

STUDY ON INDUSTRIAL WASTE MANAGEMENT SCENARIO OF BSCIC AREA OF RAJSHAHI CITY

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ABSTRACT

The waste treatment and management of BSCIC, Rajshahi does not follow any rule. There is no ETP of any industry. The reason of not having ETP is most of the industries produce little amount of wastewater. They discharge their wastewater in nearby pond or in pit and dump solid waste at road side or City Corporation's dustbin. The silk industries dump their waste in pit and nearby pond. The food industries dump their waste as fish feed. The marble industries use their waste as construction materials. Wastes of plastic and recycling industries dump their waste nearby ponds. Metal industries dump their wastes at roadside. Chemical industries dump their waste by digging pit. And all of these industries dump their waste without any treatment. Therefore, immediate necessary action needs to be taken by the authority to improve the situation.

Keywords: Industrial waste; wastewater; management; treatment

INTRODUCTION

The term industrial waste refers to all wastes arising from industrial operations or derived from manufacturing processes. Industrial wastes encompass solids, liquids, gases, and sludge. Industrial wastes can be characterized according to whether they are hazardous or non-hazardous. Although the literature suggests that the majority of industrial waste generated in developing countries is non-hazardous, hazardous waste still represents serious environmental and health threats to these countries (Polprasert and Liyanage, 1996). Usually untreated industrial wastes are disposed of unsafely through illegal dumping, open-dumps, lakes, and rivers in developing countries (Mato and Kaseva, 1999). Additionally, hazardous and non-hazardous wastes are often not segregated and are mixed together with domestic waste at disposal site (Mato and Kaseva, 1999). In combination or separately, these actions create serious environmental risks (such as contamination of groundwater and soil from landfill leachate), and create great health risks to firm employees, municipal workers, and waste pickers who collect and work with waste.

Rajshahi is one of the divisional city. Like Dhaka and Chittagong, Rajshahi is not developed in industrial sector yet now. The industries are located throughout the *zila* but around 32% are found within the four *thana* that make up the RCC area and employ over 25000 people. The Bangladesh Small and Cottage Industries Corporation (BSCIC) established an industrial estate with 325 plots in Sopura, on the northern edge of Rajshahi City in an area of just under 96 acres. Of these, 173 have been filed and the others have remained vacant for 42 years (RDA vol.-I 2004, p. 14). It is therefore clear that Rajshahi is not a major industrial area like Dhaka, Narianganj or Gazipur but it is famous for its silk and it is still likely that industrial waste may have a significant effect on agricultural production where wastewater is being used. Two of the major industrial silk mills have a combined annual production capacity of 290000 yards of silk (RDA vol.-I 2004, p. 23).

Nowadays managing wastes become most important urban environment problems because of the increasing population and more industrialization. The volume and composition of wastes generation is increasing due to the effect of population growth (Rajshahi 1.89 million in 1901, 2.27 million in 2001 and 2.60 million in 2011 (BBS, 2013) and expanding economics and the infrastructure necessary to manage the ensuing problems is inadequate. As the developing city of Rajshahi, the main industries, which have been developed here, are one Jute mill, 12 garments factory (for local use), 620 Rice and Oil mill, 689 Handloom, 13 Plastic industry (BBS, District Statistics 2011), seven Rubber and plastic

industry, 26 Cotton and spinning mill, one Cigarette factory, eight Match factory, 10 Glass factory, two Soap factory, nine Iron and Metal factory, 39 Dairy product, 2238 Food Industries, one Pharmaceutical (BBS, 2006). The industries are located within the district but around 32% are found within the four Upazila that make up the Rajshahi City Corporation area and employ over 25000 people. The Bangladesh Small and Cottage Industries Corporation (BSCIC) established an industrial estate with 325 plots at Sopura, at the northern edge of Rajshahi City in an area of just under 96 acres. Of these, 173 have been filed and the others have remained vacant for 42 years (RDA, 2004). Two of the major industrial silk mills have a combined annual production capacity of 290000 yards of silk (RDA, 2004). Therefore, the main economic activities are in this industrial zone which environmental situation needs to be assessed and improve as required.

METHODOLOGY

In Bangladesh as well as in Rajshahi, there is limited research and paucity of literature information on industrial waste management. So, information was collected from research institutions, government and non-government organizations involved with industries and industrial waste management. Field investigation through questioners and field observations were conducted. The existing situations were ascertained through a critical review and analyses of the information extracted from documents and informants discussed with, which was collected from expertise on that area. Technical officer of BSCIC gave a list of industries of that area. Each of these industries were visited several times as required and following data were collect: industry name, owner, address, category, type of waste generated, quantity of waste generated, origin of waste, collection, storage and dumping or treatment system of waste.

