IDENTIFICATION OF INDUSTRIAL HAZARDOUS WASTES IN TEHRAN AND VARIOUS METHODS OF THEIR DISPOSAL

M. Asadi ¹, PhD; D. Faezy Razy ², MS; M. Vojdony ³

Key words : Hazardous waste, Management, Tehran, waste

Abstract

There are enormous quantities of unknown composition of hazardous wastes in Tehran without any control, safe disposal and treatment. This study was done to identify hazardous wastes and to control this wastes by establishing a treatment, storage and disposal facility. According to available statistics there are 4461 different industries in Tehran, out of which sample were chosen each having over ten employees(5). From the data collected, the quantity of liquid, solid and semi-solid industries hazardous wastes was 149050 tons all together. Of the mentioned total waste, a ratio of 46.64% is toxic, 30.84% is corrosive, 1.73% is ignitable and 20.79% of the waste shows other characteristics.

About 40.83% of the produced waste is transported to the municipality site, 1.72% is incinerated against sanitary regulations, 1.96% is recovered of recycled, 37.19% is landfilled in place other than municipality site and some other wastes are disposed by unauthorized methods.

¹-Dept. of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences, P.O.Box 6446-14155 Tehran, Iran.
²-School of Public Health, Hamedan University of Medical Sciences.
³-Environmental protection Agency of IRI.
Introduction

Hazardous wastes are generated from a wide range of industrial, commercial, agricultural and even domestic activities. Hazardous wastes can include solids, liquids, gases, sludge, containerized gases of contaminated containers. Hazardous wastes have only come to be recognized as a priority problem over the past 10 to 15 years. Hazardous wastes can cause immediate and short term public health problems, as well as long term environmental pollution. It is important that all developing countries should institute controls over hazardous wastes to avoid excessive costs in the future [2,18,19,20].

Definition of Hazardous Wastes:

In the last few years, considerable attention has been focused on the question of what constitutes hazardous wastes. The U.S. Environmental Protection Agency has defined a waste to be hazardous, under the existing legislation, if it meets one or more of the following criteria[3,4,6,11].

- Exhibits characteristics of ignitability, corrosivity, reactivity or toxicity.
- Is a nonspecific source of waste (generic waste from industrial process).
- Is a specific commerical chemical product or intermediate.
- Is a mixture containing a listed hazardous waste.
- Is a substance that is not excluded from regulation under resource conservation and recovery act subtitled C.

The following definition of hazardous waste was prepared under UNEP by the Ad Hoc group of experts on the environmentally sound managment of hazardous wastes in December 1985:[1,8,9,18].

"Hazardous wastes means wastes other than radioactive wastes which by reason of their chemical reactivity or toxic explosive, corrosive or other characteristics causing danger of likely to cause danger to health or the environment, whether alone or when coming into contact
Each character represents one of the above questions. Then the database took the following form:

<table>
<thead>
<tr>
<th></th>
<th>Quantity</th>
<th>ID.Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPI Sludge</td>
<td>7900 t/y</td>
<td>QFPTAIM</td>
</tr>
<tr>
<td>Slops Oil</td>
<td>2900 t/y</td>
<td>MLTTDII</td>
</tr>
<tr>
<td>DAF Floats</td>
<td>6200 t/y</td>
<td>QSTTDIP</td>
</tr>
<tr>
<td>Bottom Sludge of</td>
<td>2 t/y</td>
<td>MFTTAIP</td>
</tr>
<tr>
<td>Crude Oil Tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat Exchanger Cleaning</td>
<td>26 t/y</td>
<td>DSTOWIM</td>
</tr>
<tr>
<td>Ing. bundle Solids</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

With regard to the collected data quantities of solid, liquid and semi-solid industrial hazardous wastes is assumed to be 149,050 tons. According to the data, the percentage of various industrial activities in generation of industrial hazardous wastes are as follows:

- food processing 2.62%
- textile, clothing and leather industries 1.48%
- chemical production 53.67%
- non-metallic mineral product industries 8.69%
- base metal producing industries 15.43%
- machinery, equipment and tool industries 18.11%

Of the mentioned total wastes, a ratio of 46.64% is toxic, 30.84% is corrosive, 1.73% is ignitable and 20.79% shows other characteristics. About 40.83% of the produced waste is transported to the municipality site, 1.72% is incinerated against sanitary regulations, 1.96% is recovered or reused, 37.19% is landfilled in the places other than municipality site and others are disposed by unauthorized methods (fig 1-6).

There are various quantities of hazardous wastes in Tehran without and control, safe disposal and treatment. To control these wastes a treatment, storage and disposal facility (TSDF) should be established.
Fig. 1- Percentage of Industrial Total Wastes Generated in Tehran
Fig. 2- Percentage of Industrial Total Wastes Generated in Tehran
Fig. 3 - Percentage of Industrial Hazardous Wastes Generated in Tehran

- F = Textiles
- E = Food Processing
- D = Non-Metallic Mineral Product
- C = Base Metal Industry
- B = Machinery, Equipment & Tools Industry
- A = Chemical Production

- 53.7%
Fig 4- Characteristics of Hazardous Wastes in Tehran
Fig. 5 Disposal Methods of Hazardous Wastes in Tehran

E = Other Unauthorized Methods
D = Incineration
C = Recovery
B = Landfilled by Industrial Units
A = Transport to The Municipality Site

Proportions

0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0
Fig. 6- Percentage of Hazardous Wastes Generated from Oil Industries
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