SUMMARY

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In Egypt, a lot of hazardous wastes are produced a year. From pollution point of view, removal of these wastes can not be ignored. An important waste of them is the domestic dry battery cell. Annually, 200 million pieces are produced. Their spent batteries contain different metals and salts. Economically, it may be necessary to carry out this study to make use of these recurring waste resources by recovering valuable metals and salts. The plan of this study consists of different parts as follows:

1- Literature survey part; technical papers, patents and reviews dealing with the recovery of metal and non-metal values from spent dry battery cell were surveyed from the available sources. These publications concerned with the following major items:

i. The types and the markets of the dry battery cell.

ii. Methods of recovery of the spent dry battery components.

2- An experimental part which includes:

i. Preparation of materials; spent battery sample, weighed 250Kg obtained from the waste yard.

ii. Preparation of chemicals, water and gases with a high pure grade.

iii. Instrumentation

iv. A conceptual experimental block diagram to achieve the designed goals that fulfill high efficiency of recovery and low cost of products.

v. Measurement of the physico-chemical properties of the input, intermediate and end products of this study.

3- Results part:

i. The obtained results addressed to the experimental program.

ii. Estimation of the efficiency of the applied method.

iii. Identification and electrochemical synthesis of the formed zinc-manganese by-product compound(s).

4- Discussion of the obtained results.

A discussion has been put forward to explain the obtained results. This part includes models to help interpreting the main findings on basis of the reactions between the ingredients, the physical and chemical properties of the chemical compounds involved.

5- About 82 references are cited.

6- A summary presenting the whole work of this thesis is also given.

7-Recommendations; this section focuses on the main achievement and the valuable end products that can be recovered with special interest on the effective way to make use of the spent domestic battery cells.

8- A summary in Arabic is attached.