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A STUDY ON IMPACT OF LEATHER INDUSTRY ON POLLUTION OF DRINKING WATER IN VELLORE DISTRICT

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Abstract: The leather making process is in general restricted to batch processing, but if the surface coating sub-process is added then some continuous processing can be included. The operation flow has to follow the preparatory → tanning → crusting → surface coating sub-process order without deviation, but some of the sub-processes can be omitted to make certain leathers.In addition to the other environmental impacts of leather, the production processes have a high environmental impact, most notably due to: the heavy use of polluting chemicals in the tanning process and air pollution due to the transformation process. This paper deals with respondents' realization on pollution of drinking water in Vellore region consequent upon leather industry and tannery activities. It outlines the respondents' observation of causes and reasons behind pollution drinking water. This paper concludes with some interesting findings based on field survey.

Keywords: Leather Industry ,Drinking Water , environmental ,economic development .

INTRODUCTION :-

Leather Industry is the One of most important, export orientated and economic development sector in Bangladesh. And other hand due to un-safe processing of raw leather, discharge of effluents with flashes along with solid waste of leather directly to the soil and in the river Buriganga (heart of the Capital City Dhaka) is a big challenge to safe water environmental and sanitation following the “World Summit for Sustainable Development (WSSD)”. The rate / ratio of pollution is very high and that is why the un-planned, un-safe waste management has changing the color of river water from blue to blackish, near about 40-50 per cent of slum and villager's community use this river water for their domestic needs and also it's helped in spreading the water born dieses like diarrhea, high fever, jaundice (non-functioning of liver), malnutrition and Iron deficiency which is contributing or causes of increasing Infant, Child under-five and maternal mobility and mortality rate. Considering all the above issues and following the UN Convention for the Right's of the Children (CRC) and Convention on Elimination of all kinds of Discrimination Against Women (CEDAW). The project “Safety Environment Pollution of Leather Industry” is very much related to Sanitation, Personal Hygiene and Water Supply. These 3 (three) components are vital for protecting environment improving health and alleviating poverty. It is the basic human right to have access to Sanitation, Personal Hygiene including impropriate waste management and Safe Water Supply at easy accessible and an affordable price.

The major components of air pollution in developed countries are nitrogen dioxide, sulphur dioxide, ozone and suspended solid or liquid particles. Many organic compounds of industrial origin contribute to airborne public health concerns, as well as environmental problems. High levels of air pollution can adversely affect lung function and triggers asthma and COPD exacerbations. People living in areas with more tanning industries, especially when stagnant air is created by waste water (effluent), are at particular risk. A wealth of evidence suggests that allergic respiratory diseases such as rhino sinusitis and bronchial asthma have become more common worldwide in recent years and a great deal of etiologic and pathogenic research has been carried out to evaluate the possible causes of this increasing trend. There is also some evidence that increased atmospheric concentrations of pollutants such as chromium, oxides of nitrogen (NOX), oxides of sulphur (SOX), particulate matter (PM) and volatile organic chemicals (VOC), which result from leather industry waste water treatment processes and disposal facilities in Vellore district, may be linked to the increased prevalence of allergic diseases which develop more frequently in urban areas of this district.

STATEMENT OF THE PROBLEM

This study aims at analyzing the impact of Tannery Industry on livelihoods of Palar river basin. The study relates to exclusive primary data analysis based on household survey. The household survey is undertaken to analyze the externalities associated with Tannery Industry in Palar river basin from the point of view of the local residents. The field study analyses the way in which households identify the nature and causes of land degradation, water pollution and air pollution. Further it analyses the effect of land degradation, water pollution, and air pollution on the health of the local residents.

REVIEW ON THE SUBJECT

Thanh B.D and Lefevre. T, (2001)[1] have reported from their study that the installation of the flue gas desulfurization to control SO_2 emission at Mae Moh significantly reduces adverse health effects not only on the population living near the power plant but also all over the country. The benefit is much higher than the investment and operation costs of equipment.

