

# Environmental awareness

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Public Awareness about Open Dumping of Solid Wastes and Its Effect on the Surrounding Environment: A Study at Kachuadanga in Tangail Pourashava, Tangail, Bangladesh. T. R. Tusher, M. Mustafa and S. Khanam Department of Environmental Science and Resource Management Mawlana Bhashani Science & Technology University, Santosh, Tangail-1902

**Abstract** The study was conducted to know the public awareness about open dumping of solid wastes and its effect on the surroundings environment at Kachuadanga in Ward no. 11 of Tangail Pourashava. One hundred and ten people were selected through simple random sampling technique from Kachuadanga where 75 were male and 35 were female. Among the respondents, 26.4% were household, 12.7% were student, 26.4% were service holder, 21.8% were daily labor and 12.7% were others. Form the 110 respondents, 12.7% were illiterate, 32.7% were range from class 1-5, 12.7% had passed SSC, 24.5% had passed HSC and 17.3% respondents were graduate. The respondents were asked about solid wastes, effect of open dumping of solid wastes, solid waste management, etc. to evaluate their understanding about the solid wastes as a global environmental issue and to find out the problems they are currently facing from the dumping site of solid wastes in Kachuadanga. In our study, the result indicates that all of the respondents have more or less idea about the solid wastes and majority of the respondents (86.4%) think open dumping of solid wastes cause environmental pollution. The result also shows that the respondents face a lot of problems such as offensive odor (69.1%), transportation problem (13.6%), increased mosquitoes, flies and insects (9.1%), aesthetic problem (8.2%) from the dumping site. Most of the respondents (89.1%) demands for

wrong site selection and lack of proper maintenance causing odor nuisance, infestation of animals, skin diseases, respiratory diseases, etc. The study shows that the service holder, students and graduate respondents have better idea about the open dumping of solid wastes, effects of open dumping solid wastes, gases released from dumping site, green house effects, etc. than other respondents. Key words: Public awareness, solid waste, open dumping, environmental pollution.

**Introduction** The environment does not belong to man, man belongs to the environment. So, it is our foremost duty to conserve the environment and its resources. But the rapid growth of population and urbanization decreases the non-renewable resources and disposal of effluent and toxic waste indiscriminately, are the major environmental issues posing threats to the existence of human being. Solid waste is one of the most visible, immediate and serious environmental problems confronting municipal authorities in developing countries like Bangladesh (Rahman, 2008). General municipal solid waste is collected and dumped in a mixed form in an unscientific manner on open waste land or low-lying areas even near creeks, forests, rivers, ponds and other ecological sensitive regions. This practice is commonly known as “ Open dumping” and does not meet the norms of disposal specified in the municipal solid waste rules (Sahu, 2007). This is due to lack of finances of the government, rapid population growth, and increasing urbanization (Gyalpo, 2008). Open dumping grounds not only affect the environment by air, water and soil pollution but also damage the property in the vicinity. The presence of moisture and rainwater leach the pollutant chemicals produced during degradation to dissolved and flow into the groundwater reserve/river thereby

affecting the flora and fauna of the water body. The dump sites virtually become a breeding ground for all kinds of diseases (Sahu, 2007). One of the major impacts from open dumping is the release of greenhouse gases, mainly methane and carbon dioxide, are produced from the biodegradation of wastes under anaerobic conditions through microbial activities (Chiemchaisri, 2005). These greenhouse gases are responsible for climate change, global warming, ozone layer depletion, etc. those are potential threats for survival and existence in the earth. In order to reduce, minimize or mitigate these environmental threats, environmental education and awareness program is utmost essential. Environmental education and awareness is a lifelong process of recognizing values and clarifying concepts in order to develop a world population that is aware of and concerned about the environment, its associate problems, so that the population will have the knowledge, skill, attitudes, motivation and commitment to work individually and collectively towards the solutions of current problems and prevention of new ones. It creates an overall perspective, which acknowledges the fact that natural environment and man-made environment are interdependent. Hence, efforts are being made for inculcating environmental consciousness or awareness among the mass people. The main purpose of environmental education is to acquaint and sensitize the responsible people minds to the environmental problems and concerns, to inculcate in them healthy personal and social attitude and behavior towards environment. Thus, people must have awareness about environment and the problems associated with it so that they can play their role very effectively in all segment of our society and also contribute to national and international level (Mamun et al, 2011). At

the present situation, it is very much essential to grow awareness among the people of Bangladesh about the problems associated with the environment such as open dumping of solid wastes and its effect, water pollution, green house effect, climate change, etc. in order to conserve or protect the environment. Considering the above views in mind, the present study was undertaken with the objective- to determine the status of public awareness about the open dumping of solid waste and its effect on the surrounding environment of Kachuadanga in Tangail Pourashava.

