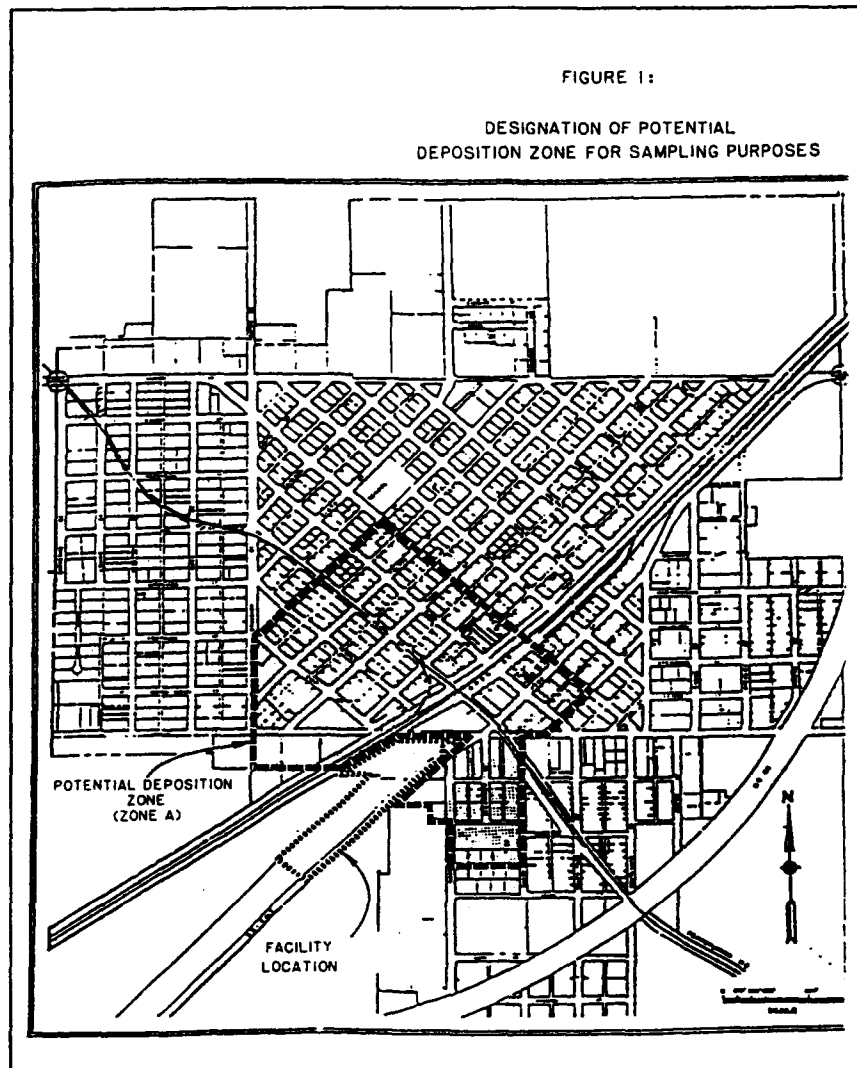


USING RISK ASSESSMENT TO DESIGN COST-EFFECTIVE REMEDIAL INVESTIGATIONS: A CASE STUDY



INTRODUCTION

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The purpose of a remedial investigation/feasibility study (RI/FS), as described in USEPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988), is to select a cost-effective remedial alternative that provides protection of human and environmental health at uncontrolled hazardous waste sites. In a typical RI/FS, field samples are collected in a phased approach and a baseline health risk assessment and health-based remediation criteria are established once the site has been completely charac-

terized. However, as described in this report, potential health risks may be assessed early in the RI/FS process if risk assessment data needs are satisfied in the initial phases of sampling. Consequently, depending on site conditions, a risk-based site investigation may prove to be an extremely cost-effective approach to the RI/FS. Specifically, if it can be determined from a limited amount of sampling that significant health risks do not exist at a particular site, there may be no need for further site characterization.

This report describes the methods used by ChemRisk to prepare a comprehensive health risk assessment from the results of a risk-based site investigation. The site is a residential area suspected to have been contaminated by aerial depositions from a cyclodiene insecticide facility. The initial phase of sampling was designed to collect only those data necessary for an accurate assessment of the potential human health risks associated with the particulate emissions. The results of this focused investigation, which consisted of a limited yet statistically representative sampling of surficial soils and garden vegetables, indicated that cyclodiene-related health risks were not of a magnitude sufficient to warrant concern. Accordingly, the State Environmental Protection Agency (EPA) issued a no-action alternative for the site. The sampling and analytical costs incurred to obtain the no-action decision were a fraction of the budget originally projected for a detailed site characterization.

Following a brief discussion of the site history, the strategic approach used to design the site investigation and prepare the risk assessment are presented in detail below.

SITE HISTORY

Between 1962-1977, several tons of chlordane, aldrin, and heptachlor products were prepared at a formulation facility in a small farming community. By the