

The Underground Chemical Storage Tank Leakage Problem:
Analysis and Recommendations for Groundwater Protection

by

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Thesis

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Preface

This project was begun in the summer of 1983 at the Brown University Center for Environmental Studies, as part of the Mellon Internship Program and sponsored by the Andrew W. Mellon Foundation and the Jesse Smith Noyes Foundation. In June, 1983, Robert Weygand of the East Providence Planning Board notified the Center about a serious leak of crude petroleum from a large above-ground storage tank at the Mobil Oil Tank Farm in East Providence. Concurrently, the Canob Park leakage case (described in Chapter One) was gaining notoriety in the media. Both of these pollution incidents had dated from the early 1970's. Yet only now, after more than ten years, was repair and litigation underway in both cases. These curiosities spurred our newly formed internship group to ask a number of questions. Why such a tremendous lag in cleanup time? Certainly the tanks are everywhere; are incidents like these common in Rhode Island and across the country? How serious a threat to groundwater and drinking water do leaks like these pose? Are there regulations governing the installation and maintenance of these tanks? Who is responsible for enforcement? Is there cause for alarm? Our subsequent research into the problem yielded an affirmative answer to the last question, and some uncertainty with regard to the rest. Groundwater contamination by leachate from underground and above-ground chemical storage tanks is a common phenomenon, and the frequency of these occurrences is on the rise, nationally and locally. Meanwhile, only a handful of states possess regulations to control the storage and handling of hazardous liquids. Rhode Island at that time had no cogent regulations either, but the Department of Environmental Management was becoming aware of the urgent need for more stringent quality controls.

In September, 1983, I synthesized the information on underground storage that we had acquired into a formal report for circulation to DEM, the New England Conservation

Law Foundation, and other agencies concerned with groundwater protection. By October, the local media (*Providence Journal Bulletin*, and other newspapers, radio stations, etc.) had begun to publicize the problem as well: basing the bulk of their commentary on our study. Prominent headlines in the national news (*New York Times*, *Sixty Minutes*, etc) which focused on underground tank leakage, coincided with the rising awareness in Rhode Island. Soon, EPA released a statement to the press, designating underground tank leakage as the predominant cause of groundwater pollution in this country (November, 1983).

In December, DEM assembled a Groundwater Development Group to which I was a consultant, comprised of members from the Water Resources Division, Sanitary Engineers, and legal council, whose task was to formulate a set of regulations designed to control underground storage in the state. I submitted to DEM a set of draft regulations for this purpose, which they have used in part to construct their own regulatory program. I am currently working with DEM to complete a set of workable regulations for adoption under Title 12, Chapter 46: the Water Pollution Control Act.

I am writing this thesis largely to call the reader's attention to the need for a cogent groundwater protection policy, both in Rhode Island and across the country. More specifically this report might serve as a "head start" as it were, for other states' agencies who are only beginning to ponder the problem in a more-rigorous way. It will perhaps bring together an account of the salient issues involved, the economic and regulatory interests of tank owners and environmental authorities (among others), and the programs which have already been initiated or implemented. Also, I would like to graduate.

I owe my thanks to several people who helped in asking and/or answering many of the questions discussed in this report. Among them are the colorful, one might even say wacky, but ever insightful people comprising the original research group: Loren Stolow, Neil Donahue, Julie Roque, Kerry Prew, Katherine Spiratos, and Edwin Welles. Dr.

Dudley Burton provided invaluable advice and moral support in bringing all these motley materials together. Mr. Michael Annarummo, of DEM Water Resources Division offered extremely helpful insight into the regulatory process. Mr. Aaron M. Ellison patiently and deftly typed a significant portion of the manuscript; while simultaneously helping to maintain my sanity at operative levels--a most impressive feat. Finally, the humor, overwhelmingly mellow vibes, and at times, sheer profundity put forth by Dr. Harold Ward, even from three-thousand miles' distance, will e'er be appreciated.