RESULTS AND DISCUSSIONS

In order to assess the relationship between firm ownership and waste minimization behavior, the participating firms consist of both state-owned enterprises and private ventures. Even though anticipated at the time of selecting the study participants, none found joint ventures, “Share Company”, among medium to large scale industrial firms operating in the BSCIC. Participating industries included: Sopura Silk Factory, Usha Silk Factory, Regent Alluminium, Polash Metal Industry Limited, Kezin Chemical Limited, Haque Rice Mill, Rajshahi Misty Bari, Bishal Food Industries Limited, Verona Marbel Industries Limited, Modern Plastic Industries Limited, Taskin Industries. The information that was collected are name of the industry, owner of the industry, address of the industry, type of the industry, types of waste generate, quantity of waste, treatment and disposal of waste.

Survey on Waste Management in Sopura Silk Factory

Sopura silk factory is one of the large silk industries in Rajshahi city situated at B-74, BSCIC industrial estate. The silk yarn is purchased from market and produce mainly Shari. The produced Shari is also printed in this industry at dying section. Through this production and printing process, liquid waste of about 20 liters is produced every day with some solid waste. The solid waste is disposed of through the municipal service. However, liquid wastes (dying effluent) are stored in storage tank through a pipe line. The dying activity and effluent storage are shown in Fig. 1.



Fig. 1: Dying effluent production and storage

The liquid wastes are kept in storage tank for some days and finally disposed in trench which is shown in Fig. 2.



Fig. 2: Disposal of effluent from storage tank

Survey on Waste Management in Usha Silk Factory

Usha silk factory is also large industry like Sopura silk factory and same type of products are produced. Dying and printing are the major function to produce the finish product after weaving the cloth. This industry is situated in BSCIC industrial estate at plot no. A-235. In this factory there is no dying section. Most of works are done with handloom. Just yarns are washed in the barrel type container. Every day 10 to 15 liter dying effluent is produced and dumped in a nearby pond without treated. Effluent production and disposal are shown in Fig. 3.



Fig. 3: Washing drum and pipe line for dumping at pond



Fig. 4: Dust production and storage

Survey on Waste Management in Verona Marble Industry

This is the so far only marble and granite industry in Rajshahi situated at plot No. 206 in BSCIC industrial estate. The dust and powder type wastes of about 25 kg are produced for shaping the marble and granite with block cutter machine. The produced powdered wastes are initially submerged under water in storage tank to protect the spreading and flying around. The tank is usually filled up by 30 tons of stone crushing. The wet dust is removed from tank every month and dumped in road side municipal bin. Sometimes this waste is reused in construction work by public. Fig. 4 shows the marble cutting and dust storage tank.

Survey on Waste Management in Modern Plastic Industry

There are some plastic industries in Rajshahi produce finish product from new and recycled raw materials. This is a plastic recycling industry situated at plot no. A-167 in BSCIC industrial estate. Both solid and liquid wastes are produced from washing and shredding of refuse plastics. About 500 liter liquid waste is produced per 300 kg plastic shredding and washing per day. The wastewater is disposed of in nearby pond without treatment. Waste production and disposal is shown in Fig. 5.



Fig. 5: Liquid and solid wastes production and dumping at nearby pond

Survey on Waste Management in Palash Metal Industry

Palash Metal Industry is situated at plot no. A-98 in BSCIC industrial estate, Sopura, Rajshahi. Mainly ashes and coal are major wastes produced during processing of metals. About 100 kg of wastes are produced per day in this industry and disposed of at the road side. The municipal wastes collection vehicle comes and collects the waste to final disposal site. Metal processing wastes are shown in Fig. 6.



Fig. 6: Metal processing and disposal of metal processing wastes at road side

Summarization of results

From above discussion and study we see that the industrial waste treatment and management of BSCIC, Rajshahi does not follow any rule for protection of public health and environment. These industries produce comparatively little amount of wastes and do not have any standard effluent treatment plant (ETP). Therefore, they dump their waste usually at nearby pond, road side or in trench. Some of industries dump their waste in City Corporation's dustbin. Wastes of "Verona Marbel Industry" are occasionally used as construction materials. Wastes from different food industry are used as food of fish (results are not shown in this paper). Wastes from chemical industry and silk industry dump in trench or pond.

CONCLUSIONS

Rajshahi, like most developing industrial cities, lacks the infrastructure, financial resources, and institutional capacity necessary to effectively manage industrial liquid and solid wastes as well as adequately control the pollution. There is no ETP of any industry because they produce small amount of waste. There is also problem of lacking of space for ETP. As a result environment is getting polluted day by day. In terms of waste minimization activities, the survey found that all interviewed firms had not adopted waste minimization measures.

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