Srivastava A and Kumar. R, (2002)[2] reported from their study that a dose-response relation of air pollution to human health is based on time spent by an individual in different microenvironments in the course of one day. Economic valuation of morbidity and mortality is estimated through lost salary. Result shows that avoidance cost is 29 percentage of total health damage cost.

Kan H.D and Chen B.H, (2002)[3] have observed from their study that long-term air particulate matter exposure causes a 1.34-1.69 year reduction of life expectancy and a decrease of survival rate for Shanghai residents.

Joseph A and Ad S. Vastave. A, (2003)[4] concluded from their study that transfer of results from epidemiologic studies in developed countries can underestimate health effects in developing countries and should not be used for this purpose.

Duki M.I, Sudarmadi S, Suzuki S, et al. (2003)[5] have reported from their study that the prevalence rate of respiratory symptoms is significantly associated with NO_2. The reduction of NO_2 to a proposed level of 25 ppb could yield savings in mean direct out-of-packet expense per capita by 3.1-5.5 days.

Kan H, Chen. B, (2004)[6] have reported from their study that in 2001, total economic cost of health impacts due to particulate air pollution in urban areas of shanghai was approximately 625.40 million US dollars, accounting for 1.30 per cent of gross domestic product of the city.

Li. J, Guttikunda S.K, Carmichael G.R, et al. (2004)[7] have reported from their study that the benefit-to cost ratio is in the range of 1-5 for the power-sector initiative and 2-15 for the industrial-sector initiative. Considerable net health benefit would result from supporting investment in air pollution control in developing cities like Shanghai.

Kan. H.D, Chen B.H, Chen C.G, et al. (2004)[8] have observed from their study that compared with best-case scenario, implementation of various energy scenarios could prevent 608 to 5144 an d1189 to 10, 462 PM10-related avoidable deaths in 2010 and 2020, respectively. Substantial decrease of morbidity would occur as well.

Yang Z.F, Xu L.Y, (2004)[9] have reported from their study that the willing ness-to-pay of Tinanjin Residents and workers to avoid health effects from township-village industrial air pollution could be equivalent to 65 million US dollars per year.

Mukhopadhyay K, Forssell. O, (2005)[10] have explored from their study that air pollution has severe effects on respiratory health in India. Fossil fuel emissions are the source of the air pollution.

Ostro. B, (1994)[11] has proposed a method for quantifying the benefits of reduced air pollution and applies the method to data from Jakarta.

Pandey J.S, Kumar R, Devotta. S, (2005)[12] has identified from their study that health risks due to air pollution in Delhi are the highest for children. For all age categories, health risks due to SO_2 are the lowest.

Anjaneyulu Y, Jayakumar I. Hima Bindu. V, et al. (2005)[13] has reported from their study that particulate matter is a significant factor in the development and exacerbation of respiratory disease in Hyderabad.

Wan. Y Yang H, Mausi. T, (2005)[14] have reported from their study that different approaches are used to estimate the economic loss resulting from premature death and other diseases associated with air pollution. The human capital approach method estimates that the economic burden of disease is equivalent to 1.26 per cent of China's GDP, whereas the computable general equilibrium model estimate is 0.38 per cent of China's GDP.

Wan, Y Yang H.W, Masui. T, (2005)[15] have observed from their study that the economic loss resulting from premature death and disease attributed to air pollution equals 0.38 per cent of China's GDP, based on estimates of a computable general equilibrium model. The human capital approach fluids the economic burden of disease to be a 1.26 per cent loss to China's GDP. Major implication of study is that air pollution can slow down China's economic growth by decreasing health and vitality of the people.

Wang. H and Mullahy. J, (2006)[16] have reported from their study that among study subjects, their willingness to pay to save one statistical life is $34, 458, while their mean annual income is $490, unlike a developed a “luxury good” in China based on the estimation.

Wang X.P, Mauzerall D.L, (2006)[17] have investigated from their study that despite some significant uncertainties, the study demonstrates that substantial benefits to public health could be achieved through the use of additional pollution contrail, particularly, from the use of advanced coal gasification technology.

