that of the respondent's literacy level. Forty per cent of the spouses had primary level education and 42.9 per cent of the spouses had upto secondary level education. Only one spouse belonging to commercial cum residential locality was graduate. Only 15.7 per cent of the spouses were illiterate. The overall data on educational level of the spouses showed a positive trend towards education (Table - 4.2).

Table 4.2 : Characteristics of the Respondent's Spouse

Spouse's Age, Education and Occupation	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Age of the spouse								
<=35 years	24	48.0 (51.1)	22	44.0 (47.8)	18	36.0 (38.3)	64	42.6 (45.7)**
36-45 years	9	18.0 (19.1)	13	26.0 (28.3)	18	36.0 (38.3)	40	26.7 (28.6)
>=46 years	14	28.0 (29.8)	11	22.0 (23.9)	11	22.0 (23.4)	36	24.0 (25.7)
Total	47	100.0	46	100.0	47	100.0	140	100.0
Mean Age	39.89		38.72		40.28		39.64	
SD	10.11		9.34		9.02		9.46	
Education of Spouse								
Illierate	6	12.0 (12.8)	8	16.0 (17.4)	8	16.0 (17.0)	22	14.7 (15.7)
Primary	15	30.0 (31.9)	15	30.0 (32.6)	26	52.0 (55.3)	56	37.3 (40.0)
Secondary	25	50.0 (53.2)	22	44.0 (47.8)	13	26.0 (27.7)	60	40.0 (42.9)
Below graduate	1	2.2 (2.1)	0	0.0	0	0.0	1	.7 (00.7)
Graduate	1	0.0	1	2.2 (2.2)	0	0.0	1	.7 (00.7)
Total	47	100.0	46	100.0	47	100.0	140	100.0
Occupation of Spouse								
Unemployed	8	16.0 (17.0)	4	8.0 (8.7)	6	12.0 (12.8)	18	12.0 (12.9)
Employed	39	78.0 (83.0)	42	84.0 (91.3)	41	82.0 (87.2)	122	81.3 (87.1)
Total	47	100.0	46	100.0	47	100.0	140	100.0

** The figures given in the parentheses denote the percentages out of relevant cases.

Occupational Status of the Spouse

Occupational status of the spouse showed that out of 140 spouses (10 spouses not alive), 122, that is 87.1 per cent of the spouses were gainfully employed outside the homes. It also showed that 12.9 per cent of the spouses were not employed. Occupational status was highest that is, 91.3 per cent amongst commercial cum residential locality.

Type of Family System

Fifty four per cent of the respondents belonged to joint family and 46 per cent of the respondents belonged to nuclear family system (Table 4.3). Joint family system was highest that is, 66 per cent in residential locality.

Family Size

Mean family size of the sample was 5.91 (Table - 4.3). The total number of members in the households ranged from minimum one to maximum 13 in the sample. Most of the respondent in the total sample, that is, 63.3 per cent had the family size of five to eight members. Further, it also showed that 20 per cent of the respondents in industrial cum residential locatities had the family size of nine and more members. The mean family size was highest in residential locality where 84 per

cent of the respondents belonged to the medium family size group of five to eight members. The reason for this was that joint family system was highest in this group.

Table 4.3 : Family Characteristics of the Respondent

Type of Family and Size of Family	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential		f	%
	f	%	f	%	f	%		
Type of Family System								
Joint	23	46.0	25	50.0	33	66.0	81	54.0
Nuclear	27	54.0	25	50.0	17	34.0	69	46.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Family size (Total number of family members)								
<=4	14	28.0	20	40.0	3	6.0	37	24.7
5-8	26	52.0	27	54.0	42	84.0	95	63.3
>=9	10	20.0	3	6.0	5	10.0	18	12.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean family size	6.02		5.14		6.58		5.91	
SD	2.74		1.88		1.42		2.16	
Number of children								
1-2	29	58.0	25	50.0	28	56.0	82	54.7
		(67.4)		(61.0)		(58.3)		(62.1)**
3-4	13	26.0	15	30.0	17	34.0	45	30.0
		(30.2)		(36.6)		(35.4)		(34.1)
5-6	1	2.0	1	2.0	3	6.0	5	3.3
		(2.3)		(2.4)		(6.3)		(3.8)
Total	43	100.0	41	100.0	48	100.0	132*	100.0

* Rest of the families did not have children.

** Figures given in the parentheses denote the percentages out of relevant cases.

Further, the information on number of children was also obtained which showed that out of 150 households, 132 had children and number of children ranged from one to six in these households. It showed that 62.1 per cent of the family had one to two children, 34.1 per cent had three to four children and only 3.8 per cent of the families had five to six children. On the whole, there was not much variation in number of children in three localities.

Family Income

Family income was categorized on the basis of monthly income earned by the family members. The mean income of the family was Rs. 1442.40 per month. About 47 per cent of the families belonged to low - high income group having income from Rs. 1001 to 2000. Forty per cent of the families had their monthly income less then Rs. 1000. Only 13.3 per cent of the families had their income more then Rs. 2001 per month. The income of the families ranged from Rs. 500 to 3500 with only two families having their monthly income of Rs. 5000 and Rs. 6000 each. On the whole, most of the respondents belonged to low income group (Table 4.4).

Table 4.4 : Income of the Family

Income of Family	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Family's Monthly Income (Rupees)								
Upto 1000	12	24.0	22	44.0	26	52.0	60	40.0
1001-2000	31	62.0	18	36.0	21	42.0	70	46.7
2001 & above	7	14.0	10	20.0	3	6.0	20	13.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean Income	1464.00		1608.00		1255.20		1442.40	
SD	591.35		1068.06		547.60		780.95	

There was a slight variation found in the mean income of families in 3 different localities and showed that families living in residential locatily had lowest mean income of Rs. 1255.20 whereas families living in commercial cum residential locality had highest mean income of Rs. 1606.00 per month. The reason for this may be that there were more numbers of employed respondents in commercial cum residential locality compared to residential locality.

4.1.3 Genreal inforamtion on respondent's work environment

This includes the basic information on respondent's work environment, such as, type of house, immediate surroundings of the house, type of kitchen, number of people working in the kitchen and time spent in the kitchen by the homemakers (Table - 4.5).

Table 4.5 : Type of House and its Surrounding

Type of House and Surroundings	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Type of House Construction								
Kuchcha house	5	10.0	8	16.0	2	4.0	15	10.0
Semi-pucca house	31	62.0	25	50.0	43	86.0	99	66.0
Pucca small house	12	24.0	15	30.0	4	8.0	31	20.7
Pucca big house	2	4.0	2	4.0	1	2.0	5	3.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Immediate Surrounding of the House*								
Street/Road	24	48.0	27	54.0	25	50.0	76	50.7
Houses	46	92.0	46	92.0	50	100.0	142	94.7
Religious	30	60.0	31	62.0	33	66.0	94	62.7
School	18	36.0	4	8.0	21	42.0	43	28.7
Bus stand	4	8.0	3	6.0	17	34.0	24	16.0
Market/Shops	8	16.0	12	24.0	6	12.0	26	17.3
Garage			1	2.0			1	0.7

* Due to multiple responses the total percent exceeds

Type of the House

A combination of various building materials used in the house for the construction of walls, floor and roof was considered for the categorization of type of house for the study. Kuchcha houses had walls of mud, cowdung or tin sheets, floors of mud or cowdung and roof of thatch or tin sheets; semi pucca houses had walls of bricks or bricks and mud plaster, floors of stone or tiles, roof of wood or clay tiles; pucca small houses had walls of bricks and mud or cememt plaster, floors of stone or tiles and R.C.C. roof and atleast two rooms in the house; whereas pucca big house had more then two rooms.

Majority of the respondents (66 per cent) lived in semi-pucca houses, 20.7 per cent of them lived in pucca small houses, 10 per cent of the respondents had kuchcha houses and only 3.3 per cent of them had pucca big houses to live in (Table 4.5).

In the industrial cum residential and commercial cum residential localities there was not much variation in the type of houses the respondents lived in. Only in residential locality, respondents living in semi-pucca houses were highest, that is, 86 per cent.

Immediate Surrounding of the House

In most of the cases, houses, streets and religious places were found in the immediate surroundings of the houses of the respondents; 94.7 per cent of the respondents had house in their immediate surroundings, 62.7 per cent had religious places like temple or mosque in their surroundings and 50.7 per cent had small streets near by their houses. Schools, bus stand and shops were found in immediate surrounings in 28.7 per cent, 16 per cent and 17.3 per cent of the cases respectively. Only one respondent had garage for repairs of two wheelers in the near surrounding (Table 4.5). In residential locality the percentage of respondents having houses, religious places and bus stand was little higher compared to the other groups.

Type of Kitchen

In the industrial cum residential locality 60 per cent of the respondents had kitchen as a part of the room, 26 per cent had separate kitchen and 14 per cent of the respondents were using their open front / back yard as kitchen. In commercial cum residential locality one half of the respondents had kitchen as a part of the room and rest half had separate room as kitchen. In residential locality 40 per cent of the respondents were

cooking in the corner of the room, 36 per cent had separate room and 24 per cent had kitchen in the open front / back yard of their houses (Table 4.6).

On the whole, only 37.3 per cent of the respondents had separate kitchen, whereas, half of them used part of the room as kitchen and 12.7 per cent had their kitchen in open front / back yard of their house.

Table 4.6 : Type of Kitchen, Persons Working in it and Time Spent in the Kitchen

Type of Kitchen and Persons Working in it.	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Type of Kitchen								
Part of the room	30	60.0	25	50.0	20	40.0	75	50.0
Open back/front yard	7	14.0	0	0.0	12	24.0	19	12.7
Separate room	13	26.0	25	50.0	18	36.0	56	37.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Number of Persons Working in Kitchen								
One person	27	54.0	34	68.0	23	46.0	84	56.0
Two persons	21	42.0	13	26.0	22	44.0	56	37.3
Three persons	2	4.0	3	6.0	5	10.0	10	6.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Time Spent in Kitchen (hours/day)								
2- 4 hours	31	62.0	26	52.0	19	38.0	76	50.7
5- 7 hours	16	32.0	22	44.0	18	36.0	56	37.3
8-10 hours	3	6.0	2	4.0	13	26.0	18	12.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean time spent	4.32		4.56		5.64		4.84	
SD	1.83		1.74		2.40		2.08	

Number of Persons Working in the Kitchen

Overall, in 56 per cent of the kitchen one person was working, in 37.3 per cent of the kitchen two persons were working most of the time and in rest of the cases, 3 persons were doing cooking and related activities (Table 4.6). There was not much variation found in number of persons working in the kitchen in different localities.

In residential locality percentage of two or three persons working in the kitchen was higher compared to the other two groups probably because more nomber of respondents had joint family system and mean family size was higher compared to the other two groups.

Time Spent in the kitchen

On the whole, average time spent by the home makers in the kitchen for cooking and related activites was 4.84 hours per day. Mean time spent in the kitchen was higher in residential locality, that is, 5.64 hours per day compared to other two groups. The reason may be that they had to cook for more number of family members as mean family size was higher in this group compared to the other groups (Table 4.6).

Thus, the summary of background characteristics of the respondents reflected that mean age of the respondents was 36.01 years, one half of them were

illiterate and rest half had primary to below graduate level of education and three - fourth of the respondents were unemployed. More than one half belonged to joint family system with 5.91 mean family size. The mean family income of the total group was Rs. 1442.40 with S.D. 780.95. Majority of the respondents lived in semi pucca house with houses, streets or religious places in their near surroundings. Only 37.3 per cent of the respondents had separate kitchen and mean time spent in the kitchen was 4.84 hours per day. Further, it showed that there were little differences in the basic characteristics among the three groups.

Section 2

4.2 Existing Quality of Micro Environment in the Kitchen and Related Problems Faced by the Respondents

This section deals with the information on the quality of work environment of the homemakers and related problems faced by them which was obtained through interview of the homemakers and was supported by the observation by the investigator. It contained detailed information on various aspects of micro environment of household kitchens on the basis of which the quality of micro environment was determined by the investigator. This information is divided into following section :

4.2.1 Orientation of Kitchen

4.2.2 Size of the Kitchen or cooking area (floor size)

4.2.3 Information pertaining to quality of ventilation

4.2.4 Information on use of fuels and cook stoves

4.2.5 Discomfort feelings realized by the respondents

4.2.6 Information regarding supply and storage of water

4.2.7 Quality of lighting in kitchen

4.2.8 Quality of sound

4.2.9 Information regarding sanitation

4.2.10 Building materials used in the kitchen

4.2.11 Appearance of the kitchen in general, overall appearance of the kitchen and its surrounding.

4.2.12 Quality of Micro environment

4.2.1 Orientation of the Kitchen

Orientation is the proper placement of the room in relation to sun, wind, rain, topography and outlook and at the same time it provides the best place to its inmates. For kitchen, Eastern or North-Eastern aspect is desirable as morning sun would make the air free of bacteria and would remain cool in the latter half of the day. Western aspect is not desirable as the breeze comes in from this direction and disturbs gas flame. It also carries the odour and fumes in the adjoining rooms (Deshpande, 1985). In the present study, it was found that only 48 per cent of the kitchen had proper

orientation whereas, 52 per cent of the kitchen were in improper direction. Further, it was found that in industrial cum residential locality 66 per cent of the kitchens had improper orientation and in commercial cum residential and residential localities 56 and 54 per cent respectively had kitchen in proper orientation.

A further probe indicated that 34.7 per cent of the respondents had kitchen in south direction, 31.3 per cent had kitchen in East direction, whereas, almost 17 per cent each cases had kitchen in West and North direction. Thus, more than 50 per cent of the houses had kitchen in improper direction as Eastern and North Eastern corner is considered the best direction according to Deshpande (1985).

4.2.2 Size of the Kitchen or Cooking Area (floor size)

In 89.3 per cent cases the size of the kitchen or cooking area (floor space) was less than 7.5 Sq. meter which is the standard size and only 10.7 per cent of the respondents had kitchen size of 7.5 sq.m or more. The mean size of the kitchen was 4.10 sq.m with Standard Deviation 2.67 sq.m. Thus, it was found that in majority of the cases, irrespective of localities, the size of the kitchen was inadequate as compared to the standard size recommended by Deshpande (1985); (Appendix - IV).

Table 4.7 : Information on Orientation and Size of Kitchen

Orientiation and Size of Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Direction of Kitchen								
South	18	36.0	15	30.0	19	38.0	52	34.7
West	15	30.0	7	14.0	4	8.0	26	17.3
North	7	14.0	9	18.0	9	18.0	25	16.7
East	10	20.0	19	38.0	18	36.0	47	31.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Orientation of the Kitchen								
Improper	33	66.0	22	44.0	23	46.0	78	52.0
Proper	17	34.0	28	56.0	27	54.0	72	48.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Size of the Kitchen or Cooking Area (Sq.M)								
< 7.5 Sq M	45	90.0	46	92.0	43	86.0	134	89.3
>= 7.5 Sq M	5	10.0	4	8.0	7	14.0	16	10.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Space Availability in Kitchen								
Inadequate	9	18.0	19	38.0	10	20.0	38	25.3
Adequate	41	82.0	31	62.0	40	80.0	112	74.7
Total	50	100.0	50	100.0	50	100.0	150	100.0

Space Availability in the Kitchen

Almost three- fourths of the respondents felt that the space available in the kitchen was adequate for them to perform cooking and related activities, whereas, one-fourth, that is, 25 per cent of the respondents felt inadequacy in terms of floor space available in their kitchen. Further, it was found that in industrial cum residential and residential localities, more number of respondents, that is, 80 per cent and above felt that, the space was adequate for them to work in it, whereas, higher number, that is, 38 per cent of the respondents in commercial cum residential locality felt that floor space available in the kitchen was not adequate.

Although it was found that majority of the kitchens were below standard size, majority of the respondents found that the space was adequate, may be because they are used to working in that kitchen and are adjusted to the space available to them.

4.2.3 Information Pertaining to Quality of Ventilation in Kitchen.

This includes information regarding provision of doors, windows, ventilators, direction of windows, adequacy of open space and immediate surrounding facing the kitchen.

Table 4.7(a) : Information Regarding Ventilation in the Kitchen

Ventilation in Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Provision of Doors in Kitchen								
No	0	0.0	2	4.0	0	0.0	2	1.3
Yes	50	100.0	48	96.0	50	100.0	148	98.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Provision of Windows in Kitchen								
No	37	74.0	25	50.0	40	80.0	102	68.0
Yes	13	26.0	25	50.0	10	20.0	48	32.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Number of Windows in Kitchen								
One window	13	26.0 (100.0)	22	44.0 (88.0)	10	20.0 (100.0)	45	30.0 (93.8)**
Two window	0	0.0	3	6.0 (12.0)	0	0.0	3	2.0 (6.3)
Total	13	100.0	25	100.0	10	100.0	48	100.0
Size of the Windows in kitchen (Sq M)								
< 1 Sq M	12	24.0 (92.3)	23	46.0 (92.0)	10	20.0 (100.0)	45	30.0 (93.8)**
>=1 Sq M	1	2.0 (7.7)	2	4.0 (8.0)	0	0.0	3	2.0 (6.3)
Total	13	100.0	25	100.0	10	100.0	48	100.0

** The figures given in the parentheses denote the percentages out of relevant cases.

(Continued...)

(Continued Table 4.7(a)

Ventilation in Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Direction of Windows								
Improper	2	4.0 (15.4)	14	28.0 (56.0)	3	6.0 (30.0)	19	12.7 (39.6)**
Proper	11	22.0 (84.6)	11	22.0 (44.0)	7	14.0 (70.0)	29	19.3 (60.4)
Total	13	100.0	25	100.0	10	100.0	48	100.0
Total Open Space (Windows & Ventilators)								
Inadequate	34	68.0	34	68.0	30	60.0	98	65.3
Adequate	16	32.0	16	32.0	20	40.0	52	34.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Natural Ventilators in Kitchen								
No	25	50.0	34	68.0	27	54.0	86	57.3
Yes	25	50.0	16	32.0	23	46.0	64	42.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mechanical Ventilation in Kitchen								
No	30	60.0	27	54.0	41	82.0	98	65.3
Yes	20	40.0	23	46.0	9	18.0	52	34.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Type of Mechanical Ventilator								
Fan	20	40.0 (100.0)	23	46.0 (100.0)	9	18.0 (100.0)	52	34.7 (100.0)
Total	20	100.0	23	100.0	9	100.0	52	100.0

** The figures given in the parentheses denote the percentages out of relevant cases.

(Continued...)

(Continued Table 4.7a)

Ventilation in the Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Immediate Surroundings Facing Kitchen *								
Buildings	36	72.0	42	84.0	25	50.0	103	68.7
Road	10	20.0	7	14.0	7	14.0	24	16.0
Open space	14	28.0	9	18.0	22	44.0	45	30.0
Trees/Plants	3	6.0	2	4.0	14	28.0	19	12.7
Other								
Quality of Ventilation in the Kitchen								
Poor	18	36.0	31	62.0	21	42.0	70	46.7
Average	18	36.0	7	14.0	13	26.0	38	25.3
Good	14	28.0	12	24.0	16	32.0	42	28.0
Total	50	100.0	50	100.0	50	100.0	150	100.0

* Due to multiple responses the total percentage exceeds

Provision of Doors in Kitchen

There was provision of doors in 98.7 per cent kitchens, whereas, in 1.3 per cent kitchens there were no doors but only opening was provided in the walls. Such cases were found in commercial cum residential locality.

Provision of Windows in Kitchen

It was disappointing to know that 68 per cent of the respondents were working in the kitchens where there were no windows at all. Only 32 per cent of the kitchens were provided with windows. Further, it showed that percentage of provision of windows was higher in commercial cum residential locality with 50 per cent respondents having windows in their kitchens. In residential locality 80 per cent of the kitchens had no windows and in industrial cum residential locality 74 per cent of the kitchens were without any windows.

Number of Windows in Kitchens

Out of 48 kitchens having provision of windows, 93.8 per cent had only one window and only 6.3 per cent had two windows in the kitchen. Such cases were found in commercial cum residential locality only.

Size of the Windows in Kitchen

Out of 48 kitchens having windows, it was found that in 98.3 per cent kitchens, the size of the windows was less than one square meter, that is, one seventh of the floor area in the kitchen and in only three kitchens the size of the windows was more than one square meter (approx.) as recommended by Deshpande (1985).

Direction of the Windows

Direction of the windows were observed in terms of proper or improper orientation on the basis of their placement on the same side of the door or on the opposite side of the door which would provide cross ventilation in the kitchen. The windows should also be placed in such a way that wind does not disturb the flame, and the odours and the fumes are carried away from the house. Thus, it was found that, 60 per cent of the kitchens had windows in proper direction and about 40 per cent of the kitchens had placement of the windows in improper direction.