#### Methods and Materials

The present study was carried out to examine the public awareness about open dumping of solid wastes and its effect on the surrounding environment of Kochuadanga in Tangail Pourashava. One hundred and ten people (75 male and 35 female) were selected through simple random sampling technique from Kachuadanga (Ward no. 11), Tangail Pourashava. Data were collected through structured and semi-structured questionnaire and interview methods. The questionnaire containing 44 questions (e. g. idea about solid wastes, impacts of open dumping of solid waste, environmental pollution from open dumping of solid waste, problems facing from dumping site, green house effect, green house gases released from dumping site, solid waste management, etc.) was developed to obtain the relevant information. Data were collected during the period from August to September, 2011. The statistical measures such as number and percent distribution were used for describing the variables of the study. Both SPSS (Statistical Package for Social Science) and MS Excel were employed to analyze data.

#### Result and Discussion

Among the 110 respondents, 3. 6% of the respondents were between 15-20 years, 22. 7% people were between

21-25 years, 41. 8% respondents were between 26-30 years, 23. 6% respondents were between 31-40 years and 8. 2% respondents were above 40 years. 68. 2% respondents are male and 31. 8% respondents are female.

Table 1 shows the age\*sex cross-tabulation of the respondents and Figure 1 and 2 shows the sex of the respondents and the clustered bar chart of age\*sex cross-tabulation of the respondents respectively.

Table 1: Age\*sex cross-tabulation of the respondents

Age	Sex	Total	Male	Female
15-20	3	1	4	
21-25	12	13	25	
26-30	33	13	46	
31-40	19	7	26	
> 40	8	1	9	
Total	75	35	110	

Figure 1: Sex of the respondents.

Figure 2: Age\*sex cross-tabulation of the respondents. Figure 2 shows that majority of the respondents were male and a major portion (30%) of male respondents range between 26-30 years. Data showing in Table 2 shows that 12. 7% respondents were illiterate, 32. 7% respondents were range from class 1-5, 12. 7% respondents had passed SSC, 24. 5% people had passed HSC and there are 17. 3% respondents were graduate (Figure 3). We can hardly say that the educational status of most of the respondents is not satisfying and that's why majority of them are not aware enough about open dumping of solid waste and its effect.

Table 2: Educational qualification of the respondents

Educational Qualification	Frequency	Percentage (%)	Cumulative Percentage
Illiterate	14	12. 7	12. 7
Primary Level	36	32. 7	45. 5
SSC	14	12. 7	58. 2
HSC	27	24. 5	82. 7
Graduate	19	17. 3	100. 0
Total	110	100. 0	

Figure 3: Educational qualification of the respondents. We have classified the total respondents into 5 categories and the maximum respondents (26. 4%) were both household and service holders. Among the other respondents, 12. 7% were student, 21. 8% were

daily labor and 12. 7% were others such as businessman, street hawkers, etc. Table 3 shows occupation types of the respondents and Figure 4 shows the clustered bar chart of occupation\*educational qualification cross-tabulation of the respondents. Table 3: Occupation types of the respondents

Occupation	Frequency	Percentage (%)	Cumulative Percentage
Household	29	26. 4	26. 4
Student	14	12. 7	39. 1
Service Holder	29	26. 4	65. 5
Daily Labor	24	21. 8	87. 3
Others	14	12. 7	100. 0
Total	110	100. 0	

Figure 4: Occupation\*educational qualification cross-tabulation of the respondents. Figure 4 shows that a large number of respondents were daily labor those are primarily educated and majority of the graduate respondents are service holder. All of the respondents have clear idea about solid wastes and also consider solid waste as a problem. Data from Table 4 shows that about 86. 4% of the total respondents have more or less idea about the harmful effects of open dumping of solid wastes such as offensive odor, transportation problem, etc. and a fewer people (13. 6%) have no idea about how solid wastes are polluting our environment. Table 4 also indicates that about 50. 9% people think that the dumping site is causing ground water contamination through infiltration and leaching of chemical pollutants. All of the respondents use tube-well water as their drinking water source. About 56. 4% respondents think that the most important problem is offensive odor, 13. 6% people think that open dumping of solid wastes create transportation problem, 12. 7% are suffering from different diseases such as respiratory disease, diarrhea, skin disease, etc, 9. 1% people think long term solid waste produces mosquitoes, flies, insects, etc. and other 8. 2% think that it creates aesthetic problem (Figure 5). Table