METHODS AND STATISTICAL TOOLS

This paper deals with respondents' realization on pollution of drinking water and reasons for pollution of drinking water consequent upon tannery industrial activities in Ambur region Vellore district, Tamil Nadu. In this study six villages are selected from the Ambur taluk. The selected villages have high concentration of tannery and leather industrial activities. From each village 60 households are selected as sample under simple random sampling technique. The collected data are classified and tabulated with the help of computer programming. The data analysis is carried out with the help of chi-square analysis and percentage analysis.

Table-1 Village wise Respondents Reasons for Pollution of Drinking Water

Village	Discharge of Chemical and Waste Water into Water bodies	Discharge of toxic chemicals into the public water bodies	Penetration tannery waste water in the ground water system	Lack of consciousness among the tannery units in discharging effluents in public water bodies	Accumulation of tannery waste in public lands	Improper monitoring the activity tannery industries	Total
Ambur	5 (8.33)	6 (10.00)	7 (11.67)	8 (13.33)	12 (20.00)	22 (36.67)	60
Pakkam	7 (11.67)	8 (13.33)	9 (15.00)	17 (28.33)	8 (13.33)	11 (18.33)	60
Palur	8 (13.33)	12 (20.00)	11 (18.33)	7 (11.67)	6 (10.00	16 (26.67)	60
Pallikuppam	9 (15.00)	5 (8.33)	6 (10.00)	8 (13.33)	25 (41.67)	7 (11.67)	60
Palapad	6 (10.00)	9 (15.00)	7 (11.67)	5 (8.33)	10 (16.67)	23 (38.33)	60
Arimalai	29 (48.33)	5 (8.33)	8 (13.33)	7 (11.67)	6 (10.00)	5 (8.33)	60
Total	64 (17.78)	45 (12.50)	48 (13.33)	52 (14.44)	67 (18.61)	84 (23.33)	360

Source: Computed.
Figures in parenthesis denote percentages.

Data presented in table-1 indicate the village wise respondents' reasons for pollution of drinking water. It could be noted that out of the total 360 respondents 17.78 per cent of them attribute the reason for pollution of drinking water consequent upon tannery effluents in terms of discharge of chemicals and wastewater into the public water bodies. The households of Arimalai village (48.33 per cent) mainly state this reason. It is observed from the study, that 12.50 per cent of the households state that discharge of toxic chemicals by the Tannery industries to the adjoining water bodies lead to the pollution of drinking water. It could be noted that 13.33 per cent of the households state that penetration tannery waste water in the ground water system leads to pollution of ground water. In this study 14.44 per cent of the households hold the view that lack of consciousness among the tannery units in discharging effluents in public water bodies leads to pollution of drinking water. Out of the total 360 respondents 18.61 per cent of them hold the view pollution of ground water is due to accumulation of tannery waste in public lands and it result in pollution of drinking water. Moreover 23.33 per cent of the respondents say that pollution drinking water is due to improper monitoring the activity tannery industries.

Majority of the respondents of Ambur village (36.67 per cent) Palapadu village (38.33 per cent) and Palur village (26.27 per cent) observe that pollution drinking water is due to Improper monitoring the activity tannery industries. A considerable number of respondents of Pakkam village (28.33 per cent) cite that pollution drinking water is the result of lack of consciousness among the tannery units in discharging effluents in public water bodies. Majority of the respondents Pallikuppam village (41.67 per cent) hold the view pollution of ground water is due to improper monitoring the activity tannery industries.

Table-2 Caste wise Respondents' Reasons for Pollution of Drinking Water

Caste	Discharge of Chemical and Waste Water into Water bodies	Discharge of toxic chemicals into the public water bodies	Penetration tannery waste water in the ground water system	Lack of consciousness among the tannery units in discharging effluents in public water bodies	Accumulation of tannery waste in public lands	Improper monitoring the activity tannery industries	Total
Forward caste	15 (14.85)	23 (22.77)	17 (16.83)	13 (12.87)	23 (22.77)	10 (9.90)	101
Backward caste	7 (8.24)	6 (7.06)	7 (8.24)	9 (10.59)	22 (25.88)	34 (40.00)	85
Most backward caste	26 (36.11)	9 (12.50)	16 (22.22)	8 (11.11)	7 (9.72)	6 (8.33)	72
Schedule caste	16 (15.69)	7 (6.86)	8 (7.84)	22 (21.57)	15 (14.71)	34 (33.33)	102
Total	64 (17.78)	45 (12.50)	48 (13.33)	52 (14.44)	67 (18.61)	84 (23.33)	360

Source: Computed.
Figures in parenthesis denote percentages.