More number of respondents (56 per cent) in commercial cum residential locality had windows in improper direction as majority of the houses had buildings facing the kitchen which hampered the air circulation and amount of light availability. Percentage of kitchen windows in proper direction was highest (84.6 per cent) in industrial cum residential locality.

Total Open Space in Terms of Windows and Ventilators

There should be one-seventh of the total floor space as open space in terms of windows and ventilators (Deshpande, 1985) to provide enough air circulation, natural light, etc., in the kitchen. It was found that majority (65 per cent) of the kitchens had inadequate open space whereas, rest of them had adequate open space

in the kitchen. Number of respondents having inadequate or adequate open space in terms of windows and ventilators was more or less similar in all three groups in the study.

Natural Ventilators in the Kitchen

Ventilation means much more than simply supplying fresh air. It also cannotes the evacuation of the vitiated air and movement of air decreases temperature and humidity and leads to a feeling of well being.

Only 42.7 per cent of the respondents had provision of natural ventilators (apart from windows) in their kitchen and 57.3 per cent of them had no ventilators in the kitchen. Out of the three groups, in commercial cum residential locality, very less, that is, only 32 per cent had natural ventilators in their kitchens. The reason may be that most of the houses were congested having buildings in their immediate surroundings and had no scope for the provision of natural ventilators in the kitchens.

Mechanical Ventilators in the Kitchen

Overall, about 65 per cent of the kitchen had no mechanical ventilators at all and only 35 per cent had provision of mechanical ventilators in the kitchen.

Among these, in residential locality, the number was higher (82 per cent) of those having no mechanical ventilation system in their kitchen and only 9 kitchens had provision of mechanical ventilation system. This was found because kitchen was part of the room in which they lived.

Out of 52 respondents among the total sample having mechanical ventilators in their kitchen, all of them had provision of fan and no one had exhaust fan in their kitchens.

Immediate Surrounding Facing Kitchen

Data showed that, in commercial cum residential locality, majority of the respondents, that is, 84 per cent had buildings in the immediate surrounding facing their kitchens. In residential locality 44 per cent of the respondents had open space around their kitchen. Trees and plants were found in very few cases in all the localities.

On the whole, 68.7 per cent of them had buildings in the immediate surrounding facing the kitchen, 30 per cent had open space, 16 per cent had road and only 12.7 per cent of the respondents had trees or plants in the immediate surroundings facing the kitchens.

Quality of Ventilation in the Kitchen

Quality of ventilation in the kitchen was determined on the basis of the observations by the investigator keeping in mind the number of doors and windows in the kitchen, direction of the windows, total open space in terms of windows and ventilators, provision of mechanical ventilators and immediate surrounding facing the kitchen that would affect the flow of fresh air in kitchen.

It was found that there were variations in the quality of ventilation in the kitchen in three different localities in the present study which was further supported by the findings pertaining to direction of windows, provision of natural ventilators and immediate surrounding facing the kitchen. Thus, highlight of findings showed that 62 per cent of the respondents had poor quality of ventilation in commercial cum residential locality, 36 per cent had average quality of ventilation in industrial cum residential locality and 32 per cent of them had good quality of ventilation in residential locality (Table 4.7a).

On the whole, out of 150 sample, 46.7 per cent had poor quality of ventilation, 28 per cent had good quality of ventilation and one-fourth of them had average quality of ventilation in the kitchen.

4.2.4 Information on Use of Fuels and Cook Stoves

This includes types of fuels and cook stoves used in the kitchen, location of the cook stoves, provision of the smoke outlet and types of smoke outlet.

Type of Fuels Used in the Kitchen

Wood, coal, kerosene, cowdung cake, crop residue and wood scrap were the various fuels used either daily or occasionally for cooking in these three localities.

Wood was found to be used as daily cooking fuel by majority of them in industrial cum residential and residential localities. Kerosene was daily used fuel for cooking in almost all the kitchens in all the localities. Very few respondents used cow dung cake, crop residue, wood scrap and coal as fuels for cooking either daily or occasionally in industrial cum residential locality and in residential locality.

On the whole, 34 per cent of the respondents used wood daily and 10 per cent used wood occasionally for cooking in their kitchen. Majority, that is, 92.7 per cent of the respondents used kerosene as daily fuel. Cowdung cake was used by 10.7 per cent either daily or occasionally. The other fuels like coal, crop residue and wood scrap were used by very less number of respondents either daily or occasionally and the percentage ranged between 1.33 to 4.7 for the use of these fuels in different localities. (Table 4.8)

Table 4.8 : Use of Fuels and Cook Stoves

Type of fuels and cook stove used and frequency of use	LOCALITY																					
	Industrial cum Residential						Commercial cum residential						Residential						Total			
	D		O		N		D		O		N		D		O		N		D		O		N*	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Typesof ** Fuels																								
Wood	21	42.0	7	14.0	22	44.0	1	2.0	0	0.0	49	98.0	29	58.0	8	16.0	13	26.0	51	34.0	15	10.0	84	56.0
Coal	2	4.0	1	2.0	47	94.0	0	0.0	0	0.0	50	100.0	0	0.0	2	4.0	48	96.0	2	1.3	3	2.0	145	96.7
Kerosene	48	96.0	1	2.0	1	2.0	49	98.0	1	2.0	0	0.0	42	84.0	8	16.0	0	0.0	139	92.7	10	6.7	1	0.7
Cowdung cake	4	8.0	5	10.0	41	82.0	0	0.0	0	0.0	50	100.0	12	24.0	11	22.0	27	54.0	16	10.7	16	10.7	118	78.7
Crop residue	2	4.0	2	4.0	46	92.0	0	0.0	0	0.0	50	100.0	3	6.0	4	8.0	43	86.0	5	3.3	6	4.0	139	92.7
Woodscrap	6	12.0	3	6.0	41	82.0	0	0.0	0	0.0	50	100.0	1	2.0	3	6.0	46	92.0	7	4.7	6	4.0	137	91.3
Typesof Cook Stoves																								
Woodstove	21	42.0	7	14.0	22	44.0	1	2.0	0	0.0	49	98.0	29	58.0	8	16.0	13	26.0	51	34.0	15	10.0	84	56.0
Sigri	2	4.0	1	2.0	47	94.0	0	0.0	0	0.0	50	100.0	0	0.0	2	4.0	48	96.0	2	1.3	3	2.0	145	96.7
Pressure stove	35	70.0	1	2.0	14	28.0	32	64.0	7	14.0	11	22.0	39	78.0	8	16.0	3	6.0	106	70.7	16	10.7	28	18.7
Wick stove	26	52.0	0	0.0	24	48.0	36	72.0	0	0.0	14	28.0	7	14.0	0	0.0	43	86.0	69	46.0	0	0.0	81	54.0

* D = Daily, O = Occasionally, N = Never

** Due to multiple responses the total percentage exceeds

Types of Cook Stoves used in the Kitchen

Information on the use of various cook stoves showed that respondents used wood stoves, sigri, pressure stove and wick stove for cooking depending upon the type of fuels used by them. Overall, 34 per cent of them made use of wood stoves daily and 10 per cent use it occasionally. Majority of them, that is, about 70 per cent of the respondents used pressure stove daily and 10 per cent of them used it occasionally and 46 per cent of the respondents were using wick stove daily. Only five respondents used sigri as they were using coal. Further, it was found that use of wood stove was higher in residential locality (about 75 per cent) and use of wick stove was highest, that is, 72 per cent in commercial cum residential locality (Table 4.8).

Placement of cook stove

Cooking in a standing position on a raised platform has many advantages, such as, it simplifies work method, provides storage space below the platform and allows easy draft of air from below. There is a further great advantage, that, it minimizes the risk of sarees catching fire, a tragedy of too frequent an occurrence in India which takes a heavy toll of life every year. But it was disappointing to know that about 90 per cent of the respondents in industrial cum residential locality and

in residential locality kept cook stoves on the floor and rest in these localities had platform for keeping the cook stoves (Table 4.9). In commercial cum residential locality more number, that is, 34 per cent of the respondents used to place the cook stoves on the platform and 66 per cent of them used to cook in the sitting position. Overall, 81.3 per cent of the respondents used to sit on the floor for cooking and only 18.7 per cent had provision of platform for keeping the cook stoves.

Location of the Cook Stoves

In industrial cum residential locality, more number (62 per cent) of the respondents were keeping the cook stoves near window or ventilator. In commercial cum residential locality about three-fourth of them were keeping it in the corner of the kitchen. In residential locality, in 24 per cent cases, cooking stoves were placed in the open area of the house. Out of the total sample, 52 per cent of the respondents were keeping the cook stove in the corner of the kitchen, 40 per cent were keeping the cook stove near window / ventilator and rest of them were keeping it in open area. Location of the cook stove was dependent upon type of the kitchen and provision of windows and ventilators in the kitchen.

Table 4.9 : Placement of Cook Stoves and Provision of Smoke Outlet.

Placement of Cook Stoves and Provision of Smoke Outlet	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Placement of Cook Stove								
Floor	45	90.0	33	66.0	44	88.0	122	81.3
Platform	5	10.0	17	34.0	6	12.0	28	18.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Location of the Cook Stove								
Corner of the kitchen	19	38.0	37	74.0	22	44.0	78	52.0
Near window/ventilator	31	62.0	13	26.0	16	32.0	60	40.0
In the open area	0	0.0	0	0.0	12	24.0	12	8.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Provision of Smoke Outlet in Kitchen								
No	19	38.0	18	36.0	20	40.0	57	38.0
Yes	31	62.0	32	64.0	30	60.0	93	62.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Type of Smoke Outlet								
Window	10	20.0 (32.3)	20	40.0 (62.5)	6	12.0 (20.0)	36	24.0 (38.7)**
Ventilator	15	30.0 (48.4)	12	24.0 (37.5)	12	24.0 (40.0)	39	26.0 (41.9)
Open roof	6	12.0 (19.4)	0	0.0	12	24.0 (40.0)	18	12.0 (19.4)
Total	31	100.0	32	100.0	30	100.0	93	100.0

** The figures given in the parentheses denote the percentages out of relevant cases.

Provision of Smoke Outlet

Overall, 38 per cent had no provision of any type of smoke outlet in their kitchen and 62 per cent had the provision of smoke outlet in the kitchen. There was no variation found in terms of provision of smoke outlet to carry away the fumes from the kitchen in the three groups (Table - 4.9).

Type of smoke outlet

Out of those respondents having provision of smoke outlet, in industrial cum residential locality 48.4 per cent had ventilators, in commercial cum residential locality 62.5 per cent had windows, in residential locality 40 per cent had open roof and also in industrial cum residential locality 19.4 per cent had open roof to carry the fumes of various fuels away from the kitchen. On the whole, about 42 per cent of the respondents had ventilators, about 39 per cent had windows and rest of the respondents had open roof in the kitchen as smoke outlet.

4.2.5 Discomforts felt by the Respondents while Working in the Kitchen

It was found that, in commercial cum residential and residential localities 98 per cent of the respondents and in industrial cum residential locality all the respondents felt discomfort while working in the kitchen (Table 4.10).

Table 4.10 : Discomforts Felt by the Respondents While Working in the Kitchen

Feeling of Discomfort	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Feel Discomfort while Working in Kitchen								
Yes	50	100.0	49	98.0	49	98.0	148	98.7
No			1	2.0	1	2.0	2	1.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Discomfort Feelings*								
Lack of enough work space	6	12.0	18	36.0	7	14.0	31	20.7
Lack of enough ventilation	21	42.0	38	76.0	28	56.0	87	58.0
Heat stress	42	84.0	47	94.0	45	90.0	134	89.3
Humidity	14	28.0	37	74.0	21	42.0	72	48.0
Suffocation	4	8.0	31	62.0	15	30.0	50	33.3
Presence of odours	6	12.0	34	68.0	13	26.0	53	35.3
Presence of fumes	40	80.0	45	90.0	44	88.0	129	86.0
Other			1	2.0	1	2.0	2	1.3
Total	50	100.0	50	100.0	50	100.0	150	100.0

* Due to multiple responses the total percentage exceeds.

On the whole, 89.3 per cent of the respondents felt heat stress, 86 per cent felt presence of fumes in the kitchen, 58 per cent felt lack of enough ventilation followed by humidity (48 per cent), presence of odours (35.3 per cent), suffocation (33.3 per cent) and 20.7 per cent of them felt lack of enough work space in their kitchens.

In industrial cum residential locality, 84 per cent of the respondents felt heat stress, 80 per cent of them felt presence of fumes and 42 per cent felt lack of enough ventilation in the kitchen. Rest of the discomfort feelings were realized by very few of them. In residential locality 90 per cent of them felt heat stress, 88 per cent felt presence of fumes, 56 per cent felt lack of enough ventilation, 42 per cent felt humidity and rest of the discomfort feelings were realized by only some of them. Whereas, in commercial cum residential locality the number of respondents who realized discomfort in their kitchen was higher compared to other two groups. The data (Table 4.10) showed that 94 per cent felt heat stress, 90 per cent felt presence of fumes followed by lack of enough ventilation (76 per cent), humidity (74 per cent), presence of odour (68 per cent), suffocation (62 per cent) and also 36 per cent of the respondents felt lack of enough work space in the kitchen. The discomfort feelings were more in commercial cum residential locality because the houses were congested and more number of them had no windows or ventilators in their kitchen.

4.2.6 Information Regarding Supply and Storage of Water

This includes information regarding sources of water supply, water storage, uses of water, placement of water storage utinsils and changes reliased by respondents in terms of quality of water.

Types of Water Supply System

Since Baroda City has various water reservoirs around and there is a water treatment plant where drinking water is treated and supplied to various storage tanks in the city, divided into several zones, people of Baroda city are fortunate to have regular and treated drinking water transported through pipe lines to the houses by Baroda Municipal Corporation. Thus, the major source of water supply to the houses is municipal water supply system directly through tap in the house, through overhead tank or through community tap.

The data showed that in industrial cum residential locality, 90 per cent respondents had water supply directly through municipal tap in the house and rest had water available through community tap. In commercial cum residential locality, 61 per cent had municipal tap in the house, 34.7 per cent respondents used community tap and 24.5 per cent had water supply through over head tank. Only one respondent had hand pump in the house and one respondent was also getting water from the open well

from the neighbour's house. In residential locality, 88 per cent of the respondent were getting water through municipal tap in the house, few of them were getting water from community hand pump (16 per cent), hand pump in the house (16 per cent) and community tap (12 per cent). In four cases respondents were also using neighbour's bore well for water. Respondents had more than one sources of water supply in residential and commercial cum residential localities (Table 4.11).

Overall, about 80 per cent had municipal water supply system directly through tap in the house and 18.8 per cent used community tap. Few respondents also used overhead tank, community hand pump, hand pump in the house, bore well and open well for getting water for their families.

Duration of Drinking Water Supply

In industrial cum residential and residential localities all the respondents had intermittent water supply. In commercial cum residential locality 96 per cent had intermittent water supply and only two respondents had continuous water supply as they were using hand pump in the house and open well also. Overall, 98.7 per cent respondents had intermittent water supply.

Table 4.11 : Sources of Water Supply and Frequency of Water Supply

Sources of Water Supply and Frequency of Water Supply	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Type of Water Supply System*								
I Municipal Water Supply								
Municipal tap in house	45	90.0	30	61.2	44	88.0	119	79.9
Over head tank	0	0.0	12	24.5	0	0.0	12	8.1
Community tap	5	10.0	17	34.7	6	12.0	28	18.8
II Other Sources of Water Supply								
Community hand pump	0	0.0	0	0.0	8	16.0	8	5.4
Hand pump in house	0	0.0	1	2.0	8	16.0	9	6.0
Bore well	0	0.0	0	0.0	4	8.0	4	2.7
Open well	0	0.0	1	2.0	0	0.0	1	0.7
Duration of Drinking Water Supply								
Intermittent	50	100.0	48	96.0	50	100.0	148	98.7
Continuous	0	0.0	2	4.0	0	0.0	2	1.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Frequency of Water Supply								
Once a day	0	0.0	1	2.0 (2.1)	0	0.0	1	0.7 (0.7)**
Twice a day	37	74.0	47	94.0 (97.6)	50	100.0	134	89.3 (90.5)
Thrice a day	13	26.0	0	0.0	0	0.0	13	8.7 (8.8)
Total	50	100.0	48	100.0	50	100.0	148	100.0

* Due to multiple responses the total percentage exceeds.
** The figures given in the parentheses denote the percentages out of relevant cases.

Frequency of Water Supply

One-fourth of the respondents in industrial cum residential locality reported that they were getting water supply thrice a day and three-fourths of the respondents said that they were getting water supply twice a day. In commercial cum residential locality, out of 48 respondents getting intermittent water supply, 97.6 per cent were getting water twice a day and only one respondent was getting water supply once a day. In residential locality, all the respondents were getting water supply twice a day. On the whole 90.7 per cent respondents were getting water supply twice a day, 8.8 per cent of them were getting water thrice a day and only one respondent was getting water once a day (Table 4.11).

Storage of Water

It was found that irrespective of type of water supply system, duration of water supply and frequency of water supply, all the respondents in all the three groups used to store water in the house for various purposes.

Purpose of Storing Water

All the respondents used to store water for various purposes (Table 4.12). All of them were storing water for drinking, cooking, cleaning the house, washing

clothes, washing utensils, bathing and sanitation purpose in all three groups. Further, it was found that in industrial cum residential locality, commercial cum residential locality and residential locality water was stored for cattles by 12 per cent, 4 per cent and 22 per cent respondents respectively and for watering the plants by 4 per cent, 2 per cent and 24 per cent of the respondents respectively. Thus, storage of water for cattles and plants was higher in residential locality compared to the other two groups.

Out of the total sample, 12.7 per cent of the respondents stored water for cattles and 10 per cent of the respondents stored water for watering their plants in the house.

Materials Used for Storage of Drinking Water

Vessels of a variety of materials were used to store water for various purposes. Out of which water used mainly for drinking and cooking purposes was stored in earthenware, vessels of copper, brass, stainless steel, aluminum and tin, cement pots and tanks, plastic vessels and tanks.

Table 4.12 : Water Storage and Material Used for Storage

Water Storage and Materials Used for Storage	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Purpose of Storing Water*								
Drinking	50	100.0	50	100.0	50	100.0	150	100.0
Cooking	50	100.0	50	100.0	50	100.0	150	100.0
Cleaning the house	50	100.0	50	100.0	50	100.0	150	100.0
Washing clothes	50	100.0	50	100.0	50	100.0	150	100.0
Washiing utensils	50	100.0	50	100.0	50	100.0	150	100.0
Bathing	50	100.0	50	100.0	50	100.0	150	100.0
Sanitation purpose	50	100.0	50	100.0	50	100.0	150	100.0
For cattles	6	12.0	2	4.0	11	22.0	19	12.7
For plants	2	4.0	1	2.0	12	24.0	15	10.0
Materials Used for Storage of Drinking Water*								
Earthenware	50	100.0	45	90.0	50	100.0	145	96.7
Copper	3	6.0	5	10.0	3	6.0	11	7.3
Brass	10	20.0	17	34.0	12	24.0	39	26.0
Stainless steel	14	28.0	42	84.0	16	32.0	72	48.0
Aluminium	16	32.0	8	16.0	11	22.0	35	23.3
Cement pots	5	10.0	3	6.0	8	16.0	16	10.7
Cement tanks	0	0.0	0	0.0	2	4.0	2	1.3
Plastic vessels	8	16.0	8	16.0	10	20.0	26	17.3
Plastic tanks	0	0.0	2	4.0	2	4.0	4	2.7

* Due to multiple responses the total percentage exceeds.

On the whole, 96.7 per cent of the respondents used earthenware for storing drinking water, 48 per cent used stainless steel vessels, 26 per cent used brass vessels and 23.3 per cent used aluminum vessels. Few of them used plastic vessels (17.3 per cent), cement pots (10.7 per cent), copper vessels (7.3 per cent), plastic tanks (2.7 per cent) and cement tanks (1.3 per cent). There was not much variation in the materials used for storing drinking water in industrial cum residential and residential localities. Respondents having cement tanks for the storage of water were found in residential locality only. In commercial cum residential locality 90 per cent respondents used earthenware and use of stainless steel vessels was higher in this group (84 per cent) compared to other two localities (Table 4.12). This showed that material which is best for storage of water was not used by most of them, probably because they were not knowing its quality or they could not affort it.

It was found in the study on various practices of homemakers for water storage by Taneja (1986) that majority of respondents used earthenware in summer and in monsoon and winter plastic was used. It was also found that there was difference in the disinfecting quality of various materials used for storage of water and copper is the best material compared to brass, earthenware and stainless steel. Plastic is the worst material for the storage of drinking water.

