Hazardous Waste Management Plan for Contaminated Construction Sites

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Abstract

A HAZARDOUS WASTE MANAGEMENT PLAN is being developed for handing contamination at construction sites. Discovery of contamination on a construction site means big delays and cost overruns. Hence a detailed procedure for contaminated sites is being developed for TxDOT engineers that provides information on the current acceptable practices and techniques in handling common types of contamination. The collected information will be synthesized into well integrated reference document that has the plans to address contamination at various stages of construction. One of the tasks in developing the handbook is collection of case studies, the analysis of which gives a better understanding of available options under various site conditions. All the cases collected so far had been documented in a database which is simple to manage and helpful in selection of the remedial options. The analysis of case studies shows that the physical methods are the most widely used technologies compared to all the remediation options available. Analysis on costs shows that chemical processes are the most expensive while physical methods are the least expensive of all the options available.

1. Introduction

Contamination at the construction site comprises of both hazardous and non hazardous waste. The presence of contamination does not automatically require expensive treatment strategies. If the contamination is due to hazardous waste which will subsequently pose threat to environment as well as human life, the site should be treated before going for construction. Remediation prior to construction is often preferred because it gives the construction crew a clean site requiring no special procedures or precautions. The most difficult situation is when contamination is unexpectedly discovered during construction, which almost results in work stoppages and cost overruns. Another problem with these contaminated sites is that once the contaminated soil or groundwater is removed to the surface, it should be subjected to a wide range of strictly enforced safety and environmental regulations (federal and state) for handling and disposal.

2. Literature Review

The contaminants commonly encountered at a construction site are inorganics, organics, and metals. Depending on the type of contaminant and the extent of contamination, various remedial options are available for the application on to a particular site. The costs involved in the remediation and the duration of the treatment also governs the selection of a particular technology. The aspects considered in the literature review are site characterization, documenting case studies and treatment technologies. The hazardous waste management plan includes five phases starting from site characterization to post treatment monitoring. All the phases are being represented in e form of flow charts which are simple and easy to understand.

3. Case Studies

Case studies on contaminated construction sites are how various treatment technologies were selected and used. These case studies have been collected from different sources and have been documented in a format which gives all the significant details of the project. These case studies help a lot in giving a preliminary idea for selecting the technology. Sixty case studies have been collected so far and are stored in a database using a software program FILE MAKER PRO in Macintosh O.S. This documentation helps in analyzing the data for popular treatment technologies and cost. The query will then provide with the case studies of the similar kind and hence gives an idea as to which treatment method is suitable for the conditions of the site. The results of analysis shows that the physical methods are the most frequently selected technologies for remediation. The cost analysis shows that the chemical methods are the most expensive technologies while the physical methods are the least expensive for remediation. This shows that the cost is also an important factor in selecting a remediation technology.

The analysis of case studies are shown in the following figures:

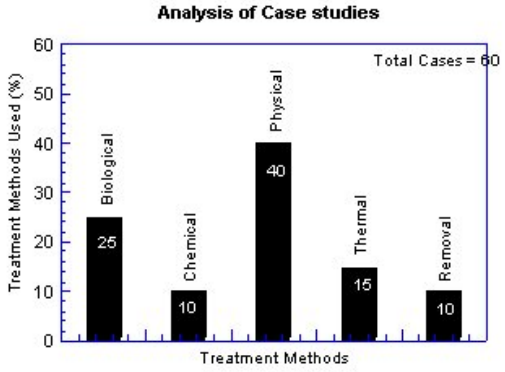

Figure 1: Analysis of case studies with reference reference to treatment methods.

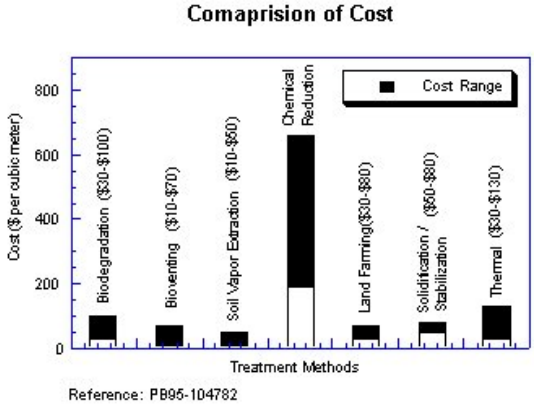

Figure 2: Analysis of case studies with to cost.

4. Summary

In this study, sixty case studies have been collected so far and documented. Preliminary analysis on cost and case studies have been completed. The analysis suggests that physical methods are the most popular treatment technologies selected so far for cleaning up the contaminated sites. A Handbook for handling contamination at the construction sites is being developed.

5. Acknowledgments

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6. References

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