Chi-Square Summary Result

Chi-square calculated value	Degrees of freedom	Chi-square tabulate value
82.67	15	25.00

Table-2 presents data on the caste wise respondents' reasons for pollution of drinking water. A considerable number of backward caste respondents (40.00 per cent) and schedule caste respondents state that drinking water pollution is the result of improper monitoring the activity tannery industries. A more than one third of the backward caste respondents (36.11 per cent) attribute the reason of drinking water pollution in terms of discharge of chemical and waste water into water bodies. In general a considerable number of forward caste respondents cite the reason of drinking water pollution in terms of discharge of toxic chemicals into the public water bodies and accumulation of tannery waste in public lands.

The chi-square test is applied for further discussion. The computed chi square value 82.67 is greater than its tabulated value at 5 per cent level significance. Hence there is significant association between caste status of the respondents and their views on reasons for pollution of drinking water.

Table-3 Education wise Respondents' Reasons for Pollution of Drinking Water

Education	Discharge of Chemical and Waste Water into Water bodies	Discharge of toxic chemicals into the public water bodies	Penetration tannery waste water in the ground water system	Lack of consciousness among the tannery units in discharging effluents in public water bodies	Accumulation of tannery waste in public lands	Improper monitoring the activity tannery industries	Total
Primary	20 (18.35)	14 (12.84)	16 (14.68)	16 (14.68)	25 (22.94)	18 (16.51)	109
Pre-secondary	22 (28.57)	11 (14.29)	9 (11.69)	12 (15.58)	8 (10.39)	15 (19.48)	77
Secondary	10 (13.89)	6 (8.33)	7 (9.72)	13 (18.06)	16 (22.22)	20 (27.78)	72
Higher Secondary	7 (11.86)	8 (13.56)	9 (15.25)	6 (10.17)	12 (20.34)	17 (28.81)	59
Degree	5 (11.63)	6 (13.95)	7 (16.28)	5 (11.63)	6 (13.95)	14 (32.56)	43
Total	64 (17.78)	45 (12.50)	48 (13.33)	52 (14.44)	67 (18.61)	84 (23.33)	360

Source: Computed.
Figures in parenthesis denote percentages.

Chi-Square Summary Result

Chi-square calculated value	Degrees of freedom	Chi-square tabulate value
22.84	20	31.40

Table-3 presents data on the education wise respondents' reasons for pollution of drinking water. It could be noted that a more than one fourth of the secondary level educated respondents (27.78 per cent), higher secondary level educated respondents (28.81 per cent), and degree level educated respondents (32.56 per cent) cite the reason for drinking water pollution in terms of improper monitoring the activity tannery industries. A considerable number of pre secondary level educated respondents (28.57 per cent) refer the reason of drinking water pollution with respect to discharge of chemical and waste water into water bodies. In general primary level educated respondents (22.94 per cent) rate the first order reason of drinking water pollution in terms of accumulation of tannery waste in public lands.

The chi-square test is applied for further discussion. The computed chi- square value 27.84 is lesser than its tabulated value at 5 per cent level significance. Hence there is insignificant association between education status of the respondents and their views on reasons for pollution of drinking water.