Place of Keeping Drinking Water Vessels

It was found that drinking water vessels were kept in kitchen, utility area, open yard or in the other room of the house and vessels were kept on the floor, on the platform or on the stand by the respondents. In industrial cum residential locality, 36 per cent respondents were keeping drinking water vessels in the kitchen and on the platform, 28 per cent respondents were keeping drinking water vessels in kitchen but on the floor, 16 per cent of them used to keep water vessels in the kitchen on the stand and also in the other room on the platform. In commercial cum residential locality, 56 per cent kept drinking water vessels in the kitchen and on the platform, 42 per cent in the kitchen but on the floor, 26 per cent in the utility area on the floor and 16 per cent in the kitchen on the stand. In residential locality, 40 per cent of the respondents kept water vessels in the kitchen on the platform, 32 per cent of them kept the vessels in other room on the platform (Table 4.13).

On the whole, main place of keeping the drinking water vessels was kitchen and 44 per cent of the respondents were keeping the vessels on the platform, 28 per cent on the floor and 12 per cent on the stand. It was also found that 17.3 per cent used other room in the house for keeping vessels on the platform and 12.7

per cent used utility area and kept the vessel on the floor. Very few of them made use of open yard for keeping drinking water vessels.

Problems Found at the Place of Storing Water

Out of the total sample, 71.3 per cent of the respondents reported that they faced problems at the place where water vessels were kept and 28.7 per cent said that they did not have any problems near the place where they kept water vessels. There was not much variation in the three groups with regards to number of respondents facing the problems where water vessels are kept (Table 4.13).

Out of those respondents who faced the problems at the place where water vessels were kept, 78.5 per cent of them said that there was water seepage and collection at the place where the vessels were kept, 43.9 per cent found presence of mosquitoes around the water vessels. Few of them also faced problems of presence of moss (18.7 per cent), foul smell (10.3 per cent) and garbage (5.6 per cent). Not many variations were found in terms of types of problems faced by the respondents in the three localities.

Table 4.13 : Placement of Drinking Water Vessels and Problems Faced.

Placement of Drinking Water Vessels and Type of Problems	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Place of Keeping Drinking Water Vessels*								
Kitchen on the floor	14	28.0	21	42.0	7	14.0	42	28.0
Kitchen on platform	18	36.0	28	56.0	20	40.0	66	44.0
Kitchen on the stand	8	16.0	8	16.0	2	4.0	18	12.0
Utility area on the floor	5	10.0	13	26.0	1	2.0	19	12.7
Utility area on platform	0	0.0	7	14.0	6	12.0	13	8.7
Utility area on the stand	3	6.0	0	0.0	1	2.0	4	2.7
Open Yard on the floor	2	4.0	1	2.0	3	6.0	6	4.0
Open Yard on platform	0	0.0	1	2.0	4	8.0	5	3.3
Open Yard on the stand	2	4.0	1	2.0	0	0.0	3	2.0
Other room on the floor	7	14.0	1	2.0	3	6.0	11	7.3
Other room on platform	8	16.0	2	4.0	16	32.0	26	17.3
Other room on the stand	2	4.0	1	2.0	0	0.0	3	2.0
Face Problems at Place Where Water Vessels are Kept								
Yes	33	66.0	37	74.0	37	74.0	107	71.3
No	17	34.0	13	26.0	13	26.0	43	28.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Type of Problems Faced*								
Water Seepage & Collection	29	58.0 (87.9)	25	50.0 (67.6)	30	60.0 (81.1)	84	56.0 (78.5)**
Garbage	2	4.0 (6.0)	2	4.0 (5.4)	2	4.0 (5.4)	6	4.0 (5.6)
Presence of moss	7	14.0 (21.2)	5	10.0 (13.5)	8	16.0 (21.6)	20	13.3 (18.7)
Foul smell	2	4.0 (6.0)	3	6.0 (8.1)	6	12.0 (16.2)	11	7.3 (10.3)
Presence of mosquitoes	11	22.0 (33.3)	19	38.0 (51.3)	17	34.0 (45.9)	47	31.3 (43.9)

* Due to multiple responses the total percentage exceeds.

** The figures given in the parentheses denote the percentages out of relevant cases.

Change in the Quality of Water Received

Overall, 84.7 per cent of the respondents felt change in the quality of water they were getting and 15.3 per cent did not find any change in the quality of water they used for drinking purpose. Further, it was found that number of respondents feeling change in the quality of water was highest in residential locality (94 per cent) and number of respondents feeling change in the quality of water was lowest (74 per cent) in industrial cum residential locality among the three groups (Table 4.14).

Out of those respondents who felt the changes the quality of water, 92 per cent of them reported that there was high level chlorination in the water that they could realize through smell. As per the report by United News of India (1996) chlorine used for purifying drinking water can lead to cancer and heart diseases. Turbidity of the water was another change observed by 68.5 per cent of the respondents. Change in the taste of water was felt by 40 per cent of the respondents followed by foul smell (24.4 per cent). Three respondents also reported that water was sometimes oily and such cases were found in residential locality only. Further, there was not much variation in terms of changes in quality of water realized by respondents in three groups.

Table 4.14 : Changes in Quality of Water Realised by Respondents

Changes in Quality of Water	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Feel Any Change with the Quality of Water								
Yes	37	74.0	43	86.0	47	94.0	127	84.7
No	13	26.0	7	14.0	3	6.0	23	15.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Types of Changes in Quality of Water Realised by Respondents*								
	(n = 37)		(n = 43)		(n = 47)		(n = 127)	
Too much chlorination	35	70.0 (94.6)	36	72.0 (83.7)	46	92.0 (97.9)	117	78.0 (92.1)**
Foul smell	6	12.0 (16.2)	20	40.0 (46.5)	5	10.0 (10.6)	31	20.7 (24.4)
Turbidity	17	34.0 (46.0)	36	72.0 (83.7)	34	68.0 (72.3)	87	58.0 (68.5)
Change in taste	16	32.0 (43.2)	10	20.0 (23.2)	25	50.0 (53.2)	51	34.0 (40.2)
Oily water	0	0.0	0	0.0	3	6.0 (6.4)	3	2.0 (2.3)

* Due to multiple responses the total percentage exceeds.

** The figures given in the parentheses denote the percentages out of relevant cases.

The changes in the quality of water felt by the respondents could be due to the fact that although water provided through taps is treated but it is stored in huge tanks at various distribution places and may lead to some of the problems mentioned above. The chance of water being polluted while it is transmitted through pipes due to leakages may also cause such problems.

4.2.7 Quality of Lighting in the Kitchen

Quality of lighting in the kitchen was judged in terms of availability of natural and artificial lighting, type and location of artificial light source.

Natural and Artificial Light Sources in the Kitchen

Information on adequacy of natural light in the Kitchen, reasons for non availability of natural light, use of artificial light during day time and types of artificial light sources was gathered from the respondents.

It was found that 68 per cent of the respondents were not getting enough natural light in the kitchen during working hours and only 32 per cent of them reported that they used to get enough natural light in the kitchen during day time. The percentage of respondents who were not getting enough natural light was higher (74 per cent) in commercial cum residential locality and the reason may be that the houses were congested in this locality (Table 4.15).

The reasons given by the respondents for non availability of natural light mainly were that there were no windows (80.3 per cent) and also lack of enough number of windows (15.7 per cent) and improper direction of the windows (12.7 per cent). In industrial cum residential

locality, those who were not getting enough light, all 32 respondents gave the reason that there were no windows in the kitchen. About 65 per cent of the respondents said that they had to make use of artificial source of light during day time whereas, 35 per cent of the respondents said that they could work in day light only. Again the percentage using artificial light during day time was higher (74 per cent) in commercial cum residential locality compared to the other two groups.

Further, information was asked about the use of various types of artificial sources of light and its placement in the kitchen. Various types of light source used were filament lamp, fluorescent lamp and oil lamp (in case of those who did not have electricity at home). The visual comfort depends upon the placement of light source in the room that may be either general at one place in the room or local at the work place which provides more light and comfort to the worker. It was found that more number of respondents used fluorescent lamps and the placement was general in case of 40 per cent of the kitchens and local in 12 per cent of the kitchens. Use of filament lamp as general source was by 35 per cent and as local source (at the work place) was by 10.7 per cent.

Table 4.15 : Natural and Artificial Light Sources

Adequacy of Natural Light and Use of Artificial Light	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Get Enough Natural Light in Kitchen								
No	32	64.0	37	74.0	33	66.0	102	68.0
Yes	18	36.0	13	26.0	17	34.0	48	32.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Reason for Non-availablity of Natural Light*								
No windows	32	64.0 (100.0)	24	48.0 (64.8)	26	52.0 (78.8)	82	54.7 (80.3)**
Lack of enough windows	0	0.0	11	22.0 (29.7)	5	10.0 (15.1)	16	10.7 (15.7)
Improper direction of Windows	0	0.0	10	20.0 (27.0)	3	6.0 (9.0)	13	8.7 (12.7)
Total	32	100.0	37	100.0	33	100.0	102	100.0
Use Artificial Source of Light During Day Time								
Yes	30	60.0	37	74.0	31	62.0	98	65.3
No	20	40.0	13	26.0	19	38.0	52	34.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Sources of Artificial Light Used in Kitchen*								
Filament lamp - General	21	42.0	11	22.0	21	42.0	53	35.3
Filament lamp - Local	5	10.0	7	14.0	4	8.0	16	10.7
Fluorescent lamp - General	17	34.0	29	58.0	14	28.0	60	40.0
Fluorescent lamp - Local	1	2.0	9	18.0	8	16.0	18	12.0
Oil lamp - General	2	4.0	2	4.0			4	2.7
Oil lamp - Local	3	6.0	5	10.0	8	16.0	16	10.7

* Due to multiple responses the total percentage exceeds.

** The figures given in the parentheses denote the percentages out of relevant cases.

Use of fluorescent lamp was higher (58 per cent) in commercial cum residential locality. Oil lamp were also used by few respondents who did not have electricity in their kitchens and it was found that, out of total sample, about 13 per cent of the respondents used oil lamp and the number was higher in residential locality where 8 respondents were using oil lamp in the kitchen as a source of artificial light.

Quality of Natural light and Artificial light in the Kitchen

Quality of natural light was observed on the basis of adequacy of open area in relation to floor space, direction of windows and surrounding facing the kitchen. Quality of artificial light was observed on the basis of type of light source, number of light points and location of light points in the kitchen. Quality of light was described in terms of poor, fair and good lighting (Table 4.16).

It was found that 53.3 per cent of the respondents had poor quality of natural lighting, 30 per cent had good quality of lighting and rest of the respondents had average quality of natural light in the kitchen. Percentage of respondents having poor quality of natural light was higher (66 per cent) in commercial cum residential locality and percentage of respondents having

fair quality of natural light was higher (26 per cent) in industrial cum residential locality in comparison to the other two groups (Table 4.16).

Table 4.16 : Quality of Natural and Artificial Light in the Kitchen

Quality of Light	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Quality of Natural Light in Kitchen								
Poor lighting	21	42.0	33	66.0	26	52.0	80	53.3
Fair lighting	13	26.0	4	8.0	8	16.0	25	16.7
Good lighting	16	32.0	13	26.0	16	32.0	45	30.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Quality of Artificial Light in Kitchen								
Poor lighting	32	64.0	24	48.0	34	68.0	90	60.0
Fair lighting	14	28.0	15	30.0	9	18.0	38	25.3
Good lighting	4	8.0	11	22.0	7	14.0	22	14.7
Total	50	100.0	50	100.0	50	100.0	150	100.0

The data showed that 60 per cent of the respondents among the total sample had poor quality of artificial light in the kitchen, 25.3 per cent had fair quality of artificial light and only 14.7 per cent had good quality of artificial light in the kitchen. Further, it was found that the percentage of respondents was higher (22 per cent) in commercial cum residential locality who had good quality of artificial light as more number of respondents

used fluorescent lamp in commercial cum residential locality compared to the other groups. Among the three groups, lowest number that is, only 8 per cent of respondents in industrial cum residential locality had good quality of artificial light in the kitchen.

4.2.8 Quality of Sound

It is described in terms of various sources in and around the house and intensity of sound realised by the respondents.

Sources of Sound and Intensity of Sound

Various sources of sound realized by the respondents were divided into three groups namely, sound from equipments used in the kitchen both electrical and non- electrical equipments, other sources of sound in the house and sources of sound outside the house which included vehicular and other sources of sound in the street or around the house. The intensity of the sound was described in terms of loud, moderate or soft as perceived by the respondents.

Table - 4.17 : Sources of Sound and Intensity of Sound

Sources of Sound and Intensity of Sound	LOCALITY																					
	Industrial cum residential						Commercial cum residential						Residential						Total			
	L		M		S		L		M		S		L		M		S		L		M		S*	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
I Soundfrom equipment usedin Kitchen																								
a) Non-electrical equipments																								
Pressure Cooker	47	94.0	0	0.0	0	0.0	40	80.0	8	16.0	0	0.0	27	54.0	0	0.0	0	0.0	114	76.0	8	5.3	0	0.0
Stone grinder	50	100.0	0	0.0	0	0.0	49	98.0	0	0.0	0	0.0	49	98.0	0	0.0	0	0.0	148	98.7	0	0.0	0	0.0
Stove	36	72.0	0	0.0	14	28.0	26	52.0	10	20.0	13	26.0	46	92.0	0	0.0	3	6.0	108	72.0	10	6.7	30	20.0
b) Electrical equipments																								
Mixerand grinder	6	12.0	0	0.0	0	0.0	8	16.0	1	2.0	0	0.0	0	0.0	0	0.0	0	0.0	14	9.3	1	0.7	0	0.0
Fan	1	2.0	15	30.0	5	10.0	4	8.0	14	28.0	6	12.0	2	4.0	5	10.0	1	2.0	7	4.7	34	22.7	12	8.0
II Other Sourcesof Soundin the House																								
Running waterin the tap	0	0.0	10	20.0	35	70.0	2	4.0	7	14.0	29	58.0	0	0.0	5	10.0	41	82.0	2	1.3	22	14.7	105	70.0
Dish washing	46	92.0	4	8.0	0	0.0	39	78.0	9	18.0	2	4.0	43	86.0	6	12.0	1	2.0	128	85.3	19	12.7	3	2.0
Washing clothes	42	84.0	8	16.0	0	0.0	24	48.0	26	52.0	0	0.0	39	78.0	11	22.0	0	0.0	105	70.0	45	30.0	0	0.0

(Continued Table 4.17)

Sources of Sound and Intensity of Sound	LOCALITY																					
	Industrial cum residential						Commercial cum residential						Residential						Total			
	L		M		S		L		M		S		L		M		S		L		M		S*	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Talking of people	28	56.0	19	38.0	3	6.0	23	46.0	22	44.0	5	10.0	38	76.0	11	22.0	1	2.0	89	59.3	52	34.7	9	6.0
Moving things / furniture	43	86.0	7	14.0	0	0.0	30	60.0	19	38.0	1	2.0	44	88.0	6	12.0	0	0.0	117	78.0	32	21.3	1	0.7
Banging of doors/ windows	39	78.0	10	20.0	1	2.0	25	50.0	22	44.0	3	6.0	40	80.0	10	20.0	0	0.0	104	69.3	42	28.0	4	2.7
Children making noise	30	60.0	16	32.0	0	0.0	32	64.0	9	18.0	1	2.0	31	62.0	16	32.0	0	0.0	93	62.0	41	27.3	1	0.7
refriger-ator	0	0.0	0	0.0	0	0.0	1	2.0	2	4.0	1	2.0	0	0.0	2	4.0	0	0.0	1	0.7	4	2.7	1	0.7
Water pump/motor	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0	1	2.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.7	1	0.7
Sewing machine	3	6.0	4	8.0	0	0.0	0	0.0	3	6.0	1	2.0	1	2.0	1	2.0	0	0.0	4	2.7	8	5.3	1	0.7
Alarm clock	0	0.0	21	42.0	1	2.0	0	0.0	2	4.0	2	4.0	0	0.0	4	8.0	1	2.0	0	0.0	27	18.0	4	2.7
Door bell	0	0.0	4	8.0	0	0.0	0	0.0	1	2.0	3	6.0	0	0.0	0	0.0	0	0.0	0	0.0	5	3.3	3	2.0
Radio	16	32.0	5	10.0	0	0.0	13	26.0	16	32.0	1	2.0	16	32.0	5	10.0	0	0.0	25	16.7	26	17.3	1	0.7
Television	15	30.0	2	4.0	0	0.0	29	58.0	2	4.0	1	2.0	21	42.0	1	2.0	0	0.0	65	43.3	5	3.3	1	0.7

(Continued...)

(Continued Table 4.17)

Sources of Sound and Intensity of Sound	LOCALITY																					
	Industrial cum residential						Commercial cum residential						Residential						Total			
	L		M		S		L		M		S		L		M		S		L		M		S*	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
III Sources of Sound Outside the House																								
a) Vehicles																								
Light Vehicles	33	66.0	17	34.0	0	0.0	22	44.0	27	54.0	1	2.0	33	66.0	17	34.0	0	0.0	88	58.7	61	40.7	1	0.7
Moderate Vehicles	32	64.0	17	34.0	0	0.0	24	48.0	26	52.0	0	0.0	33	66.0	17	34.0	0	0.0	89	59.3	60	40.0	0	0.0
Heavy Vehicles	17	34.0	8	16.0	0	0.0	15	30.0	7	14.0	1	2.0	15	30.0	3	6.0	0	0.0	47	31.3	18	12.0	1	0.7
Aircraft	2	4.0	0	0.0	0	0.0	11	22.0	11	22.0	0	0.0	8	16.0	7	14.0	0	0.0	21	14.0	18	12.0	0	0.0
Trains	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	14.0	0	0.0	0	0.0	7	4.7	0	0.0	0	0.0
b) Other Sources																								
Children playing in the streets	48	96.0	2	4.0	0	0.0	35	70.0	12	24.0	1	2.0	48	96.0	2	4.0	0	0.0	131	87.3	16	10.7	1	0.7
Music from neighbour's house	42	84.0	2	4.0	0	0.0	31	62.0	6	12.0	0	0.0	39	78.0	7	14.0	0	0.0	112	74.7	15	10.0	0	0.0
Neighbour's pets	10	20.0	3	6.0	0	0.0	6	12.0	0	0.0	0	0.0	7	14.0	4	8.0	0	0.0	23	15.3	7	4.7	0	0.0
Street animals	40	80.0	10	20.0	0	0.0	47	94.0	2	4.0	0	0.0	14	28.0	13	26.0	0	0.0	101	67.3	25	16.7	0	0.0

(Continued..)

(Continued Table 4.17)

Sources of Sound and Intensity of Sound	LOCALITY																					
	Industrial cum residential						Commercial cum residential						Residential						Total			
	L		M		S		L		M		S		L		M		S		L		M		S*	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Vendors	47	94.0	3	6.0	0	0.0	48	96.0	1	2.0	1	2.0	42	84.0	8	16.0	0	0.0	137	91.3	12	8.0	1	0.7
Religious activities	48	96.0	0	0.0	0	0.0	47	94.0	3	6.0	0	0.0	47	94.0	0	0.0	0	0.0	142	94.7	3	2.0	0	0.0
Loudspeaker in the street	46	92.0	0	0.0	0	0.0	47	94.0	2	4.0	0	0.0	26	52.0	0	0.0	0	0.0	119	79.3	2	1.3	0	0.0
Siren from mills	50	100.0	0	0.0	0	0.0	0	0.0	2	4.0	0	0.0	0	0.0	0	0.0	0	0.0	50	33.3	2	1.3	0	0.0
Small scale industrial activities	0	0.0	0	0.0	0	0.0	1	2.0	3	6.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.7	3	2.0	0	0.0
Construction work.	0	0.0	0	0.0	0	0.0	4	8.0	0	0.0	0	0.0	4	8.0	0	0.0	0	0.0	8	5.3	0	0.0	0	0.0

* L = Low, M = Moderate, S = Soft

On the whole, it was found (Table 4.17) that major sources of sound which were loud in intensity were pressure cooker (76 per cent), stone grinder (98.7 per cent), stove (72 per cent), dish washing (85.3 per cent), washing of clothes (70 per cent) talking of people (59.3 per cent), moving of things / furniture (78 per cent), banging of doors / windows (69.3 per cent), children making noise (62 per cent), light vehicles such as scooters, mopeds (58.7 per cent), moderate vehicles such

as rickshaws, cars (59.3 per cent), children playing in the street (87.3 per cent) music from neighbour's house (74.4 per cent), street animals (67.3 per cent) vendors (91.3 per cent), religious activities (94.7 per cent) and loudspeaker in the street (79.3 per cent).