4: Perception about open dumping of solid waste SL. No. | Issues | Percentage (%) | | Yes | No | 1. | Idea about impacts of open dumping of solid waste | 86. 4 | 13. 6 | 2. | Idea about groundwater contamination from open dumping of solid waste | 50. 9 | 49. 1 | 3. | Use mask while passing the dumping site | 40. 9 | 59. 1 | 4. | Dump waste in the dumping site | 43. 6 | 56. 4 | 5. | Appropriate place for dumping waste | 20. 9 | 79. 1 | 6. | Complain to the concerned authority | 37. 3 | 62. 7 | 7. | Idea about green house effect | 40 | 60 | 8. | Idea about green house gases released from the dumping site | 12. 7 | 87. 3 | 9. | Idea about solid waste management | 52. 7 | 47. 3 | 10. | Present solid waste management is satisfactory | 12. 1 | 87. 9 |

Figure 5: Most important problems that respondents are currently facing. Data showing in Table 4 also shows that 40. 9% people use mask while passing the dumping site. The clustered bar chart of educational qualification\*use of mask cross-tabulation is shown in the Figure 6. About 56. 4% of the local people do not dump of waste in the dumping site and the other 43. 6% dump waste here (Table 4). Figure 7 shows that about 37. 5%, 50% and 12. 5% people dump their domestic wastes in the dumping site because of no dustbin, no available dustbin and lack of consciousness respectively. About 79. 1% people think that it is not an appropriate place for dumping waste because there are a busy road, some shops, saw mills, rice mills and also there are many houses adjacent to the dumping site where local people live, but other 20. 9% think that it is not harming so much and the purpose of choosing that place is to fill the land cheaply as well as to manage solid waste of Tangail Pouroshova (Table 4). About 37. 3% people complained to the concerned authority to solve the problem and other 62. 7% did nothing



to solve the problem (Table 4). Figure 8 shows that the clustered bar chart of idea about appropriate place\*complain to authority cross-tabulation of the respondents. Figure 6: Educational qualification\*use of mask cross-tabulation of the respondents. Figure 6 shows that the respondents those were primarily educated do not use mask while passing the dumping site because of lack of awareness. Whereas the graduate and HSC passed respondents are more aware than other respondents and use mask while passing the dumping site. Figure 7: Reason of dumping domestic wastes by the respondents in the dumping site. Figure 8: Idea about appropriate place\*complain to authority cross-tabulation of the respondents. About 40% of the people know what is green house effect and 12. 7% respondents think that significant amount of green house gases such as methane, carbon-dioxide, etc. are emitted from the dumping site (Table 4). Figure 9 shows the clustered bar chart of cross-tabulation between idea about green house effect and idea about gases released from dumping site of the respondents. Figure 9: Cross-tabulation between idea about green house effect and idea about green house gases released from dumping site of the respondents. Figure 9 shows that only 12. 73% respondent out of 40% respondents, those have idea about solid waste management, have idea about gases released from the dumping site. Table 4 also shows that about 52. 7% people have idea about solid waste management and other 47. 3% people have no idea about solid waste management. About 12. 1% people said that present solid waste management of Tangail Pourashava is satisfactory and other 87. 9% are not satisfied because of lack of proper maintenance (Table 4). Figure 10 shows that the clustered bar charts of cross-tabulation between idea about

solid waste management and satisfaction of the respondents. Figure 10: Cross-tabulation between idea about solid waste management and satisfaction of the respondents. Figure 10 shows that 87.93% respondents those have idea about solid waste management are not satisfied from the present solid waste management system, whereas a few percent (12.07%) are satisfied. Conclusion The study showed that the extent of general concept of environmental awareness among the local people of Kachudanga was good though they had average idea about solid waste, effect of solid wastes, environmental pollution, green house effect, solid waste management, etc. This study also showed that there is a significant difference in awareness among various level of occupation. The study found that the students, service holders and graduate respondents are more aware about the environment, solid waste, environmental pollution, etc. than their counterparts daily labor and others including businessman. There was no environmental awareness program conducted in Kachudanga and majority of the people never participated in any environmental education or awareness program. A large number of respondents suggest that it is necessary to improve present solid waste management system of Tangail Pourashava and to change the place for dumping municipal solid waste from Kachudanga to other place where effects of dumping solid waste will be negligible. Recommendation 1. Environmental education or awareness programs i. e. seminar, conference, environmental fair, rally, etc. should be arranged in Tangail Pourashava and all over the Bangladesh and ensured participation of all levels of people of the society. 2. Environmental issues such as water pollution, air pollution, soil pollution, green house house effect,

global warming, ozone layer depletion, solid waste management, etc. should be included in the syllabus and made compulsory from primary level to upper level. 3. Publicity about environmental concerns should be developed through distribution of leaflets, posters and mass media support. 4. All the parties' (i. e. government, households, service holders, students, daily labor, businessman, etc.) spontaneous participation and involvement should be ensured to manage and dispose solid wastes properly in order to maintain clean and healthy environment. References Chiemchaisri, C., W.

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