Table-4 Income wise Respondents Reasons for Pollution of Drinking Water

Income	Discharge of Chemical and Waste Water into Water bodies	Discharge of toxic chemicals into the public water bodies	Penetration tannery waste water in the ground water system	Lack of consciousness among the tannery units in discharging effluents in public water bodies	Accumulation of tannery waste in public lands	Improper monitoring the activity tannery industries	Total
Below Rs.5000	9 (14.06)	15 (23.44)	12 (18.75)	6 (9.38)	11 (17.19)	11 (17.19)	64
Rs.5000-10000	31 (36.47)	9 (10.59)	11 (12.94)	12 (14.12)	9 (10.59)	13 (15.29)	85
Rs.10000-15000	10 (12.66)	7 (8.86)	8 (10.13)	14 (17.72)	22 (27.85)	18 (22.78)	79
Rs.15000-20000	8 (11.94)	7 (10.45)	9 (13.43)	11 (16.42)	13 (19.40)	19 (28.36)	67
Above Rs.20000	6 (9.23)	7 (10.77)	8 (12.31)	9 (13.85)	12 (18.46)	23 (35.38)	65
Total	64 (17.78)	45 (12.50)	48 (13.33)	52 (14.44)	67 (18.61)	84 (23.33)	360

Source: Computed.
Figures in parenthesis denote percentages.

Chi -Square Summary Result

Chi-square calculated value	Degrees of freedom	Chi-square tabulate value
48.75	20	31.40

Table-4 presents data on the income wise respondents reasons for pollution of drinking water. A considerable number of highest income group respondents (35.58 per cent) and respondents in the income group Rs.15000-20000 (28.36 per cent) cite the reason for drinking water pollution in terms of Improper monitoring the activity of the tannery industries. A more than one fourth of the respondents in the income group Rs.10000-15000 (27.85 per cent) attribute the reason of drinking water pollution in terms of accumulation of tannery waste in public lands. A more than one third of the respondents in the income group Rs. 5000-10000 (36.47 per cent) refer the reason of drinking water pollution in terms of discharge of chemical and waste water into water bodies. In this study 23.44 per cent of the lowest income group respondents cite the reason of drinking water pollution in terms of discharge of toxic chemicals into the public water bodies.

The chi-square test is applied for further discussion. The computed chi- square value 48.75 is greater than its tabulated value at 5 per cent level significance. Hence there is significant association between income status of the respondents and their views on reasons for pollution of drinking water.

Table-5 Village wise Respondents' Realization of Pollution of Drinking Water

Village	Changes in Colour and Iron Content	Salty Taste and Accumulation of Impurities	Sometimes Sedimentation	Suspended particles	Algal growth	Total
Ambur	16 (26.67)	26 (43.33)	7 (11.67)	6 (10.00)	5 (8.33)	60
Pakkam	20 (33.33)	16 (26.67)	9 (15.00)	8 (13.33)	7 (11.67)	60
Palur	7 (11.67)	8 (13.33)	19 (31.67)	16 (26.67	10 (16.67)	60
Pallikuppam	10 (16.67)	14 (23.33)	11 (18.33)	16 (26.67)	9 (15.00)	60
Palapad	9 (15.00)	30 (50.00)	6 (10.00)	7 (11.67)	8 (13.33)	60
Arimalai	29 (48.33)	13 (21.67)	5 (8.33)	6 (10.00)	7 (11.67)	60
Total	91 (25.28)	107 (29.72)	57 (15.83)	59 (16.39)	46 (12.78)	360

Source: Computed.
Figures in parenthesis denote percentages.

Data presented in table-5 indicate the village wise respondents' realization of drinking water pollution consequent upon tannery effluents. It could be noted that out of the total 360 respondents 25.65 per cent of them realize the drinking water pollution in terms of changes in colour and iron content in the study area. Majority half of the households of Arimalai village (42.33 per cent) and a one third of the respondents of Pakkam village (33.33%) observe the water pollution in the form of changes in colour and iron content. This happens because of accumulation of pollutants in groundwater consequent upon tannery effluents.

In this study, 29.72 per cent of the households observe the drinking water pollution in the form of salty taste and accumulation of impurities and 15.0 per cent of them refer to it as accumulation of sedimentation on some occasions. In this study 16.39 per cent of the households realize the drinking water pollution in the form of occurrence of suspended particles in the water. Moreover 12.78 per cent of the respondents realize the pollution of ground water in terms of occurrence Algal growth.