Most of these sources were also perceived by some respondents as moderate intensity of sound and negligible percentage of respondents viewed these sources of sound as soft in intensity. Only the sound of running water was described soft by 70 per cent respondents. Most of the sources of sound and intensity of sound as perceived by the respondents were more or less same irrespective of the locality. Some of the differences were also observed in terms of sources of sound in three localities. In commercial cum residential locality 58 per cent respondents found television as loud source of sound, 26 per cent and 32 per cent of them also found radio as source of sound loud or moderate in intensity, respectively 22 per cent each found air crafts as a source of sound either loud or moderate in intensity. In residential locality, 14 per cent respondents reported that they were affected by loud sound from the trains near their locality. In industrial cum residential locality, all the respondents perceived the loud sound from the sirens from the mills near by their locality.

Thus, it can be concluded that most of the respondents were living in a noisy surroundings facing variety of sources of sound in their daily life (Table 4.17).

4.2.9 Information Regarding Sanitation

This includes information such as use and placement of dust bin, its related problems, problems of insects and pest in the kitchen, drainage facilities in the house and its conditions.

Use of Dust Bin and Related Problems

Almost 77 per cent of the respondents did not use dust bin for the collection of kitchen garbage and only 23 per cent of them were using dust bin. Among the three localities, in residential locality, 84 per cent of the respondents did not use dust bin and in industrial cum residential locality, number of respondents using dust bin was more (30 per cent) compared to other groups (Table 4.18).

Out of those using dust bin, in industrial cum residential locality and in residential locality about 60 per cent were keeping the dust bin in open yard, about 27 per cent were keeping it in the utility area and about 13 per cent were keeping it under the sink in the kitchen. Whereas, in commercial cum residential locality 25

per cent each were keeping dust bin in the kitchen either near the cooking area or under the sink, 33 per cent were keeping the dust bin in the utility area and 17 per cent of the respondents were keeping it in open yard.

On the whole, out of total sample, only 35 respondents were using dust bin and out of that, 45 per cent were using open yard to keep the dust bin, 28.6 per cent used to keep it in utility area and rest were keeping it in the kitchen near cooking area or under the sink (Table 4.18).

Out of these using dust bin, 86 per cent faced problems near the dust bin and 14 per cent did not have any problem near the dust bin. Presence of insects around the dust bin was major problem faced by about 93 per cent respondents followed by dirt around the bin and foul smell near the dust bin by 63 per cent and 30 per cent respondents respectively. On an average 900 grams of kitchen waste was generated per day by the households. In residential locality, average kitchen waste produced per day was higher that is, 1111 grams and was lower in commercial cum residential locality, that is, 683 grams per day, among the three groups.

Table 4.18 : Use of Dust Bin and Related Problems

Use of Dust Bin, Related Problems, Kitchen Waste	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Use Dust Bin for Collection of Kitchen Garbage								
No	35	70.0	38	76.0	42	84.0	115	76.7
Yes	15	30.0	12	24.0	8	16.0	35	23.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Dust Bin is Kept								
Near cooking area	0	0.0	3	6.0 (25.0)	0	0.0	3	2.0 (8.6)**
Under the sink	2	4.0 (13.3)	3	6.0 (25.0)	1	2.0 (12.5)	6	4.0 (17.1)
In the utility area	4	8.0 (26.7)	4	8.0 (33.3)	2	4.0 (25.0)	10	6.7 (28.6)
In the open yard	9	18.0 (60.0)	2	4.0 (16.7)	5	10.0 (62.5)	16	10.7 (45.7)
Total	15	100.0	12	100.0	8	100.0	35	100.0
Face Any Problem with Place of Dust Bin								
Yes	15	30.0 (100.0)	10	20.0 (83.0)	5	10.0 (62.5)	30	20.0 (85.7)
No	0	0.0	2	4.0 (16.7)	3	6.0 (37.5)	5	3.3 (14.3)
Total	15	100.0	12	100.0	8	100.0	35	100.0

(Continued ...)

(Continued Table 4.18)

Use of Dust Bin, Related Problems, Kitchen Waste	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Type of Problems Faced*								
Dirt around the bin	8	16.0 (53.3)	6	12.0 (60.0)	5	10.0 (100.0)	19	12.7 (63.3)
Presence of insects	15	30.0 (100.0)	8	16.0 (80.0)	5	10.0 (100.0)	28	18.7 (93.3)
Foul smell	8	16.0 (53.3)	0	0.0	1	2.0 (20.0)	9	6.0 (30.0)
Kitchen Waste in (gms)								
< = 1000 gm	36	72.0	42	84.0	30	60.0	108	72.0
1001-2000 gm	10	20.0	8	16.0	20	40.0	38	25.3
> 2000 gm	4	8.0	0	0.0	0	0.0	4	2.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean	926.00		683.04		1111.00		906.68	
SD	705.97		418.51		545.42		591.82	

* Due to multiple responses the total percentage exceeds.

** The figures given in the parentheses denote the percentages out of relevant cases.

It was found that most of the respondents dispose of the garbage by throwing it outside while leads to dirty surroundings and spread of diseases through insects. It properly collected, this waste could be turned into manure by giving them proper knowledge and training.

Problems of Insects / Pests

Most of the respondents, that is 97 per cent had problems of insects / pests in their kitchens in all three localities (Table 4.19).

Table 4.19 : Problems of Insects and Pests

Insects and Pests in the Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Problem of Insects/pests in Kitchen								
Yes	48	96.0	48	96.0	49	98.0	145	96.7
No	2	4.0	2	4.0	1	2.0	5	3.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Type of Insects/pests Found in Kitchen*								
Houseflys	35	70.0	32	64.0	46	92.0	113	75.3
Cockroaches	16	32.0	18	36.0	19	38.0	53	35.3
Mosquitoes	41	82.0	38	76.0	43	86.0	122	81.3
Ants	25	50.0	17	34.0	25	50.0	67	44.7
Rats	40	80.0	39	78.0	41	82.0	120	80.0

* Due to multiple responses the total percentage exceeds.

Presence of mosquitoes, rats and houseflies were higher in the kitchen, that is, in 81 per cent, 80 per cent and 75 per cent cases respectively. Ants were found in 45 per cent cases and 35 per cent respondents had problem of cockroaches in their kitchens. The problems of insects/ pests were similar in three localities.

Drainage System in the House

On the whole, 84 per cent of the respondents did not have drainage facility in the kitchen and only 16 per cent had drainage facility in the kitchen (Table 4.20). In industrial cum residential locality only 2 respondents had drainage system in the kitchen whereas, the percentage was higher (32 per cent) in commercial cum residential locality who had drainage facility in the kitchen.

Out of the total sample, 73 per cent had drainage facility in the utility area and 27 per cent of them did not have drainage facility in the utility area. In industrial cum residential locality more number (86 per cent) had drainage facility in the utility area and in residential locality less number that is, 62 per cent had drainage facility in utility area compared to other groups.

Table 4.20 : Drainage System in the House

Drainage System in the House	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Drainage Facility in Kitchen								
No	48	96.0	34	68.0	44	88.0	126	84.0
Yes	2	4.0	16	32.0	6	12.0	24	16.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Drainage Facility in Utility Area								
No	7	14.0	14	28.0	19	38.0	40	26.7
Yes	43	86.0	36	72.0	31	62.0	110	73.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Condition of Drainage System								
Open	15	30.0 (34.9)	8	16.0 (22.2)	9	18.0 (29.0)	32	21.3 (29.1)**
Rusted	0	0.0	1	2.0 (2.8)	0	0.0	1	.7 (.9)
Leaking	8	16.0 (18.6)	3	6.0 (8.3)	3	6.0 (9.7)	14	9.3 (12.7)
Broken	0	0.0	2	4.0	0	0.0 (5.6)	2	1.3
Good	20	40.0 (46.5)	22	44.0 (61.1)	19	38.0 (61.3)	61	40.7 (55.5)
Total	43	100.0	36	100.0	31	100.0	110	100.0

** The figures given in the parentheses denote the percentages out of relevant cases.

In more than little half cases (55 per cent) the condition of drainage was good. In 29 per cent cases the drainage was found open and in 12.7 per cent cases the drainage was leaking. Also in one or two cases it was found rusted or broken (Table 4.20).

4.2.10 Building Materials Used in the Kitchen

Information on materials used for kitchen walls, floor, ceiling, doors, windows, work surface and sink or wash area and storage facilities was recorded as cleaning and appearance in general depends upon building materials. Information regarding colour and texture of walls was also observed as they also affect the light and sound reflections and temperature level in the room. Various building materials of different characteristics have some advantages and disadvantages (Deshpande, 1985; Bari, 1990 and Kumar, 1990).

Materials used for Kitchen Walls

In industrial cum residential locality, 48 per cent of the kitchen had walls made up of bricks and cement plaster, 36 per cent of the kitchen had walls made out of mud and cowdung and rest of the kitchens had walls made up of bricks and mud plaster or only bricks. In commercial cum residential locality majority that is, 66 per cent of the kitchen walls were made up of bricks finished with cement plaster, 22 per cent of the kitchens had walls made up of bricks finished with mud plaster and rest of the kitchens had walls made up of mud and cowdung or only bricks. In residential locality majority that is, 64 per cent of the kitchens had walls made up of

bricks and mud plaster, 22 per cent had brick walls finished with cement plaster and rest of the kitchens had wall of only bricks with no finishing or of mud and cowdung (Table 4.21).

On the whole, out of 150 sample, 45 per cent of the respondents had kitchen walls made up of bricks and cement plaster, 32 per cent of the kitchen walls were made up of bricks and mud plaster, about 17 per cent of the kitchens had walls of mud and cowdung and in 6 per cent cases bricks were used without any finish on it for the kitchen walls. Thus, the data showed that in commercial cum residential locality percentage of respondents having walls made with bricks and cement plaster was higher that is, 66 per cent and was lower that is, 22 per cent in residential locality compared with other two groups. In residential locality kitchen walls of bricks with mud plaster was higher that is, 64 per cent and in commercial cum residential locality, it was lower that is, 22 per cent among the three groups. In industrial cum residential locality the kitchen walls of mud and cowdung was higher (36 per cent) compared to other two groups. Thus, use of mud is common in kuchha and semi-pucca construction; it is heat insulating but has low strength, soaks up water causing cracks and gets dirty due to smoke and dust. Whereas, brick walls with cement plaster gets heated faster but has strength and easy to clean.

Table 4.21 : Materials Used for Kitchen

Material Used for Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Materials Used for Kitchen Walls								
Mud and cowdung	18	36.0	5	10.0	2	4.0	25	16.7
Bricks	3	6.0	1	2.0	5	10.0	9	6.0
Bricks & mud plaster	5	10.0	11	22.0	32	64.0	48	32.0
Bricks & cement plaster	24	48.0	33	66.0	11	22.0	68	45.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Materials Used for Kitchen Floor								
Mud and cowdung	7	14.0	7	14.0	22	44.0	36	24.0
Stones	15	30.0	27	54.0	19	38.0	61	40.7
Tiles	28	56.0	16	32.0	9	18.0	53	35.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Materials Used for Ceiling								
Thatch	0	0.0	0	0.0	2	4.0	2	1.3
Bamboo	4	8.0	9	18.0	6	12.0	19	12.7
Corrugated iron sheets	32	64.0	24	48.0	34	68.0	90	60.0
R.C.C.	14	28.0	17	34.0	4	8.0	35	23.3
CLay tiles	0	0.0	0	0.0	4	8.0	4	2.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Materials Used for Doors								
Wood	42	84.0	39	78.0 (81.3)	42	84.0	123	82.0 (83.1)**
Wood & metal	2	4.0	1	2.0 (2.1)	3	6.0	6	4.0 (4.1)
Metal Sheets	0	0.0	2	4.0 (4.2)	5	10.0	7	4.6 (4.7)
Just Door Frame/opening	6	12.0	6	12.0 (12.5)	0	0.0	12	8.0 (8.1)
Total	50	100.0	48	100.0	50	100.0	148	100.0

(Continued....)

(Continued Table 4.21)

	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Materials Used for Windows' Panes								
Wood	10	20.0 (76.9)	14	28.0 (56.0)	4	8.0 (40.0)	28	18.7 (58.3)**
Wood & Glass	0	0.0	3	6.0 (12.0)	0	0.0	3	2.0 (6.3)
Wire mesh	0	0.0	5	10.0 (20.0)	1	2.0 (10.0)	6	4.0 (12.5)
Metal frame	3	6.0 (23.1)	3	6.0 (12.0)	5	10.0 (50.0)	11	7.3 (22.9)
Total	13	100.0	25	100.0	10	100.0	48	100.0
Materials Used for Work Surface / Centre								
Mud & dung	7	14.0	7	14.0	22	44.0	36	24.0
Wood	1	2.0	1	2.0			2	1.3
Stone	18	36.0	31	62.0	23	46.0	72	48.0
Tiles	24	48.0	8	16.0	5	10.0	37	24.7
Cement slab	0	0.0	3	6.0	0	0.0	3	2.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Sink or Wash Area in Kitchen								
No	45	90.8	17	34.0	44	88.0	106	70.7
Yes	5	10.0	33	66.0	6	12.0	44	29.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Materials Used for Sink Centre*								
Stone	2	4.0 (40.0)	18	36.0 (54.5)	6	12.0 (100.0)	26	17.3 (59.1)
Metal	1	2.0 (20.0)	1	2.0 (3.0)	0	0.0	2	1.3 (4.5)
R.C.C.	4	8.0 (80.0)	25	50.0 (75.8)	2	4.0 (33.3)	31	20.7 (70.5)

* Due to multiple responses the total percentage exceeds.
** The figures given in the parentheses denote the percentages out of relevant cases.

Materials Used for Kitchen Floor

In industrial cum residential locality 56 per cent of the kitchens had floor made up of tiles, 30 per cent of the kitchens had floor made up of stones and 14 per cent of the kitchens had mud and cowdung floor. In commercial cum residential locality, 54 percent of the kitchens had floor of stones, tiles were used in 32 per cent cases and 14 per cent of the kitchens had floor made up of mud and cowdung. In residential locality, 44 per cent of the kitchen floors were made up of mud and cowdung, 38 per cent of the kitchens had floor of stones and 18 per cent had used tiles for the kitchen floor.

Overall, 40.7 per cent had kitchen floor made up of stones, 35.3 per cent of the kitchens had floor finished with tiles and in 24 per cent of the kitchens floor was made up of mud and cowdung (Table 4.21). Thus, in industrial cum residential locality, percentage of use of tiles for floor was higher (56 per cent) which are easy to clean and reflect light. In commercial cum residential locality percentage of use of stones for flooring was higher (54 per cent) which has rough surface and difficult to keep clean. In residential locality more number (44 per cent) of respondents had kitchen floor made up of mud and cowdung among the three groups which is heat insulating but not durable and requires maintainance.

Materials Used for Ceiling

Various materials for ceiling are used to keep out rain, sun and wind and protect the building from the adverse effects of these elements. It was found that use of corrugated iron sheet for ceiling in the kitchen was higher in all the groups that is, 64 per cent in industrial cum residential locality, 48 per cent in commercial cum residential locality and 68 per cent in residential locality. Iron sheets though durable retains heat and not good for hot regions. Other materials were also used in ceiling such as thatch, bamboo, R.C.C. or clay tiles (Table 4.21). On the whole, 60 per cent of the kitchens had ceiling made up of corrugated iron sheet, R.C.C. roof was found in 23 per cent cases, which has poor sound absorbing quality and gets heated faster. In 13 per cent of the kitchens ceiling was made up of bamboo, whereas, in two kitchens thatch roof was found and clay tiles were used in four kitchens for ceiling. Clay tiles help to keep cool but they are not durable; thatch roof absorbs moisture, gives foul smell and does not allow ventillation.

Materials Used for Doors

Overall, in majority of the kitchens that is, 83 per cent cases wooden doors were found and in very few cases wood and metal (4 per cent) and metal sheets (4.7

per cent) were used for doors. In 8 per cent cases it was found that just an opening or door frame was provided but no door was made in kitchen. There was not much variation found regarding materials used for doors in the kitchen in three localities (Table 4.21).

Materials Used for Windows

In industrial locality, out of those having windows in the kitchen, about 77 per cent of the respondents had windows made up of wood and 23 per cent of the respondents had windows made up of metal frame. In commercial cum residential locality, 56 per cent of the respondents had wooden windows in the kitchen, 20 per cent of them had wiremesh windows, 12 per cent each of the respondents had windows made up of wood and glass and metal frame. In residential locality, half of those having windows in the kitchen had metal frame, 40 per cent had wooden windows and rest had wire mesh windows (Table 4.21).

On the whole, 58 per cent of the respondents had kitchen windows made up of wood, about 23 per cent of them had metal frame, in 12.5 per cent cases wiremesh windows were used and in 6.3 per cent cases wood and glass was used for kitchen windows. Thus, use of wooden windows was more in industrial cum residential locality (76.9 per cent), in commercial cum residential locality

56 per cent had wooden windows and use of metal frame was more in residential locality (50 per cent) among the three groups. Glass windows give good day light but if kept closed do not allow air flow whereas, metal frame allows light and ventilation.

Materials used for work surface / center

The data (Table 4.21) showed that use of stones, mud and dung and tiles for the work surface was more and in few cases work surface was made up of wood or cement slab also. Out of total sample, 48 per cent of the respondents had work surface or center made up of stones, in 24.7 per cent cases tiles were used. in 24 per cent cases mud and dung was used for work center. In three cases work surface was made up of cement slab which was found in commercial cum residential locality. Wooden work surface was found in two kitchens one each in industrial cum residential locality and commercial cum residential locality. Further, use of stones was more (62 per cent) in commercial cum residential locality, use of tiles was more (48 per cent) in industrial cum residential locality and use of mud and dung for work surface was more (44 per cent) in residential locality.

Materials Used for Sink or Wash Area in the Kitchens

In industrial cum residential locality, 90 per cent of the respondents did not have provision of sink or wash area in the kitchen, in residential locality 88 per cent of the respondents did not have sink or wash area in the kitchen. Whereas, in commercial cum residential locality 66 per cent of the respondents had provision of sink or wash area in the kitchen and 34 per cent of them did not have sink/wash area in the kitchen. On the whole, 70.7 per cent of the respondents did not have sink / wash area in the kitchen and only 29.3 per cent of them had sink or wash area in the kitchen (Table 4.21).

On the whole, out of those having sink or wash area in the kitchen, it was found that R.C.C., stone or metal or combination of more than one material were used for it. In about 70 per cent cases R.C.C. was used and in 60 per cent cases stones were used for sink / wash area. In two kitchens metal sinks were used, one each in industrial cum residential locality and commercial cum residential locality.

Storage Facility in the Kitchen

This includes information on provision of storage in the kitchen, various types of storage units and materials used for storage units.

Table 4.22 : Storage Facility in the Kitchen

Types of Storage and Materials Used for Storage in the Kitchen	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Provision of Storage Facilities								
Yes	50	100.0	50	100.0	50	100.0	150	100.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Type of Storage Units in Kitchen*								
Wall cabines	4	8.0	2	4.0	1	2.0	7	4.7
Base cabinets	6	12.0	15	30.0	1	2.0	22	14.7
Open shelves on walls	32	64.0	40	80.0	38	76.0	110	73.3
Portable shelves/racks	42	84.0	46	92.0	37	74.0	125	83.3
Cupboards	17	34.0	16	32.0	20	40.0	53	35.3
Materials Used for Storage Units*								
Cement slab	8	16.0	17	34.0	1	2.0	26	17.3
Stones			2	4.0			2	1.3
Wood	35	70.0	37	74.0	47	94.0	119	79.3
Metal	29	58.0	45	90.0	28	56.0	102	68.0
Wiremesh	7	14.0	6	12.0	10	20.0	23	15.3

* Due to multiple responses the total percentage exceeds.

Provision of storage facility was found in all the kitchens in all three groups. It was also found that in most of the kitchens there were more than one type of storage units used. On the whole, 83.3 per cent of the respondents used portable shelves / racks, 73.3 per cent of them used open shelves on the walls, 35.3 per cent of them had provision of cupboards to store the things in

the kitchen. In few cases base cabinets (14.7 per cent) and wall cabinets (4.7 per cent) were also used as storage units in the kitchens. There were not many variations found in the use of types of storage units in three localities (Table 4.22).

Materials Used for Storage Units

In industrial cum residential locality, in 70 per cent cases wooden storage units were used, in 58 per cent cases metal was used for storage units. Cement slab (16 per cent) and wire mesh (14 per cent) were also used as materials for storage units. In commercial cum residential locality, 90 per cent of the respondents had storage units made up of metal, 74 per cent of them had wooden storage, 34 per cent of the kitchen had provision of cement slabs as open shelves on the walls and few of them had wiremesh (12 per cent) and stones (4 per cent) used for storage units. In residential locality, 94 per cent of the respondents had wooden storage, 56 per cent had metal storage and rest of them had wiremesh (20 per cent) and cement slab (2 per cent) for storage units (Table 4.22). On the whole, in majority of the cases wooden (79.3 per cent) and metal (68 per cent) storage units were used. Few respondents had provision of cement slab (17 per cent) wiremesh (15.3 per cent) used for storage units in the kitchen. And two respondents had storage units made up of stones.

Colour of the Kitchen Walls

Colour of the walls affect the light reflection and appearance in general, provides protection to the surface of the structure and add decoration if rightly done. On the whole, it was found that in 46.7 per cent of the kitchens walls had medium colours, in 27.3 per cent of the kitchens walls had dark colours and in 26 per cent of the kitchens walls had light colours (Table 4.23). White and light colours absorbs less heat and improves illumination but gets dirty easily and requires frequent cleaning. Medium and dark colour absorbs heat and affects illumination.

Further, it was found that in industrial cum residential locality less number (34 per cent) of the respondents had walls with medium colours and more number (36 per cent) of respondents had walls of light colours compared to other two groups.

Texture of the Kitchen Walls

Texture of the kitchen walls depends upon the material used for construction of walls and finish applied on it. Texture of the walls affect the cleaning and appearance in general as rough surface catches dust and is difficult to clean whereas, smooth surface is easy to clean.

Table 4.23 : Colour & Texture of Kitchen Walls

Colour and Texture of Kitchen Walls	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Colour of Kitchen Walls								
Dark	15	30.0	11	22.0	15	30.0	41	27.3
Medium	17	34.0	26	52.0	27	54.0	70	46.7
Light	18	36.0	13	26.0	8	16.0	39	26.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Texture of Kitchen Walls								
Very rough	14	28.0	15	30.0	23	46.0	52	34.7
Slightly rough	7	14.0	10	20.0	13	26.0	30	20.0
Medium	7	14.0	12	24.0	2	4.0	21	14.0
Slightly smooth	18	36.0	10	20.0	12	24.0	40	26.7
Very smooth	4	8.0	3	6.0	0	0.0	7	4.7
Total	50	100.0	50	100.0	50	100.0	150	100.0

On the whole, in 34.7 per cent cases the texture of the kitchen walls was very rough, in 26.7 per cent cases it was slightly smooth, in 20 per cent of the kitchen walls texture was slightly rough, in 14 per cent cases it was medium and 4.7 per cent of the kitchen walls had very smooth finish (Table 4.23). In residential locality more number (46 per cent) of the respondents had very rough textured kitchen walls and in industrial cum residential locality more number (36 per cent) of the respondents had slightly smooth textured walls compared to other two

groups. On the whole the texture of walls was somewhat coarse which makes it difficult to keep clean and gives a dirty appearance.

4.2.11 Appearance of the Kitchen in General, Overall Appearance of the Kitchen and its Surrounding

This was based on the condition of the walls floors and ceilings of the kitchen and conditions of surroundings of the house as observed by the investigator.

Overall Appearance of Kitchen in General

It was observed that overall appearance of the kitchens in industrial cum residential locality was fairly clean in 46 per cent cases, clean in 40 per cent cases and dirty in 14 per cent cases. In commercial cum residential locality 56 per cent of the kitchens were fairly clean, 30 per cent of the kitchens were dirty and only 14 per cent of the kitchens were clean. In residential locality, 62 per cent of the respondents had fairly clean kitchens, 22 per cent had dirty kitchens and only 16 per cent had clean kitchens.

Out of total sample (Table 4.29), 54.7 per cent of the kitchens were found fairly clean, 23.3 per cent of the kitchens were clean and 22 per cent of the kitchens were dirty in appearance.

Table 4.24 : Appearance of Kitchen and Surroundings of the House

Overall Appearance of the Kitchen and Overall Appearance of the Surrounding of the House	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Overall Appearance of the Kitchen								
Dirty	7	14.0	15	30.0	11	22.0	33	22.0
Fairly clean	23	46.0	28	56.0	31	62.0	82	54.7
Clean	20	40.0	7	14.0	8	16.0	35	23.3
Total	50	100.0	50	100.0	50	100.0	150	100.0
Overall Appearance of Surrounding of the House								
Dirty	28	56.0	22	44.0	18	36.0	68	45.3
Fairly clean	19	38.0	23	46.0	18	36.0	60	40.0
Clean	3	6.0	5	10.0	14	28.0	22	14.7
Total	50	100.0	50	100.0	50	100.0	150	100.0

Overall Appearance of the Surroundings of the House

Overall appearance of the surroundings of the house was observed by the investigator and it was found that on the whole, 45.3 per cent of the houses had dirty surroundings, 40 per cent of them had fairly clean surroundings and only 14.7 per cent of the houses had clean surroundings (Table 4.24).

Further, it was found that out of three groups, in industrial cum residential locality, more number that is, 56 per cent of the respondents had dirty surroundings and only 6 per cent of them had clean surroundings. In residential locality more number that is, 28 per cent of the respondents had clean surroundings as compared to other two groups. Such a condition existed because there was lack of proper drainage and waste disposal system in these localities.

4.2.12 Quality of Micro Environment

Quality of micro environment of household kitchen was measured in terms of poor, average and good quality by giving scores to various aspects of micro environment such as, type of house and kitchen, size of the kitchen, orientation of the kitchen, ventilation and air, water, light, sound, sanitation, colour and texture of kitchen walls, overall appearance of kitchen and surrounding of the house (Appendix V). It was found that overall obtained scores ranged between 71 to 139 with mean=99.29 and SD=12.18 (Table 4.25). Further, it showed that out of total sample, 65.3 per cent of the respondents had average quality of micro environment, 18.7 per cent of them had poor quality of micro environment and only 16 per cent of respondents lived in good quality of micro environment.

Table 4.25 : Quality of Micro Environment

Quality of Micro Environment	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Poor (37 - 86)	6	12.0	9	18.0	13	26.0	28	18.7
Average (87-111)	37	74.0	27	54.0	34	68.0	98	65.3
Good (112-156)	7	14.0	14	28.0	3	6.0	24	16.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean	100.44		102.56		94.86		99.29	
SD	10.87		14.31		9.77		12.18	

While comparing three groups, it was found that respondents living in commercial cum residential locality had the highest mean score (102.56) for quality of micro environment. A little less than that (100.44) was found in industrial cum residential locality and respondents living in residential locality had the least mean score (94.86) for quality of micro environment. The reasons could be that they had lowest income among these groups, more than half of the respondents were illiterate. Most of the respondents were living in semi-pucca houses with majority of the kitchens without windows and poor lighting. More number of respondents had lower knowledge and followed poor practices influencing quality of micro environment.

Section 3

4.3 Extent of Exposure of the Respondents to Media in Relation is various Aspects of Environment.

This section of the chapter deals with the information on the respondents exposure to various media, extent of exposure per day and the information they get on various aspects of environment form various sources. The media included were -

(a) Audio visual media : television, movies, advertisement films

(b) Audio media : radio

(c) Print media : news paper, magazines, poster and booklets, books

(d) Other : relatives, friends.

Various aspects of information regarding environment included importance of sanitation and hygiene, sources of pollution, effects of pollution, preventive measures, conservation of resources, governmental laws pertaining to environment and need for education on environment. The respondents were asked which media they were exposed to and the extent to which they were exposed to these media per day. Further they were asked whether they got any information on various aspects of environment from any of the media they were exposed to.

Table 4.26 : Information on Media and Exposure per day

Media and Exposure per day	Locality																	
	Industrial cum residential (n=50)						Commercial cum residential (n=50)						Residential (n=50)				Total (n=150)					
	Less than half an hour		Half an hour to one hr.		More than one hour		Less than half an hour		Half an hour to one hr.		More than one hour		Less than half an hour		Half an hour to one hr.		More than one hour		Less than half an hour		Half an hour to one hr.		More than one hour	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Medias																								
I Audio Visual Media																								
Television	13	26.0	11	22.0	0	0.0	22	44.0	15	30.0	7	14.0	12	24.0	11	22.0	2	4.0	47	31.3	37	24.7	9	6.0
Movies	6	12.0	6	12.0	0	0.0	8	16.0	8	16.0	1	2.0	9	18.0	7	14.0	0	0.0	23	15.3	21	14.0	1	0.7
Ad Films	9	18.0	0	0.0	0	0.0	2	4.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	11	7.3	0	0.0	0	0.0
II Audio Media																								
Radio	10	20.0	1	2.0	0	0.0	25	50.0	0	0.0	0	0.0	10	20.0	0	0.0	0	0.0	45	30.0	1	0.7	0	0.0
III Print media																								
News paper	14	28.0	0	0.0	0	0.0	14	28.0	0	0.0	0	0.0	15	30.0	0	0.0	0	0.0	43	28.7	0	0.0	0	0.0
Magazines	1	2.0	0	0.0	0	0.0	10	20.0	0	0.0	0	0.0	3	6.0	0	0.0	0	0.0	14	9.3	0	0.0	0	0.0
Poster and Booklets	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Books	5	10.0	0	0.0	0	0.0	4	8.0	0	0.0	0	0.0	1	2.0	0	0.0	0	0.0	10	6.7	0	0.0	0	0.0
IV Others																								
Relatives	39	78.0	0	0.0	0	0.0	24	48.0	0	0.0	0	0.0	36	72.0	0	0.0	0	0.0	99	66.0	0	0.0	0	0.0
Friends	36	72.0	0	0.0	0	0.0	21	42.0	2	4.0	0	0.0	26	52.0	0	0.0	0	0.0	83	55.3	2	1.3	0	0.0

It was found that overall 31 per cent of the respondents were watching television for about less than half an hour. Whereas, about one-fourth respondents watched it for half an hour to one hour per day. About 30 per cent of the respondents used to see movies on T.V. Almost equal percentage of respondents were exposed to it for less than half an hour and half an hour to one hour per day (Table - 4.26). Only 7.3 per cent of the respondents used to see advertisement films for about less than half an hour per day. About 30 per cent of them were listening to the radio for less than half an hour per day. Only 28.7 per cent of them used to read newspaper whereas, very few (9.3 per cent) used to read magazines; 6.7 per cent used to read books and average exposure to this media was less than half an hour per day. Exposure to other sources of information was higher among all the listed sources. About 66 per cent of the respondents were exposed to relatives and 55 per cent were exposed to friends for about less than an hour per day (Table 4.26).

Respondents were asked whether they got any information pertaining to various aspects of environment through exposure to various media. It was found that only 28 per cent of them got some information on various aspects of environment (Table 4.27).

Table 4.27 : Information on Various Aspects of Environment from the Meida.

Information on various aspects of environment	Total (n= 150) f	%
Information on environment		
No	108	72.0
Yes	42	28.0
Total	150	100.0
Various aspect of environment*		
Importance of sanitation and hygiene	14	9.3 (50.0)**
Sources of pollution	11	7.3 (39.3)
Effects of pollution	11	7.3 (39.3)
Preventive measures	4	2.7 (14.3)
Conservation of resources	5	3.3 (17.8)
Governmental laws	1	0.7 (3.5)
Need for education on environment	4	2.7 (14.3)

* Due to multiple responses the total percentage exceeds.

** The figures given in the parentheses denote the percentages out of relevant cases.

Further, it was found that out of those who received any information on various aspects of environment, 50 per cent of them got information on importance of sanitation and hygiene, 39.3 per cent each got information on sources of pollution and effects of pollution, only 17 per cent knew about conservation of resources, 14.3 per cent each got information on preventive measures and need for education on environment. Only one respondents got some information regarding governmental laws on environment through these media.

The extent of respondent's exposure to media was measured in terms of low, medium or high level of exposure by ascribing scores. The scoring pattern was formulated as follows :

Exposure / day	Score
Less than half an hour	1
Half an hour to one hour	2
More than half an hour	3

It was found that overall obtained scores ranged between one and 16 with a mean of 4.76 (Table - 4.28).

Table 4.28 : Extent of Exposure to Media by Respondents in Relation to Various Aspects of Environment

Extent of Exposure to Media	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Low (1)	11	22.0	1	2.0	11	22.0	23	15.3
Medium (2-8)	35	70.0	39	78.0	31	62.0	105	70.0
High (9-30)	4	8.0	10	20.0	8	16.0	22	14.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean		4.66		5.44		4.78		4.96
SD		2.92		3.28		3.63		3.29

It was observed that 70 per cent of the respondents had medium level of exposure to media, 15.3 per cent of them had low level of exposure to media and only 14.7 per cent of the respondents had high level of exposure to media regarding various aspects of environment. Number of respondents having medium level of exposure to media was less in residential locality compared to the other two groups.

Section 4

4.4 Level of Knowledge of the Respondents Regarding Quality of Environment

To measure the level of knowledge of respondents regarding quality of environment a knowledge scale was developed and standardized (Appendix - I). This was a summated rating scale. The test contained statements pertaining to various aspects such as; problems of air, water and noise pollution, causes and consequences of pollution, control of pollution at micro level, quality of ventilation and lighting, effects of building materials on micro environment, use of fuels, reuse of resources and diseases caused due to pollution. The respondents were asked to state whether each of the statement was "correct" or "incorrect". All the right answers were given a score of `2' and wrong answers were given socre of `1'. The level of knowledge was measured in terms of low, medium or high level of knowledge on the basis of summated scores obtained by the respondents. The obtained scores ranged between 49 and 69 with mean of 56.99 (Table 4.29). Majority (68.7 per cent) of the respondents possessed medium level of knowledge regarding quality of environment in general. More percentage of respondents (20.7 per cent) had higher level of knowledge than those who had lower level of knowledge (10.7 per cent).

Table 4.29 : Level of Knowledge of the Respondents Regarding the Quality of Environment

Level of Knowledge	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Low (42-51)	4	8.0	3	6.0	9	18.0	16	10.7
Medium (52-63)	38	76.0	36	72.0	29	58.0	103	68.7
High (64-84)	8	16.0	11	22.0	12	24.0	31	20.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean	56.56		57.76		56.66		56.99	
SD	4.56		5.20		6.08		5.31	

Majority of the respondents from industrial cum residential and commercial cum residential had medium level of knowledge. In case of residential locality it was observed that nearly one-fourth of the respondents had high level of knowledge and about 58 per cent had medium level of knowledge, that is, less than the other two groups. More number of respondents in residential locality had low level of knowledge compared to other two groups.

The mean score on knowledge scale obtained by respondents from commercial cum residential locality was the highest among the three localities (57.76). The mean score obtained by the respondents from industrial cum residential locality and residential locality were almost equal (Table 4.29).

Section 5

4.5 Practices Followed by the Respondents Which Affect the Quality of Micro Environment in the Kitchen

This section of the chapter includes information on practices followed by the respondents which affect the quality of micro environment in the kitchen. The practices referred to the method of doing certain activities such as water storage and purification methods; waste disposal methods; insects and pests control; sound control and cleaning of the kitchen. On the basis of scores given to each activity, the practices were categorised as poor, fair or good (Vide Chapter III). The total scores ranged between 46 to 82 with mean of 63.25 (Table 4.30).

It was found that majority of the respondents (62 per cent) followed fair practices, 19.3 per cent followed poor practices and 18.7 per cent of the respondents followed good practices which affected the quality of environment in the kitchen.

Table : 4.30 : Practices Followed by the Respondents Which Affect the Quality of Micro Environment in the Kitchen.

Practices Followed by the Respondents	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Poor (26-54)	5	10.0	11	22.0	13	26.0	29	19.3
Fair (55-71)	33	66.0	27	54.0	33	66.0	93	62.0
Good (72-112)	12	24.0	12	24.0	4	8.0	28	18.7
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean	64.92		63.92		60.90		63.25	
SD	6.83		8.70		7.25		7.78	

On comparing the practices of the respondents from various localities, it was observed that one-fourth of the respondents from industrial cum residential locality and commercial cum residential locality each followed good practices. In case of residential locality very few that is, only 8 percent followed good practices whereas, 26 per cent of the respondents followed poor practices. In case of industrial cum residential locality very few that is, 10 per cent of the respondents followed poor practices.

Comparing the mean scores obtained by the respondents on the practices showed that it was the highest among the respondents from industrial cum residential locality and the lowest among the respondents from residential locality (Table 4.30).

Section 6

4.6 Health Problems Experienced by the Respondents and their Family Members.

This section of the chapter includes information on health problems faced by the respondents while working in the kitchen and also information on frequency with which the adult family members and children were falling sick.

4.6.1 Health Problems Faced by the Respondents While Working in the Kitchen

Various health problems arise due to micro environment of the work place. In the present study it was found that wide majority (78 per cent) of the respondents suffered from eye irritation most of the time while working in the kitchen. About one-third of the respondents had problems of sneezing most of the times while working in the kitchen. About 27 per cent respondents sometimes had the problems of headache while working in the kitchen. It was found that more than 82

per cent respondents never faced the problems of fatigue, nausea, excitement, skin irritation and effects on visibility while working in the kitchen.

Table 4.31 : Health Problems Faced by the Respondents While Working in the Kitchen

Health problems faced by respondents while working in the kitchen *	Locality																					
	Industrial cum residential (n=50)						Commercial cum residential (n=50)						Residential (n=50)						Total (n=150)					
	M		S		N		M		S		N		M		S		N		M		S		N	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sneezing	9	18.0	13	26.0	28	56.0	27	54.0	9	18.0	14	28.0	14	28.0	17	34.0	19	38.0	50	33.3	39	26.0	61	40.7
Cough	4	8.0	8	16.0	38	76.0	25	50.0	9	18.0	16	32.0	6	12.0	19	38.0	25	50.0	35	23.3	36	24.0	79	52.7
Headache	5	10.0	13	26.0	32	64.0	16	32.0	13	26.0	21	42.0	6	12.0	15	30.0	29	58.0	27	18.0	41	27.3	82	54.7
Nausea	3	6.0	1	2.0	46	92.0	5	10.0	6	12.0	39	78.0	3	6.0	6	12.0	41	82.0	11	7.3	13	8.7	126	84.0
Fatigue	3	6.0	1	2.0	46	92.0	5	10.0	8	16.0	37	74.0	3	6.0	6	12.0	41	82.0	11	7.3	15	10.0	124	82.7
Excitement	5	10.0	1	2.0	44	88.0	5	10.0	1	2.0	44	88.0	3	6.0	8	16.0	39	78.0	13	8.7	10	6.7	127	84.7
Eye irritation	32	64.0	14	28.0	4	8.0	43	86.0	3	6.0	4	8.0	42	84.0	3	6.0	5	10.0	117	78.0	20	13.3	13	8.7
Effects on visibility	4	8.0	0	0.0	46	92.0	7	14.0	2	4.0	41	82.0	2	4.0	0	0.0	48	96.0	13	8.7	2	1.3	135	90.0
Skin irritation	4	8.0	0	0.0	46	92.0	8	16.0	0	0.0	42	84.0	3	6.0	1	2.0	46	92.0	15	10.0	1	0.7	134	89.3

* Due to multiple responses the total percentages exceeds.

** M - Most of the time
S - Sometimes
N - Never

While comparing the problems faced by the respondents in the three localities, it was observed that, majority of the respondents faced the problem of eye irritation most of the time. Highest percentage of respondents (86 per cent) from commercial cum residential locality faced this problem while working in the kitchen. More than half of the respondents from commercial cum residential locality faced the problems of cough and sneezing.

Thus, eye irritation emerged as the main problem faced most of the time by the respondents followed by sneezing and coughing while working in the kitchen (Table 4.31). Because the quality of ventilation was poor, the fumes from various fuels led to above health problems to the respondents.

4.6.2 Health Problems Faced by Adult Family Members

A probe was made into the health problems faced by adult family members in terms of frequency with which they suffered from various diseases caused mainly by air and water pollution. It was observed that 80 per cent of adult family members suffered from cold, 66 percent from bronchitis and 61 per cent from fever sometimes. None of the adult family members faced the problems of typhoid, influenza, cholera, jaundice, tonsillitis and guinea worms (Table 4.32). Similar observations were made on comparing the sample from three localities.