Majority of the respondents of Ambur village (43.33 per cent) and Palapad village (50.00 per cent) observe the drinking water pollution in the form of salty taste and accumulation of impurities. A considerable number of respondents Palur village (26.67 per cent) and Pallikuppam village (26.67 per cent) realize the pollution of drinking water consequent upon tannery effluents in terms of accumulation of sedimentation on some occasions.

Table-6 Caste wise Respondents' Realization of Pollution of Drinking Water

Caste	Changes in Colour and Iron Content	Salty Taste and Accumulation of Impurities	Sometimes Sedimentation	Suspended particles	Algal growth	Total
Forward caste	11 (10.89)	42 (41.58)	15 (14.85)	21 (20.79)	12 (11.88)	101
Backward caste	38 (44.71)	14 (16.47)	16 (18.82)	9 (10.59)	8 (9.41)	85
Most backward caste	27 (37.50)	13 (18.06)	15 (20.83)	8 (11.11)	9 (12.50)	72
Schedule caste	15 (14.71)	38 (37.25)	11 (10.78)	21 (20.59)	17 (16.67)	102
Total	91 (25.28)	107 (29.72)	57 (15.83)	59 (16.39)	46 (12.78)	360

Source: Computed.
Figures in parenthesis denote percentages.

Chi-Square Summary Result

Chi-square calculated value	Degrees of freedom	Chi-square tabulate value
55.39	12	21.00

Table-6 presence data on the caste wise respondents' realization of pollution of drinking water. Majority of the backward caste respondents (44.71 per cent), and most backward caste respondents (37.50 per cent), observe the pollution of drinking water consequent upon tannery effluents in terms of changes in colour and iron content. In this study 41.58 per cent of the forward caste respondents and 37.25 per cent of the schedule caste respondents observe the pollution of drinking water consequent upon tannery effluents in form of presence of salty taste and accumulation of impurities.

The chi-square test is applied for further discussion. The computed chi- square value 55.39 is greater than its tabulated value at 5 per cent level significance. Hence there is significant association between caste status of the respondents and their views on realization of pollution of drinking water.

Table-7 Education wise Respondents' Realization of Pollution of Drinking Water

Education	Changes in Colour and Iron Content	Salty Taste and Accumulation of Impurities	Sometimes Sedimentation	Suspended particles	Algal growth	Total
Primary	28 (25.69)	28 (25.69)	13 (11.93)	24 (22.02)	16 (14.68)	109
Pre- secondary	14 (18.18)	23 (29.87)	17 (22.08)	12 (15.58)	11 (14.29)	77
Secondary	17 (23.61)	27 (37.50)	11 (15.28)	9 (12.50)	8 (11.11)	72
Higher Secondary	25 (42.37)	11 (18.64)	9 (15.25)	8 (13.56)	6 (10.17)	59
Degree	7 (16.28)	18 (41.86)	7 (16.28)	6 (13.95)	5 (11.63)	43
Total	91 (25.28)	107 (29.72)	57 (15.83)	59 (16.39)	46 (12.78)	360

Source: Computed.
Figures in parenthesis denote percentages.

Chi-Square Summary Result

Chi-square calculated value	Degrees of freedom	Chi-square tabulate value
23.64	16	26.3

A keen observation of data in table-7 indicates the education wise respondents' realization of pollution of drinking water. It could be noted that the majority of the higher secondary level educated respondents (42.37 per cent) realize the pollution of drinking water consequent upon tannery effluents in form of changes in colour and iron content. In this study 41.86 per cent of the degree level educated respondents, 37.50 per cent of the secondary level educated respondents 29.87 per cent of the pre secondary level educated respondents and 25.69 per cent of the primary level educated respondents realize the pollution of drinking water in the form of presence of salty taste and accumulation of impurities in water.

The chi-square test is applied for further discussion. The computed chi- square value 23.64 is lesser than its tabulated value at 5 per cent level significance. Hence there is insignificant association between education status of the respondents and their views on realization of pollution of drinking water.