Table 4.32 : Frequency With Which the Adult Family Members Were Falling Sick

Various diseases*	Locality																					
	Industrial cum residential (n=50)						Commercial cum residential (n=50)						Residential (n=50)						Total (n=150)					
	M		S		N		M		S		N		M		S		N		M		S		N	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Cold	2	4.0	46	92.0	2	4.0	2	4.0	36	72.0	12	24.0	7	14.0	38	76.0	5	10.0	11	7.3	120	80.0	19	12.7
Bronchitis	1	2.0	35	70.0	14	28.0	1	2.0	31	62.0	18	36.0	5	10.0	33	66.0	12	24.0	7	4.7	99	66.0	44	29.3
Fever	0	0.0	33	66.0	17	34.0	1	2.0	30	60.0	19	38.0	4	8.0	29	58.0	17	34.0	5	3.3	92	61.3	53	35.3
Diarrhoea	0	0.0	7	14.0	43	86.0	0	0.0	14	28.0	36	72.0	0	0.0	12	24.0	38	76.0	0	0.0	33	22.0	117	78.0
Vomitting	0	0.0	5	10.0	45	90.0	0	0.0	14	28.0	36	72.0	0	0.0	12	24.0	38	76.0	0	0.0	31	20.7	119	79.3
Dysentery	0	0.0	1	2.0	49	98.0	2	4.0	10	20.0	38	76.0	1	2.0	7	14.0	42	84.0	3	2.0	18	12.0	129	86.0
Malaria	0	0.0	1	2.0	49	98.0	2	4.0	6	12.0	42	84.0	2	4.0	7	14.0	41	82.0	4	2.7	14	9.3	132	88.0
Typhoid	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Influenza	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Cholera	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Jaundice	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Tonsillitis	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Guinea worms	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Ring worms	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	50	100.0	0	0.0	0	0.0	150	100.0
Eczema	0	0.0	0	0.0	50	100.0	2	4.0	0	0.0	48	96.0	0	0.0	0	0.0	50	100.0	2	1.3	0	0.0	148	98.7
Asthama	1	2.0	2	4.0	47	94.0	1	2.0	4	8.0	45	90.0	3	6.0	1	2.0	46	92.0	5	3.3	7	4.7	138	92.0

* Due to multiple responses the total percentages exceeds.

** M - Most of the time
S - Sometimes
N - Never

4.6.3 Health Problems Faced by Children

Information regarding health problems faced by children was collected in terms of frequency with which the children suffered due to various diseases caused mainly by air and water pollution. It was observed that 59 per cent of the children had cold most of the time and more than half of the children suffered from bronchitis most of the time. One- third of children suffered from diarrhoea and little more than that (35 per cent) suffered from fever most of the time. Nearly 30 per cent suffered from vomitting most of the time, whereas 34 per cent suffered from this problem only sometimes. It was found that almost all the children never suffered from influenza, guinea worms, Cholera and typhoid. Whereas 93 and 87 per cent children never suffered from jaundice and tonsillitis respectively. Not a single child was found suffering from ring worms, eczema and asthama.

On comparing the data in three localities it was observed that in residential locality, 79 per cent and 70.8 per cent children suffered from cold and bronchitis most of the times respectively. Whereas, these complaints were found most of the time in 56 and 44 per cent children respectively in commercial cum residential

Table 4.33 : Frequency With Which the Children Falling Sick

Children falling sick due to diseases*	Locality																							
	Industrial cum residential (n=43)						Commercial cum residential (n=41)						Residential (n=48)						Total (n=132)					
	M		S		N		M		S		N		M		S		N		M		S		N***	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Cold	17	34.0 (39.5)	20	40.0 (46.5)	6	12.0 (14.6)	23	46.0 (56.0)	14	28.0 (34.1)	4	8.0 (9.7)	38	76.0 (79.1)	8	16.0 (16.6)	2	4.0 (4.1)	78	52.0 (59.0)	42	28.0 (31.8)	12	8.0 (9.0**)
Bronchitis	17	34.0 (39.5)	20	40.0 (46.5)	6	12.0 (14.6)	18	36.0 (43.9)	13	26.0 (31.7)	10	20.0 (24.3)	34	68.0 (70.8)	11	22.0 (22.9)	3	6.0 (6.2)	69	46.0 (52.2)	44	29.3 (33.3)	19	12.7 (14.3)
Fever	20	40.0 (46.5)	18	36.0 (41.8)	5	10.0 (11.6)	7	14.0 (17.0)	21	42.0 (51.2)	13	26.0 (31.7)	20	40.0 (41.6)	19	38.0 (39.5)	9	18.0 (18.7)	47	31.3 (35.6)	58	38.7 (43.9)	27	18.0 (20.4)
Diarrhoea	13	26.0 (30.2)	9	18.0 (20.9)	21	42.0 (48.8)	12	24.0 (27.9)	21	42.0 (51.2)	8	16.0 (19.5)	19	38.0 (39.5)	18	36.0 (37.5)	11	22.0 (22.5)	44	29.3 (33.3)	48	32.0 (36.3)	40	26.7 (30.2)
Vomitting	12	24.0 (27.9)	8	16.0 (18.6)	23	46.0 (53.4)	10	20.0 (24.3)	20	40.0 (48.7)	11	22.0 (26.8)	17	34.0 (35.4)	17	34.0 (35.4)	14	28.0 (29.1)	39	26.0 (29.5)	45	30.0 (34.0)	48	32.0 (36.3)
Dysentery	6	12.0 (14.6)	6	12.0 (14.6)	31	62.0 (72.1)	8	16.0 (19.5)	8	16.0 (19.5)	25	50.0 (60.9)	15	30.0 (31.2)	18	36.0 (37.5)	15	30.0 (31.2)	29	19.3 (21.9)	32	21.3 (24.2)	71	47.3 (53.7)
Malaria	1	2.0 (2.3)	12	24.0 (27.9)	30	60.0 (69.7)	4	8.0 (9.7)	19	38.0 (46.3)	18	36.0 (43.9)	7	14.0 (14.5)	21	42.0 (43.7)	20	40.0 (41.6)	12	8.0 (9.0)	52	34.7 (39.3)	68	45.3 (51.5)
Typhoid	0	0.0 (0.0)	3	6.0 (6.9)	40	80.0 (93.0)	0	0.0 (0.0)	1	2.0 (2.4)	40	40.0 (97.5)	0	0.0 (0.0)	0	0.0 (0.0)	48	96.0 (100.0)	0	0.0 (0.0)	4	2.7 (3.0)	128	85.3 (96.6)
Influenza	0	0.0 (0.0)	0	0.0 (0.0)	43	86.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	41	82.0 (100.0)	0	0.0 (0.0)	1	2.0 (2.0)	47	94.0 (97.9)	0	0.0 (0.0)	1	0.7 (0.7)	131	87.3 (99.2)
Cholera	0	0.0 (0.0)	0	0.0 (0.0)	43	86.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	41	82.0 (100.0)	0	0.0 (0.0)	2	4.0 (4.1)	46	92.0 (95.8)	0	0.0 (0.0)	2	1.3 (1.5)	130	86.7 (98.4)
Jaundice	0	0.0 (0.0)	2	4.0 (4.6)	41	82.0 (95.3)	0	0.0 (0.0)	1	2.0 (2.4)	40	97.5 (97.5)	0	0.0 (0.0)	5	10.0 (10.4)	43	86.0 (89.5)	0	0.0 (0.0)	8	5.3 (6.0)	124	82.7 (93.9)
Tonsillitis	0	0.0 (0.0)	1	2.0 (2.3)	42	84.0 (97.6)	0	0.0 (0.0)	7	14.0 (17.0)	34	68.0 (82.9)	0	0.0 (0.0)	8	16.0 (16.6)	40	80.0 (83.3)	0	0.0 (0.0)	16	10.7 (12.1)	116	77.3 (87.8)

(Continued ....)

(Continued Table 4.33)

Children falling sick due to diseases*	Locality																					
	Industrial cum residential (n=43)						Commercial cum residential (n=41)						Residential (n=48)						Total (n=132)			
	M		S		N		M		S		N		M		S		N		M		S		N	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Guinea worms	0	0.0 (0.0)	0	0.0 (0.0)	43	86.0 (100.0)	0	0.0 (0.0)	1	2.0 (2.4)	40	80.0 (97.5)	0	0.0 (0.0)	0	0.0 (0.0)	48	96.0 (100.0)	0	0.0 (0.0)	1	0.7 (0.7)	131	87.3 (99.2)
Ring worms	0	0.0 (0.0)	0	0.0 (0.0)	43	86.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	41	82.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	48	96.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	132	88.0 (100.0)
Eczema	0	0.0 (0.0)	0	(0.0)	43	86.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	41	82.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	48	96.0 (100.0)	0	0.0 (0.0)	00	0.0 (0.0)	132	88.0 (100.0)
Asthama	0	0.0 (0.0)	0	0.0 (0.0)	43	86.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	41	82.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	48	96.0 (100.0)	0	0.0 (0.0)	0	0.0 (0.0)	132	88.0 (100.0)

* Due to multiple responses the total percentage exceeds.

** The figure given in the parentheses denote the percentages out of relevant cases

*** M - Most of the time
S - Sometimes
N - Never

locality. In industrial cum residential locality, 46.5 per cent children suffered from cold and bronchitis only some times but suffered from fever most of the time (Table 4.33). About 6 per cent children suffered from jaundice and only 1.5 per cent suffered from Cholera. Thus, cold, bronchitis and fever emerged as the diseases occurring in children most of the time.

4.6.4 Other Diseases Caused to the Respondents

It was thought essential to find out diseases other than those caused mainly by water and air pollution from which the respondents suffered. Only 14.7 per cent of the respondents had the problem of blood pressure. None of the respondents suffered from T.B. or Cancer (Table 4.34).

Table 4.34 : Other Diseases Caused to Respondents

Diseases caused to Respondents	Locality						Total	
	Industrial cum residential (n = 50)		Commercial cum residential (n = 50)		Residential (n = 50)		(n = 150)	
	f	%	f	%	f	%	f	%
Blood Pressure	8	16.0	5	10.0	9	18.0	22	14.7
TB	0	0.0	0	0.0	0	0.0	0	0.0
Cancer	0	0.0	0	0.0	0	0.0	0	0.0

4.6.5 Health Problems Experienced by the Respondents

The level of health problems experienced by the respondents was assessed by ascribing scores to the frequency with which they suffered from various health problems while working in the kitchen. The scoring pattern was as follows :

Frequency of facing the health problems	Scores
Most of the time	1
Sometimes	2
Never	3

The possible score ranged from 10 to 30. The obtained scores ranged between 12 and 28 with a mean of 22.30 (Table 4.35).

Table 4.35 : The Level of Health Problems Experienced by the Respondents

The Level of Health Problems Experienced by Respondents	Locality						Total	
	Industrial cum residential		Commercial cum residential		Residential			
	f	%	f	%	f	%	f	%
Poor (10-15)	4	8.0	6	12.0	2	4.0	12	8.0
Average (16-28)	46	92.0	44	88.0	48	96.0	138	92.0
Good (29-30)	0	0.0	0	0.0	0	0.0	0	0.0
Total	50	100.0	50	100.0	50	100.0	150	100.0
Mean	23.40		20.68		22.82		22.30	
SD	6.48		6.14		4.85		5.94	

It was observed that a wide majority (92 per cent) of the respondents had average level of health problems. Only 8 per cent of the respondents had poor level of health problems whereas, none of the respondents had good level of health problems. Similar observations were made on comparing the level of health problems experienced by the respondents from various localities.

Section VII

4.7 Results of Experimental Work

To access the micro environmental quality of household kitchens, the experiments were conducted on certain aspects of environment in terms of :

4.7.1 Air analysis

4.7.2 water analysis

4.7.3 Sound levels

4.7.4 Temperature levels

4.7.5 Illumination levels

4.7.1 Air Analysis

Air analysis was carried out to determine the quality of air by measuring level of selected pollutants in the indoor air. For the present study the level gaseous pollutants like Carbon Monoxide (CO), Sulfur Dioxide (SO_2) and Nitrogen Dioxide (NO_2) were measured with the use of Technovation Multi Gas Monitor (vide chapter III).

Average of three readings for each pollutants was recorded in data sheet for the discussion. Out of 150 sample, 92.7 per cent of the respondents were using kerosene daily as their main fuel for cooking along with the combination of other fuels such as wood, coal, cowdung cake, crop residue and wood sgrap used either

daily or occasionally. In 11 kitchens wood was used daily as main fuel (in 2, 1 and 8 kitchens in industrial cum residential locality, commercial cum residential locality ad residential locality respectively). Rest of the fuels were used by less than 10 per cent of the respondents. Thus, air quality analysis was done for kerosene in 139 cases and for wood in 11 cases only.

Table 4.36 : Air Analysis Where Kerosene is Used as Main Fuel (Frequency and Percentage Distribution of Respondents by Recommended Values)

Concentration of Pollutants (ppm)	Locality						Total (n=139)	
	Industrial cum residential (n=48)		Commercial cum residential (n=49)		Residential (n=30)			
	f	%	f	%	f	%	f	%
Carbon Monoxide (CO)								
< recommended value	0	0.0	0	0.0	0	0.0	0	0.0
> recommended value	48	100.0	49	100.0	42	100.0	139	100.0
Sulfur Dioxide (SO_2)								
< recommended value	0	0.0	0	0.0	0	0.0	0	0.0
> recommended value	48	100.0	49	100.0	42	100.0	139	100.0
Nitrogen Dioxide (NO_2)								
< recommended value	35	72.9	33	67.3	25	59.5	93	67.0
> recommended value	13	27.1	16	32.7	17	40.5	46	33.0

The results of air quality analysis showed that, out of 139 respondents using kerosene daily as their main fuel for cooking, in all the kitchens high concentration of air pollution was found. Levels of concentration of carbon monoxide (CO) and sulfur dioxide (SO_2) was found high in all the kitchens whereas, presence of nitrogen dioxide (NO_2) was found in 33 per cent of the cases above the recommended value (Table 4.36).

The level of carbon monoxide (CO) ranged from 10 to 60 ppm and of sulfur dioxide ranged from 1 to 3 ppm (all above recommended value, Table 2.1). Level of nitrogen dioxide was 001 ppm. (Table 4.37).

Table 4.37 : Air Analysis Where Kerosene is Used as Main Fuel (Range of values)

Concentration of Pollutants (Range of values) (ppm)	Locality			Total (n=139)
	Industrial cum residential (n=48)	Commercial cum residential (n=49)	Residential (n=30)	
Carbon Monoxide (CO)	010 - 050	010 - 055	010 - 060	10 - 60
Sulfur Dioxide (SO_2)	001 - 003	001 - 003	001 - 003	01 - 03
Nitrogen Dioxide (NO_2)	000 - 001	000 - 001	000 - 001	00 - 01

Further, it was found that level of concentration of carbon monoxide in kitchens in residential locality was higher compared to the other two groups.

Table 4.38 : Air Analysis Where Wood is Used as Main Fuel (Frequency and Percentage Distribution of Respondents by Recommended Values)

Concentration of Pollutants (ppm)	Locality						Total (n=11)	
	Industrial cum residential (n=2)		Commercial cum residential (n=1)		Residential (n=8)			
	f	%	f	%	f	%	f	%
Carbon Monoxide (CO)								
< recommended value	0	0.0	0	0.0	0	0.0	0	0.0
> recommended value	2	100.0	1	100.0	8	100.0	11	100.0
Sulfur Dioxide (SO_2)								
< recommended value	0	0.0	0	0.0	0	0.0	0	0.0
> recommended value	2	100.0	1	100.0	8	100.0	11	100.0
Nitrogen Dioxide (NO_2)								
< recommended value	0	0.0	0	0.0	0	0.0	0	0.0
> recommended value	2	100.0	1	100.0	8	100.0	11	100.0

Out of 11 respondenets using wood daily as their main fuel for cooking, it was found that in all the kitchens the concentrations of Carbon Monoxide (CO), Sulfur Dioxide (SO_2) and Nitrogen Dioxide (NO_2) were extremely hign compared to the recommended values (Table 4.38).

Further, the concentration of Carbon Monoxide ranged from 150-500 ppm, Sulfur Dioxide ranged from 002-020 and Nitrogen Dioxide ranged from 001-003 ppm. (Table 4.39).

The concentration of pollutants in the kitchen were higher in the residential locality as more number of respondents were using wood in their kitchens which gave out more pollutants.

Table 4.39 : Air Analysis Where Wood is Used as Main Fuel (Range of Values)

Concentration of Pollutants (Range of values) (ppm)	Locality			Total (n=11)
	Industrial cum residential (n=2)	Commercial cum residential (n=1)	Residential (n=8)	
Carbon Monoxide (CO)	300 - 400	250	150 - 500	150 - 500
Sulfur Dioxide (SO_2)	015 - 016	010	002 - 020	002 - 020
Nitrogen Dioxide (NO_2)	001 - 002	001	001 - 003	001 - 003

4.7.2 Water analysis

Water analysis was done in terms of its bacteriological quality. For the present study the multiple tube fermentation test (M.P.N. test - Most Probable Number) was applied to find out the presence of pathogenic organism (vide chapter III).

Samples of stored water was collected for the test. Five samples of 10 ml each were prepared and presence of gas was observed which is an indication of growth of coliform organisms. The quality of water sample was assessed with the use of M.P.N. Index (Table-3.1) which is a standard table for water analysis.

Table 4.40 : Water Analysis
(Frequency and Percentage Distribution of Respondents by Recommended Values)

Level of Water Pollution	Locality						Total (n=90)	
	Industrial cum residential (n=30)		Commercial cum residential (n=30)		Residential (n=30)			
	f	%	f	%	f	%	f	%
Below the Standard limit	7	23.3	3	10.0	2	6.7	12	13.3
Above the Standard limit	23	76.7	27	90.0	28	93.3	78	86.7

Water analysis was done by observing the number of polluled samples which were compared with M.P.N. Index (Table 3.1) to judge the level of pollution. The permissible standard limit for M.P.N. is < 2.2 (not polluted). It was disappointing to find that the majority of the samples (86.7 per cent) were found above the permissible standard limit and low to high level of pollution was found in those samples (Appendix-VII). Only 13.3 per cent of the samples were found below the permissible limit that is, those samples were not polluted (Table-4.40). The level of water pollution was found highest (93.3 per cent) in residential locality and was the lowest (76.7 per cent) in industrial cum residential locality among the three localities. Thus, majority of the respondents and their family members were drinking polluted water.

4.7.3 Sound levels

To measure the quality of sound in the household kitchens, the actual levels of sound produced when activities were going in the kitchen were measured. Also sound level in the kitchen (ambient sound) was measured when no activities were being carried out.

Three readings in both the situations were taken out with the use of sound level meter (Vide chapter III) and average of the readings was recorded in data sheet for further discussion.

According to Grandjean (1978), sound becomes nuisance when it is more then 67 dB. The data (Table-4.41) showed that 91.3 percent of the respondents were working in the kitchen where sound levels were above the recommended limits and only 8.7 percent of the respondents were working in the kitchen where sound levels were below standard limits when the activities were going on.

Table 4.41 : Sound Levels in Kitchen (Frequency and Percentage Distribution of the Respondents by Recommended Value)

Sound Levels (dB)	Locality						Total (n=150)	
	Industrial cum residential (n=50)		Commercial cum residential (n=50)		Residential (n=50)			
	f	%	f	%	f	%	f	%
When activities are going on								
Below recommended standards	3	6.0	6	12.0	4	8.0	13	8.7
Above recommended standards	47	94.0	44	88.0	46	92.0	137	91.3
When no activities are going on in kitchen								
Below recommended standards	22	44.0	24	48.0	20	40.0	66	44.0
Above recommended standards	28	56.0	26	52.0	30	60.0	84	56.0

Even when there were no activities going on in the kitchen, the sound levels were above the standard limits in 56 per cent kitchens and the sound levels were below the recommended limit in 44 per cent of the kitchens. Not much variations were found in sound levels of three localities.

The sound levels ranged between 65-78 dB when activities were going on and ranged between 62-72 dB when no activities were going on in the kitchens (Appendix - VIII). Thus, it could be concluded that majority of the respondents were working in a very noisy environment which might have long range implications on their hearing capacity.

4.7.4 Temperature Levels

To find out the heat stress faced by the respondents, the temperature levels were taken near the cooking area when cooking was going on and also the temperature levels in the kitchen were taken when working was not going on. Simple mercury thermometer (vide chapter III) was used to measure the temperature levels in the kitchen.

It was revealed from the data (Table - 4.42) that in all the kitchens the temperature levels recorded when cooking was going on and when cooking was not going on were above the recommended comfortable level which is

21°C to 28°C (Mahipatsinhji, 1986). The reasons for high level of temperature could be due to type of fuels used and poor ventilation in the kitchens.

Table 4.42: Temperature Levels in the Kitchen (Frequently and Percentage Distribution of Respondents by Recommended Values)

Temperature Levels in the Kitchen	Locality						Total (n=150)	
	Industrial cum residential (n=50)		Commercial cum residential (n=50)		Residential (n=50)			
	f	%	f	%	f	%	f	%
At the work area where cooking is going on								
Below Permissible level	0	0.0	0	0.0	0	0.0	0	0.0
Above Permissible level	50	100.0	50	100.0	50	100.0	150	100.0
General Temperature Level in the Kitchen								
Below Permissible level	0	0.0	0	0.0	0	0.0	0	0.0
Above Permissible level	50	100.0	50	100.0	50	100.0	150	100.0

The temperature levels ranged between 37-42°C near the working area when cooking was going on and between 35-40°C (Table - 4.43) in the kitchen when cooking was not going on (Appendix-IX). Not much variations were

found regarding temperature levels of three groups. Thus, it could be concluded that all the respondents were working in the environment with high temperature which is the main cause of discomfort to them.

Table 4.43 : Tempreature Levels in Kitchens (Range of values)

Temperature Levels (°C) (Range of Value)	Locality			Total (n=150)
	Industrial cum residential (n=50)	Commercial cum residential (n=50)	Residential (n=50)	
Near Working area when cooking is going on	37 - 42.0	38 - 42.0	37 - 41.0	37 - 42.0
When cooking is not going on in kitchen	35 - 40.0	36 - 40.0	35 - 39.0	35 - 40.0

4.7.5 Illumination levels

For the present study, the illumination levels at the work place and in kitchen in general were measured with the use of light meter (vide chapter III). The illumination level at the work place was measured by placing the light meter facing the work area. General illumination of the kitchen was estimated by taking four readings by dividing the floor area into four parts and average of four readings was recorded for the discussion.

According to Pickett (1962) and John (1983), the illumination level on the work area in the kitchen should be 50 F.C. and general illumination in the kitchen should be atleast 20 F.C.

Table 4.44 : Illumination Levels in the Kitchen (Frequency and Percentage Distribution of Respondents by Recommended Values)

Illumination Levels in kitchen (Foot candles)	Locality						Total (n=150)	
	Industrial cum residential (n=50)		Commercial cum residential (n=50)		Residential (n=50)			
	f	%	f	%	f	%	f	%
At work area								
Below recommended standards	48	96.0	44	88.0	40	80.0	132	88.0
= & > recommended standards	2	4.0	6	12.0	10	20.0	18	12.0
General illumination in the kitchen								
Below recommended standards	38	76.0	36	72.0	37	74.0	111	74.0
= & > recommended standards	12	24.0	14	28.0	13	26.0	39	26.0

It was found that the illumination levels at the work area were below the recommended standard in 88 per cent of the kitchens and were above the recommended standards only in 12 per cent kitchens. On comparing the illumination levels at the work area in three

localities, it was found that 20 per cent of the kitchen in residential locality had illumination level above the standard value and in industrial area only 4 per cent of the kitchen had illumination level above the recommended value (Table 4.44).

In 74 per cent of the cases general illumination in kitchen was found below the recommended standard limit and about one-fourth of the kitchen had general illumination level above the recommended value. Similar observations were made regarding general illumination level in the kitchens in three localities.

Table 4.45 : Illumination Levels in the Kitchen (Range of Values)

Illumination Levels (F.C.) (Range of Values)	Locality						Total (n=150)	
	Industrial cum residential (n=50)		Commercial cum residential (n=50)		Residential (n=50)			
At work area	5	50.0	3	57.0	5	60.0	3	60.0
General illumination in the kitchen	5	33.75	5.5	35.0	5	42.5	5	42.5

The illumination levels on the work area ranged between 3-60 F.C. and general illumination levels in kitchen ranged between 5-42.5 F.C. (Appendix - X). Further, it was observed that higher illumination levels in the kitchen were found in residential locality compared to other groups (Table 4.45).

The results of field experiments thus indicated that the respondents worked in highly polluted and stressful environment. The quality of air they breathed was poor, the water they drank was polluted and the work place was noisy, hot and poorly lighted. Such surroundings would have harmful effects on their health.

Section VIII

4.8 Testing of Hypotheses

For the purpose of statistical analysis the following hypotheses were framed in null form.

NH_O - 1

The knowledge of the respondents regarding quality of environment will not vary with the

a) age of the respondent

b) educational level of the respondent

c) occupational status of the respondent

d) extent of exposure to media by the respondent.

Analysis of Variance was computed to find the variation in the knowledge of respondents regarding quality of environment due to age, educational level and extent of exposure to media. If 'F' ratio-was found to be significant, then 't-tests' were performed to find the variation between the groups of respondents according to selected variables.

To find variation in the knowledge due to occupational status, t-test was computed.

Age

The `F' ratio (F=4.72, Sig. 0.01) indicated a variation in the knowledge of respondents due to age (Table-4.46). On computing t-tests, it was found that `t' value was 3.27 (Sig. 0.01, at 78 df) for young and old respondents which indicated that young and old respondents differed in their knowledge regarding quality of environment; `t' value was 1.99 (Sig. 0.05, at 89 df) for middle age and old group which indicated that middle aged and old respondents also differed in their knowledge regarding quality of environment.

No significant differences were found in the knowledge of young and middle aged respondents regarding quality of environment (Table-4.47). Observing the mean scores on knowledge, it was found that young home makers had higher level of knowledge than middle aged and old aged home makers [Figure 4(i)].

Table 4.46 : Analysis of Variance for Level of Knowledge of Respondents Regarding Quality of Environment.

Sources of Variation	df	Sum of Square	Mean Square	F Ratio	Level of Significance
1. Age of the Respondent					
Between Groups	2	253.6102	126.8051	4.7222	0.01
Within Groups	147	3947.3031	26.8529		
2. Educational level					
Between Groups	2	2703.0402	1351.5201	132.6300	0.01
Within Groups	147	1497.9532	10.1902		
3. Exposure to Media					
Between Groups	2	1398.6412	699.3206	36.6835	0.01
Within Groups	147	2802.3522	19.0636		

Educational level

On computing analysis of variance, `F' ratio was found to be 132.6 (Sig. 0.01) hence, a variation in the knowledge of respondents was found due to educational level. On computing t-tests, the values of `t' being 9.33, 22.73 and 5.95 for illiterate and low level; illiterate and medium level and low level and medium level of education respectively were found significant at 0.01 level hence, it indicated that all the three groups differed from each other in their knowledge regarding quality of environment (Table - 4.47).

Table 4.47 : t-values Showing Difference Between level of Knowledge of Respondents Regarding Quality of Environment by Selected Variables.

Variables	Mean	t-value	df	Level of Significance
Occupational Status				
Unemployed	57.05	0.24	148	N.S
Employed	56.80			
Age of Respondent				
A. Young	58.20	1.48	127	N.S
Middle age	56.81			
B. Young	58.20	3.27	78	0.01
Old	54.19			
C. Middle age	56.81	1.99	89	0.05
Old	54.19			
Educational level				
A. Illiterate	53.08	9.33	121	0.01
low level	58.60			
B. Illiterate	53.08	22.73	97	0.01
Medium level	64.37			
C. Low level	58.60	5.95	76	0.01
Medium level	64.37			
Exposure to Media				
A. Low level	52.56	3.90	126	0.01
Medium level	56.60			
B. Low level	52.56	12.90	43	0.01
High level	63.50			
C. Medium level	56.60	6.31	125	0.01
High level	63.50			

Exposure to Media

Analysis of variance was computed to find out the variation in the knowledge regarding quality of environment due to exposure to media. Since 'F' ratio was found to be 36.68 (Sig.0.01) it indicated a variation in the knowledge level of respondents due to exposure to media. On computing t-tests, the values were found to be t=3.9, t=12.9 and t=6.3 (Sig. 0.01) for low and medium level; low and high level and medium and high level of exposure to media respectively. It could be concluded that all the three groups differed from each other in their knowledge regarding quality of environment (Table - 4.47).

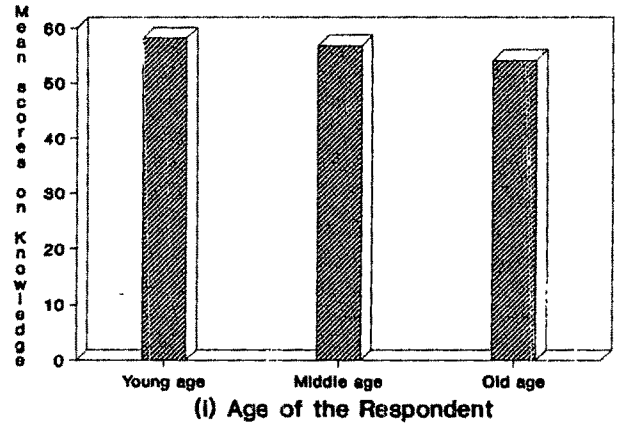
Further, it was observed that the mean scores on knowledge test was found to be highest among those respondents who had high level of exposure to media and was lowest among those respondents having low level of exposure to media [Figure 4 (iii)].

Occupational Status

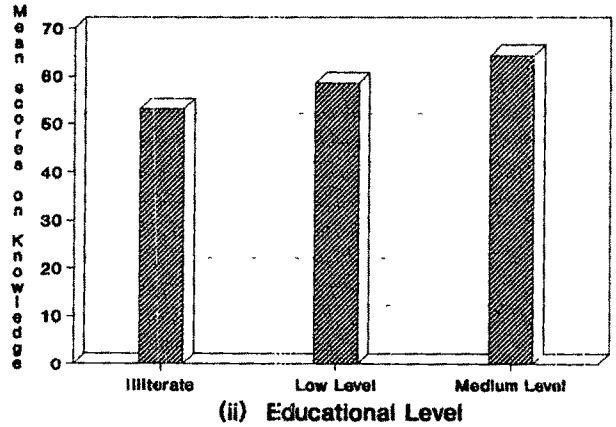
To find out the difference in the knowledge between unemployed and employed respondents, t-test was computed and t-value was found not significant (t=0.24, N.S., at 148 df). It could be inferred that employed and unemployed respondents did not differ in their knowledge regarding quality of environment.

FIGURE 4

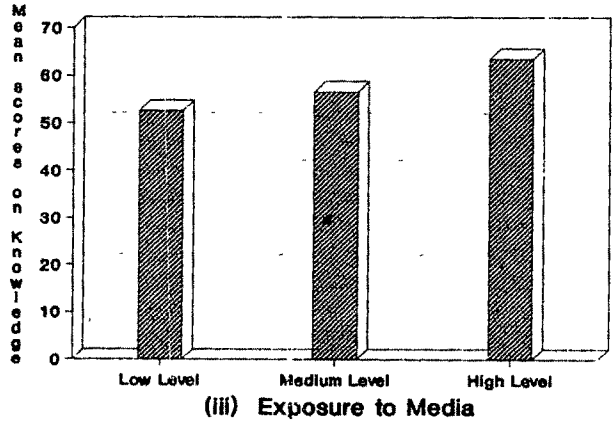
MEAN SCORES ON KNOWLEDGE OF RESPONDENTS REGARDING QUALITY OF ENVIRONMENT BY SELECTED VARIABLES



(i) Age of the Respondent



(ii) Educational Level



(iii) Exposure to Media

Thus, it could be concluded that the knowledge of respondents regarding quality of environment varied due to age, educational level and exposure to media but did not vary due to occupational status. The null hypothesis was accepted only in case of occupational status and it was rejected in case of other variables.

NH_O - 2

The practices followed by the respondents which affect the quality of micro environment will not vary with the

a) age of the respondent

b) educational level of the respondent

c) occupational status of the respondent

d) income of the family

e) size of the family

f) extent of exposure to media by the respondent

Analysis of variance was computed to find the variation in the practices followed by the respondents which affect the quality of micro environment due to age, educational level, occupational status, income of the family, size of the family and extent of exposure to media. It `F' ratio were found to be significant, then `t-tests' were applied to find the variation between the groups. To find out variation in the practices followed by the respondents due to occupational status, t-test was computed.

Age

The `F' ratio (F=0.9931; N.S.) did not indicate variation in the practices followed by respondents due to age (Table-4.48).

Table 4.48 : Analysis of Variance for Practices Followed by Respondents Which Affect the Quality of Micro Environment

Sources of Variation	df	Sum of Square	Mean Square	F Ratio	Level of Significance
1. **Age of the Respondent**					
Between Groups	2	120.1086	60.0543	0.9931	N.S.
Within Groups	147	8889.7647	60.4746		
2. **Educational level**					
Between Groups	2	894.8352	447.4176	8.1048	0.01
Within Groups	147	8115.0381	55.2043		
3. **Income of Family**					
Between Groups	2	663.5376	331.7688	5.8433	0.01
Within Groups	147	8346.3357	56.7778		
4. **Family Size**					
Between Groups	2	1039.7403	519.8702	9.5884	0.01
Within Groups	147	7970.1330	54.2186		
3. **Exposure to Media**					
Between Groups	2	912.6589	456.3294	8.2844	0.01
Within Groups	147	8097.2145	55.0831		

Educational level

On computing analysis of variance, a variation in the practices followed by the respondents was found due to educational level (F = 8.10; Sig. 0.01).

Further, t-tests was applied and the t-value was found to be significant (t=2.62, Sig. 0.01, at 121 df) for illiterate and low level group which indicated that these groups differed in their practices. The t-value being significant (t=3.86, Sig. 0.01, and 97 df) for illiterate and medium level group also indicated that the illiterate and medium level group differed in their practices. No significant differences were found in the practices followed by the respondents having low level and medium level education (Table -4.49).

The mean scores on practices indicated that with the increase in educational level, better practices were followed by the respondents [Figure 5(i)].

Occupational Status

To find out the difference in the practices followed by the respondents between unemployed and employed group, t-test was computed and t-value was found not significant (t=0.41, N.S., at 148 df; Table-4.49). Thus it could be concluded that unemployed and employed respondents did not differ in their practices which affect the quality of micro environment.

Income of the Family

The `F' ratio (F=5.84, Sig. 0.01) indicated variation in the practices followed by the respondents due to income of the family (Table-4.48). On computing t-tests, the t-value was found not significant (t= 1.30, N.S., at 128 df) for low and low-high income group which indicated that low and low-high income group respondents did not differ in their practices which affect the quality of micro environment. Further, t-values were found to be 3.15 (Sig. 0.01, at 78 df) for low and middle income group and 2.83 (Sig. 0.01, at 88 df) for low-high and middle income group which indicated significant differences for low and middle income group and low-high and middle income group respondents respectively. Hence, it could be concluded that respondents of low and middle income group and respondents of low-high and middle income group differed in their practices (Table - 4.49).

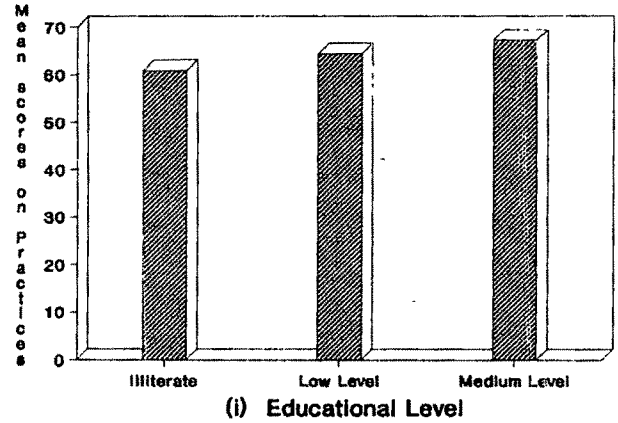
From the mean scores on practices follow by the respondents, it was found that with the increase in the income of the family, respondents followed better practices which affect the quality of micro environment [Figure 5 (ii)].

Table-4.49 :t-values Showing Differences Between Practices Followed by the Respondents Which Affect the Quality of Mirco Environment by Selected Variables.

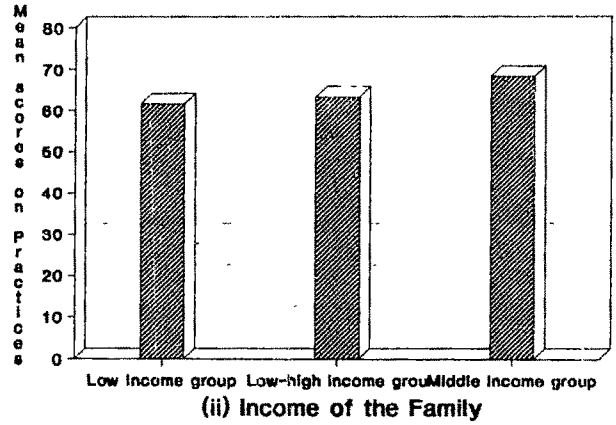
Variable	Mean	t-value	df	Level of Significance
Occupational Status				
Unemployed	63.39	0.41	148	N.S
Employed	62.77			
Educational level				
A. Illiterate	60.91	2.62	121	0.01
Low level	64.41			
B. Illiterate	60.91	3.86	97	0.01
Medium level	67.25			
C. Low level	64.41	1.53	76	N.S.
Medium level	67.25			
Income of the Family				
A. Low Income	61.55	1.30	128	N.S
Low-high Income	63.28			
B. Low Income	61.55	3.15	78	0.01
Middle Income	68.20			
C. Low-high Income	63.28	2.83	88	0.01
Middle Income	68.20			
Size of the Family				
A. Small	67.64	3.72	130	0.01
Medium	62.18			
B. Small	67.64	3.69	53	0.01
Large	59.77			
C. Medium	62.18	1.32	111	N.S.
Large	59.77			
Exposure to Media				
A. Low	60.52	1.25	126	N.S.
Medium	62.65			
B. Low	60.52	3.95	43	0.01
High	68.90			
C. Medium	62.65	3.55	125	0.01
High	68.90			

FIGURE 5

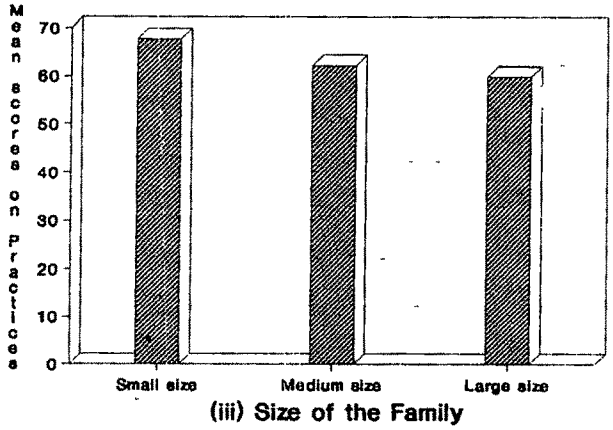
MEAN SCORES ON PRACTICES FOLLOWED BY RESPONDENTS INFLUENCING QUALITY OF MICRO ENVIRONMENT BY SELECTED VARIABLES



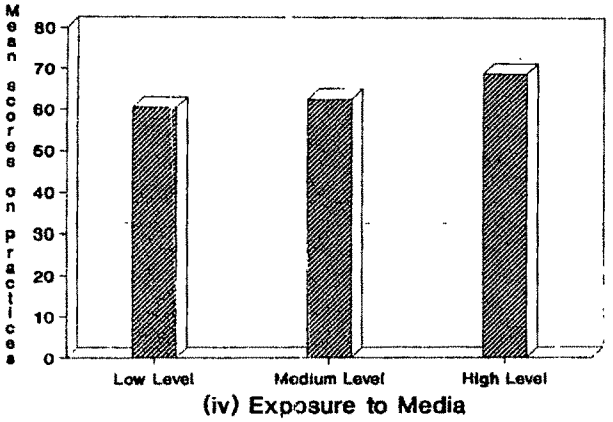
(i) Educational Level



(ii) Income of the Family



(iii) Size of the Family



(iv) Exposure to Media

Size of the Family

On computing analysis of variance, a variation in the practices followed by the respondents was found due to size of the family (F=9.58, sig. 0.01). On computing t-tests, the t-value was found to be significant (t=3.72, Sig. 0.01, at 130 df) for small and medium size families which indicated that these groups differed in their practices which affect the quality of environment. The t-value was found to be significant (t=3.69, sig. 0.01, at 53 df) for small and large size families, which indicated that the respondents having small and large size families also differed in their practices. No significant differences were found in practices followed by the respondents having medium and large size families (Table - 4.49).

Observing the mean scores on practices, it could be concluded that respondents having small size family followed better practices than respondents having medium or large size families [Figure 5.(iii)]

Exposure to media

Analysis of variance was computed to find out the variation in the practices followed by the respondents which affect the quality of environment due to exposure to media. Since 'F' ratio was found to be 8.28, Sig.

0.01, it indicated a variation in the practices followed by the respondents due to exposure to media. On computing t-tests, the t-value was found to be significant (t= 3.95, sig. 0.01, at 43 df) for low and high level of exposure to media indicating that respondents having low and high level of exposure to media differed in the practices which affect the quality of micro environment. Further, t-value was found to be significant (t=3.55, sig. 0.01, at 125 df) for medium and high level of exposure to media which indicated that respondents having medium and high level of exposure to media also differed in the practices. No significant differences were found in the practices followed by respondents having low and medium level of exposure to media (Table - 4.49).

The mean scores on the practices indicate that better practices were followed by the respondents with the increase in their level of exposure to media [Table - 4.49; Figure 5(iv)].

Thus, it could be concluded that practices followed by the respondents which affect the quality of micro environment varied due to educational level, income of the family, size of the family and exposure to media. The null hypothesis was partially accepted only in case of age and occupational status of the respondents.