Table-8 Income wise Respondents' Realization of Pollution of Drinking Water

Income	Changes in Colour and Iron Content	Salty Taste and Accumulation of Impurities	Sometimes Sedimentation	Suspended particles	Algal growth	Total
Below Rs.5000	15 (23.44)	8 (12.50)	12 (18.75)	19 (29.69)	10 (15.63)	64
Rs.5000-10000	29 (34.12)	16 (18.82)	13 (15.29)	12 (14.12)	15 (17.65)	85
Rs.10000-15000	15 (18.99)	33 (41.77)	12 (15.19)	11 (13.92)	8 (10.13)	79
Rs.15000-20000	24 (35.82)	17 (25.37)	11 (16.42)	9 (13.43)	6 (8.96)	67
Above Rs.20000	8 (12.31)	33 (50.77)	9 (13.85)	8 (12.31)	7 (10.77)	65
Total	91 (25.28)	107 (29.72)	57 (15.83)	59 (16.39)	46 (12.78)	360

Source: Computed.
Figures in parenthesis denote percentages.

Chi-Square Summary Result

Chi-square calculated value	Degrees of freedom	Chi-square tabulate value
47.41	16	26.30

Data presented in table-8 indicate the income wise respondents' realization of pollution of drinking water. It could be noted that a considerable number of respondents in the income group Rs.5000-10000 (34.12 per cent), and respondents in the income group Rs.15000-20000 (35.82 per cent) realize the pollution of drinking water in terms of changes in colour and presence of iron content in water. Majority of the highest income group respondents (50.77 per cent) and respondents in the income group Rs.10000-15000 (41.77 per cent), observe the pollution of drinking water in the form of presence of salty taste and accumulation of impurities. A more than one fourth of the lowest income group respondents (29.69 per cent) observe the pollution of drinking water in the form of presence of suspended particles in water.

The chi-square test is applied for further discussion. The computed chi square value 47.41 is greater than its tabulated value at 5 per cent level significance. Hence there is significant association between education status of the respondents and their views on realization of pollution of drinking water.

CONCLUSION

It could be seen clearly from the above discussion that the respondents cite the first order reason of drinking water pollution consequent upon improper monitoring the activity tannery industries, reason of accumulation of tannery waste in public lands and it result in pollution of drinking water consequent upon tannery effluents the second, reason of discharge of toxic chemicals by the tannery industries to the adjoining water bodies lead to the pollution of drinking water consequent upon tannery effluents the third, reasons of lack of consciousness among the tannery units in discharging effluents in public water bodies leads to pollution of drinking water consequent upon tannery effluents the fourth, reason of penetration tannery waste water in the ground water system leads to pollution of ground water the fifth, and reason of discharge of toxic chemicals by the Tannery industries to the adjoining water bodies lead to the pollution of drinking water consequent upon tannery effluents the last.

The result of caste wise analysis reveals that the backward caste respondents and schedule caste respondents considerably cite the reason for drinking water pollution is due to improper monitoring the activity tannery industries.

The result of education wise analysis reveals that the high level educated respondents mainly cite the reason for drinking water pollution in terms of improper monitoring the activity of tannery industries. The result of income wise analysis reveals that the high income group respondents considerably cite the reason for drinking water pollution in terms of Improper monitoring the activity of the tannery industries and low income group respondents say it as discharge of toxic chemicals into the public water bodies.

The findings of respondents' realization on pollution of drinking water consequent upon tannery effluents indicate the following facts. The respondents have first order realization of pollution of drinking water consequent upon tannery effluents in terms of presence of salty taste and accumulation of impurities, changes in colour and iron content in water the study area the second, accumulation of suspended particles in water the third, presence of sometimes Sedimentation the fourth, and occurrence of growth in water the last.

The result of castes wise analysis reveals that the backward caste and most backward caste respondents considerably realize the pollution of drinking water consequent upon tannery effluents in terms of changes in colour and presence of iron content in water.

It is observed that the higher secondary level educated respondents mainly observe the pollution of drinking water in form of changes in colour and presence of iron content in water. The result of income wise analysis reveals that the high income group respondents mainly realize the pollution of drinking water in terms of presence of salty taste and accumulation of impurities.

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