NH_O - 3

There exists a positive relationship between knowledge regarding quality of environment and practices followed by respondents influencing quality of micro environment.

The result of coefficient of correlation showed a significant positive relationship between knowledge and practicies followed by respondents influencing quality of environment (r = 0.4384, Sig. 0.001, at 148 df). Thus it could be concluded that better the knowledge, better would be the practices.

NH_O - 4

There exists no relationship between level of knowledge of respondents and quality of micro environment.

Coefficient of correlation was computed to test this hypothesis. As r=0.2260 was found to be significant at 0.01 at 148 df, it could be concluded that there exists a positive relationship between level of knowledge and quality of micro environment and it could be concluded that as the level of knowledge increases, quality of micro environment imoproves. Thus, the null hypothesis was rejected.

NH_0 - 5

There exists no relationship between practices followed by the respondents and quality of micro environment.

The result of coefficient of correlation showed value of r=0.5598 (sig. 0.001, at 148 df). Thus, the null hypothesis was rejected and it could be concluded that there exists a relationship between practices followed by the respondents and quality of micro environment.

Table-4.50 : Analysis of Variance for Quality of Micro Environment due to Practices Followed by the Respondents.

Sources of Variation	df	Sum of Square	Mean Square	F Ratio	Level of Significance
Practices followed by Respondent					
Between Groups	2	5444.24	2722.12	24.03	0.01
Within Groups	147	16650.42	113.26		

A further probe through analysis of variance was done to study the variation in quality of micro environment due to practice of respondents. The `F' ratio (F=24.03, sig. 0.01) indicated significant

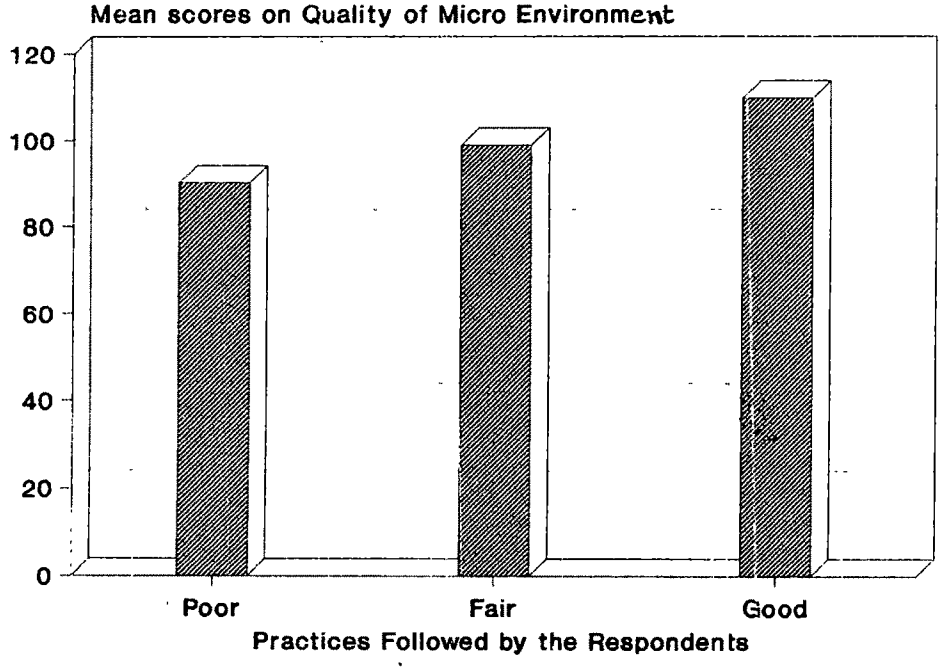
variation in the quality of micro environment (Table-4.50). The result of t-test (t-3.78, Sig. 0.01, at 120 df) indicated that the respondents following poor practices and fair practices differed in their quality of micro environment. The value of t-test (t= 8.18, Sig. 0.01, at 55 df) indicated that the respondents having poor practices and good practices also differed in their quality of mocro environment. The t-value (t= 4.50, Sig. 0.01, at 119 df) indicated that the respondents having fair and good practices differed in their quality of micro environment (Table - 4.51).

Table-4.51 : t-values Showing Difference Between Quality of Micro Environment and Practices Followed by the Respondents

Variables	Mean	t-value	df	Level of Significance
Practices followed by the respondents				
A. Poor	90.20	3.78	120	0.01
Fair	98.97			
B. Poor	90.20	8.18	55	0.01
Good	109.71			
C. Fair	98.97	4.50	119	0.01
Good	109.71			

FIGURE 6

MEAN SCORES ON QUALITY OF MICRO ENVIRONMENT BY PRACTICES FOLLOWED BY THE RESPONDENTS



Thus, the null hypothesis was rejected and it could be concluded that the respondents having better proactices had better quality of micro environment in their kitchens.

Further probe into the data showed that the mean scores on quality of micro environment increased with better practices followed by the respondents (Figure-6).

NH_0 - 6

The quality of micro environment will not vary with the locality in which respondents live.

Analysis of variance showed value of F = 5.668 (sig. 0.01). This indicated that the quality of micro environment varied with the locality in which respondents lived (Table-4.52).

Table 4.52 : Analysis of Variance for Quality of Micro Environment due to Locality in Which Respondents Live

Sources of Variation	df	Sum of Square	Mean Square	F Ratio	Level of Significance
Locality in which Respondent live					
Between Groups	2	1582.01	791.00	5.6686	0.01
Within Groups	147	20512.66	139.54		

The result of t-test (t=2.7, Sig. 0.01, at 98 df) indicated that respondents living in industrial cum residential locality and residential locality differed in their quality of micro environment. The value of t-test (t= 3.14, Sig. 0.01, at 98 df) indicated that respondents living in commercial cum residential locality and residential locality also differed in their quality of micro environment. No variation was found in the quality of micro environment between industrial cum residential locality and commercial cum residential locality (Table - 4.53).

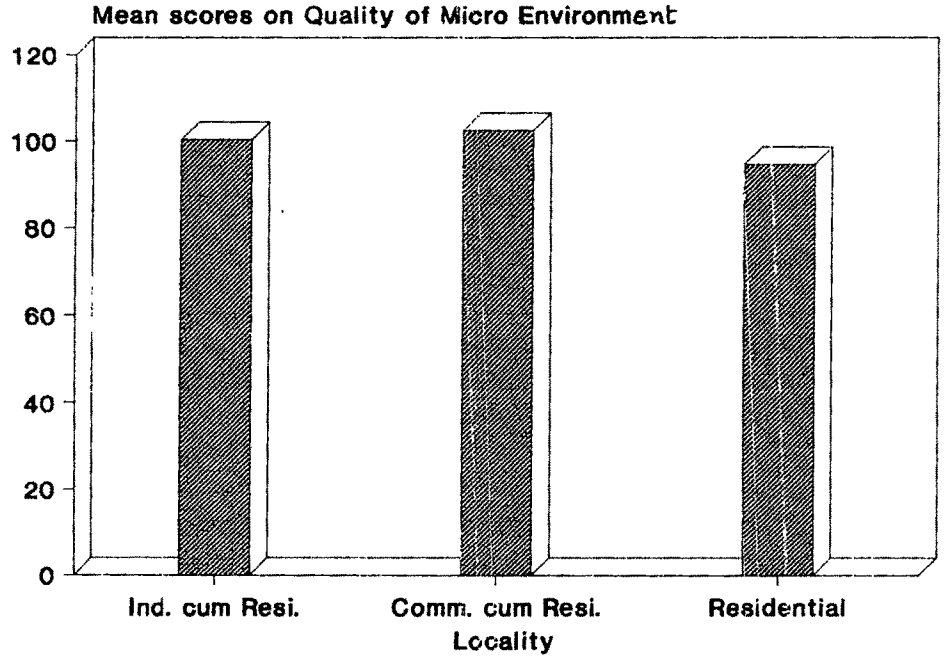
Thus, the null hypothesis was rejected and it could be concluded that the qality of micro environment varied with the locality in which respondents live (Figure-7).

Table 4.53 : t-values showing Difference Between Quality of Micro Environment and Locality in Which Respondents live.

Variable		Mean	t-value	df	Level of Significance
Locality					
A.	Industrial cum residential	100.44	0.83	98	N.S.
	Commercial cum residential	102.56			
B.	Industrial cum residential	100.44	2.70	98	0.01
	Residential	94.68			
C.	Commercial cum residential	102.56	3.14	98	0.01
	Residential	94.86			

FIGURE 7

MEAN SCORES ON QUALITY OF MICRO ENVIRONMENT BY LOCALITY IN WHICH RESPONDENTS LIVE



Observing the mean scores on quality on micro environment in different localities, it was found that commerical cum residential locality had the highest mean scores indicating bettwe quality of micro environment. Residential locality had the lowest mean scores indicating poor quality of micro environment.

NH_O - 7

> There exists no relationship between quality of micro environment and health problems experienced by the respondents.

Correlation of coefficient was found not significant (r= 0.1112, N.S., at 148 df.). Hence, the null hypothesis was accepted and it could be concluded that there exists no relationship between quality of environment and health problems experienced by the respondents.

Section 9

4.9 Discussion on Findings

Today quality of environment is everyone's concern. All of us talk about environment, causes of its degradation and its impact on quality of life of human beings. Man himself is responsible for the degradation of his environment and in turn is influenced by his environment. This is true not only for the macro environment but also for micro environment which is the

most immediate surrounding of man. The quality of micro environment that is, the household environment is affected by a number of activities carried out and appliances used in the house for survival and maintaining a desired standard of living.

Kitchen occupies an important place in the house but in most shelters it is least cared for (Thomas, 1986). Women usually spend longer hours in the micro environment that is, the kitchen; and are most likely to be affected by the quality of micro environment in which they work.

4.9.1 Quality of Micro Environment of Household Kitchens

In the present study it was found that the respondents spend about 4.84 hours per day for cooking and related activities in the kitchen (Table 4.6). The existing quality of micro environment was studied in terms of quality of air, availability of ventilation and lighting, temperature levels, sound levels, quality of sanitation, quality of water, etc.

The existing quality of micro environment in the kitchen was found to be average having mean scores of 99.29 (Table 4.25). The reasons being that the kitchen had improper orientation in more than half of the cases and in most of the cases floor space was far below the

recommended standards (Table 4.7). Majority (68 per cent) of the respondents had no windows in the kitchens (Table 4.7 a).

About 81 per cent of the respondents kept their cook stoves on the floor (Table 4.9) which did not allow easy air draft and led to poor quality of indoor air. The results of the analysis of air samples from the kitchen showed that respondents using kerosene daily as their main fuel had high level of concentration of carbon monoxide (CO) and sulfur dioxide (SO_2) in indoor air (Table 4.37). The respondents using wood daily as main fuel had very high level of concentration of carbon monoxide (CO), sulfur dioxide (SO_2) and nitrogen dioxide (NO_2) in their kitchens (Table 4.39). As a result of this almost all of them felt discomfort due to the presence of fumes (Table 4.10). This caused the health problems such as eye irritation, coughing, sneezing and headache which are mainly associated with poor air quality.

Further, it was found that most of the houses had corrugated iron sheets and R.C.C. for kitchen ceiling which retains heat and causes heat stress (Table 4.21). The results of the experiments also showed high level of temperature while cooking was going on and when cooking was not going on in all the kitchens (Table 4.43). This led to discomforts like fatigue, excitement and even skin irritation.

Although majority of the respondents had municipal water supply through tap in the house (Table 4.11), 85 per cent of them felt changes in the quality of water mainly due to too much chlorination, turbidity and change in taste (Table 4.14) which indicated that the problems related poor quality of water were associated with the source of water itself. The results of the bacteriological quality analysis of water showed that 86.7 per cent of the water samples were polluted but varied in level of pollution (Table 4.40; Appendix - VII). The poor quality of water results in epidemics of water borne diseases such as diarrhoea, dysentery, and many more. The respondents reported that the family members and the respondents themselves at times suffered from these diseases.

Majority of the respondents felt that the household activities such as cooking, washing of clothes and utensils, also moving of things, banging of door and children playing resulted in a lot of noise. They also reported about the outdoor noise causing disturbance in the home (Table 4.17). The result of sound level measurements also revealed high level of sounds in most of the kitchens ranging from 65 to 78 dB when activities were going on and in 56 per cent of the cases sound levels were high ranging from 62-72 dB when no activities were going on (Table 4.41). Thus, the respondents were

living in a noisy environment which probably was the cause of health problems such as headache and blood pressure. Further, it may have long run implications on their hearing capacity.

It was found that 68 per cent of the respondents were not getting enough natural light during working hours in day time (Table 4.15). The reasons were that they had improper orientation of the kitchen, total open space in terms of windows and ventilators was inadequate in 65 per cent kitchens (Table 4.7a). The texture of the walls was rough and colour of the walls was medium, even the work surface and floor surface were made up of such materials which did not reflect much light. Hence, 65 per cent of the respondents used artificial light source during day time (Table 4.15) which also was inadequate because type and location of artificial light source were not proper in most cases. The results of the experiments also showed that the illumination levels at work place in 88 per cent of the kitchens were below recommended standards and ranged from 3 to 60 F.C. The general illumination in the kitchen was also found below recommended standards in 74 per cent of the kitchens and it ranged from 5 to 42.5 F.C. (Tale 4.44; Table 4.45). Thus, most of them were working in a poorly lighted kitchens, leading to poor visibility and causing strain on their eyes.

The sanitary conditions of the kitchen and its surroundings were found to be poor as nearly three-fourth of the respondents did not use dust bin to collect kitchen garbage (Table 4.18) and used to dispose it by throwing out side the house leading to dirty surroundings. On an average they produced 900 grams of kitchen waste (Table 4.18) which was organic in nature and if collected and treated properly could turn into rich manure. Those who used dust bin did not keep the surroundings clean and faced the problems of insects and pests (Table 4.19) which may give rise to several diseases. Also 84 per cent of them did not have drainage facility in the kitchen (Table 4.20) and used to dispose waste waster outside the house. Work surface in most cases was made up of stone or mud and dung (Table 4.21) which made it difficult for them to keep it absolutely clean.

Thus about 55 per cent of the kitchen were fairly clean, only 23 per cent of the kitchens were clean and remaining 22 per cent of the kitchens were dirty. About 45 per cent of the houses had dirty surroundings and only 15 per cent of the houses had clean surroundings (Table 4.24).

The overall quality of micro environment was established by giving scores to various aspects of micro environment and was judged as good, average or poor. In the present study it was revealed that about two-thirds of the respondents had average quality of micro environment and more respondents had poor quality than those who had good quality of micro environment (Table 4.25). Further, in most of the cases air pollution, water pollution, sound levels and temperature levels were above the permissible standards, while the illuminations levels were found to be inadequate and the poor sanitation of the work place and surrounding area resulted in health problems for respondents and their family members. Thus, on the whole, the quality of micro environment was not satisfactory. Veerbala (1990) reported that majority of her respondents felt that they had satisfactory level of quality of environment in the kitchen.

On comparing three localities of the present study, it was found that the quality of micro environment varied with the locality in which respondents lived. Respondents living in commercial cum residential locality had the highest mean scores indicating better quality of micro environment and those of residential locality surprisingly had the lowest mean scores for quality of micro environment which indicated poor quality of micro

environment. The main reasons for such a situation were because most of the respondents were living in semi-pucca houses, had the lowest income among the three groups, more than half of the respondents were illiterate and hence, they had lower level of knowledge regarding quality of environment and scores of practices followed by them were low.

The findings of the present study highlights the fact that living in a residential locality alone does not necessarily ensure good quality of environment. There are several other factors which determine the quality of environment.

Ramdas (1988) and Veerbala (1990) also reported that quality of environment varied with the localities. Further, quality of environment was best in residential locality and worse in highly populated and commercial locality as reported by Veerbala (1990).

4.9.2 Major Determinants of Quality of Micro Environment

It was further thought that quality of micro environment might be influenced by the women's knowledge regarding quality of environment and practices followed by women influencing quality of micro environment. It was also thought that women's personal factors (age, educational level and occupational status), familial factors (income and size of the family) and situational

factors (exposure to media) would influence the knowledge and practices followed by the respondents which in turn would affect the quality of their work environment.

Health problems experienced by the women were thought to be affected by the quality of micro environment of kitchen where women work for most of the time during a day.

The interrelationships of these determinants as reflected in the present study are discussed here :

Knowledge Regarding Quality of Environment

The present investigation showed that majority of the respondents possessed medium level of knowledge regarding quality of environment. About one fifty of the respondents had high level of knowledge and about one-tenth of the respondents had low level of knowledge. Kaur (1984), Veerbala (1990) and Pawar (1993) reported similar observations whereas, Ramdas (1988) found that majority of her respondents had low level of knowledge regarding various aspects of environment.

A probe into the level of knowledge while comparing respondents from three localities showed that 18 percent respondents from residential locality had low level of knowledge whereas, very few respondents from other two localities had low level of knowledge. This may be due

to the fact that more than half of the respondents from residential locality were illiterate. Ramdas (1988) and Veerbala (1990) have also reported similar findings. Whereas, Pawar (1993) found that respondents from three slum areas did not differ in their level of knowledge about environmental pollution.

In the present study it was found that knowledge of respondents regarding quality of environment varied due to age, educational level and exposure to media but did not vary due to occupational status.

Kaur (1984) found no relation but Veerbala (1990) found a negative correlation between knowledge and age of the respondents. Further, supporting the findings of present study Bhatnagar (1968), Kaur (1984), Ramdas (1988), Veerbala (1990) and Pawar (1993) also reported an influence of education on knowledge regarding various aspects of environment. It was found in the present study that exposure to media caused variation in the knowledge of respondents but Pawar (1993) reported that knowledge was not influenced by exposure to media.

A relationship was found in the present study between knowledge of respondents regarding quality of environment and quality of micro environment of the household kitchens. Ramdas (1988) and Veerbala (1990) have also strongly supported same findings in their research studies.

The knowledge of the respondents was higher in the younger age group and improved with the level of education and exposure to media. The findings thus, suggest that there is a need to develop an awareness regarding environmental quality among older age group and people having low level of education. Various media should be used to bring awareness among the masses.

Practice Influencing Quality of Micro Environment

Majority of the respondents in the present study followed fair practices influencing quality of micro environment. Kaur (1984) and Pawar (1993) support the present findings. About one-fourth of the respondents of present investigation living in residential locality followed poor practices and only eight per cent followed good practices. This may be due to the fact that more than half of these respondents were illiterate. About one-fourth of the respondents from industrial cum residential and commercial cum residential localities followed good practices.

In the present study it was found that practices followed by respondents which affect the quality of micro environment varied due to educational level, income of the family, size of the family and exposure to media, whereas, age and occupational status did not influence the practices followed by the respondents.

Kaur (1984) concluded that age did not show any significant effect on practices but Pawar (1993) found that practice significantly differed due to age. She reported that, practices did not vary due to exposure to media. Income was found to be influencing the practices in the present study. This was supported by the findings of the studied conducted by Bhatnagar (1968) and Kaur (1984), but findings of Pawar (1993) did not support this.

In contradiction to the findings of the present study and also of Bhatnagar (1968) that, practices varied due to educational level of the respondents, Kaur (1984) found no significant relationship between educational level and sanitary practices.

In the present study a positive correlation was established between knowledge and practice. Kaur (1984) and Pawar (1993) also found highly significant relationship between knowledge regarding environment and practices regarding sanitation. The present investigation also revealed that, practices had a relationship with the quality of micro environment.

The practices followed by the respondents improved with increase in educational level, income of the family and exposure to media and also with increase in knowledge. Hence, this again emphasises a need for improving awareness through media.

As it was found that, practices deteriorated with increase in family size, there is a need to impart knowledge regarding population control among poor sections of the society through formal and informal educational programmes.

4.9.3 Health Problems Experienced by Home Makers

The level of health problems experienced by wide majority of the homemakers of the present study was average. Similar observations were made on comparing health problems of respondents from three localities. There did not exist significant relationship between quality of micro environment and health problems experienced by the respondents. This could be due to the fact that in the present investigation the health problems were studied in terms of perception of respondents but it was not medically established. Hence, no significant relationship was found. However, this area could be exclusively explored in the future.

4.9.4 An Evaluation of the Conceptual Frame Work Set for the Present Study

As conceptualized in the present study, the quality of micro environment was influenced by the knowledge of the respondents regarding quality of environment and practices followed by respondents influencing quality of environment. They, intrun, were influenced by various

personal, familial and situational factors of the women, that is, the respondents. Practices were also influenced by the knowledge of respondents regarding quality of environment. The findings of the present study confirm this relationship. But the level of health problems experienced by the homemaker was not influenced by the quality of micro environment, although it was thought otherwise.

Thus, it could be concluded that the conceptual framework suggested in the present study proved to be true to a great extent.