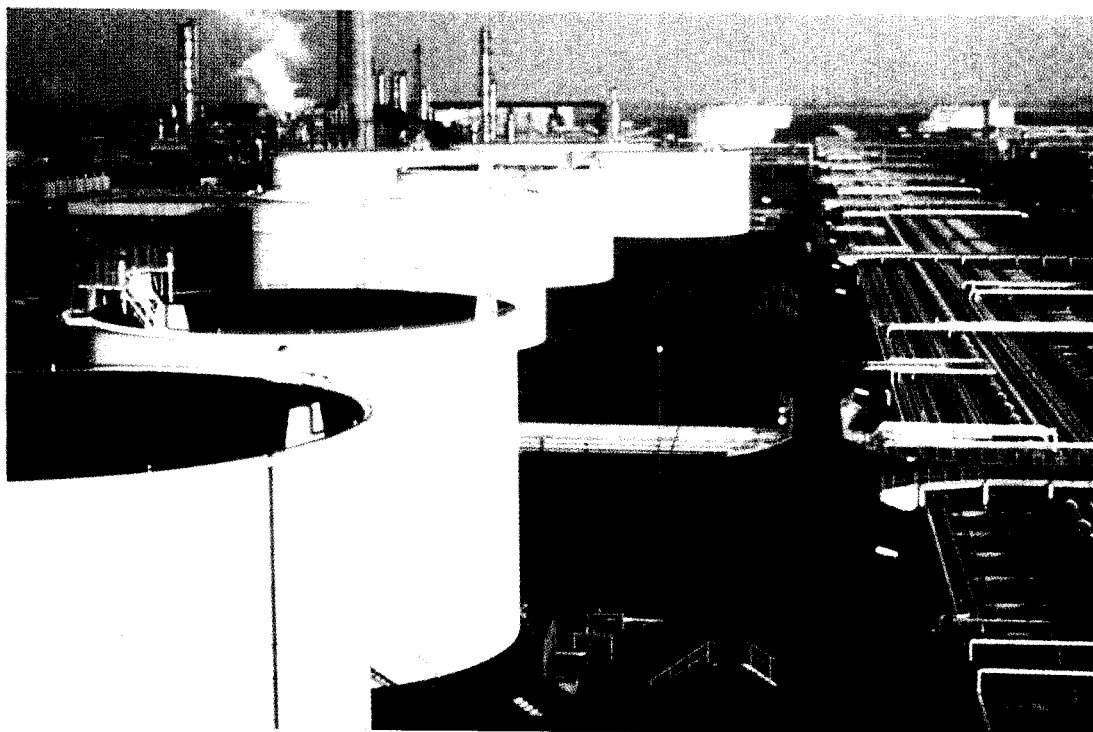
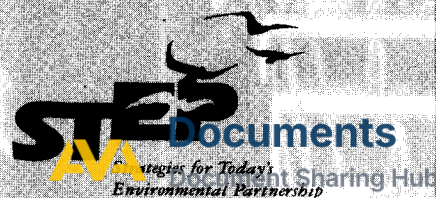




A Survey of Diked-Area Liner Use at Aboveground Storage Tank Facilities

Health & Environmental Affairs Department
Publication Number 341
February 1998



American Petroleum Institute Environmental, Health, and Safety Mission and Guiding Principles

MISSION

The members of the American Petroleum Institute are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy resources and supplying high quality products and services to consumers. We recognize our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public. To meet these responsibilities, API members pledge to manage our businesses according to the following principles using sound science to prioritize risks and to implement cost-effective management practices:

PRINCIPLES

- To recognize and to respond to community concerns about our raw materials, products and operations.
- To operate our plants and facilities, and to handle our raw materials and products in a manner that protects the environment, and the safety and health of our employees and the public.
- To make safety, health and environmental considerations a priority in our planning, and our development of new products and processes.
- To advise promptly, appropriate officials, employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- To counsel customers, transporters and others in the safe use, transportation and disposal of our raw materials, products and waste materials.
- To economically develop and produce natural resources and to conserve those resources by using energy efficiently.
- To extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
- To commit to reduce overall emission and waste generation.
- To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

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Health and Environmental Affairs Department

API PUBLICATION NUMBER 341

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EXECUTIVE SUMMARY

In 1997, the American Petroleum Institute (API) conducted a survey on the use of diked-area liners around aboveground storage tanks. The data indicate that the effectiveness of liners in protecting the environment is limited because liner systems frequently fail. Further, the resulting data indicate that there are few releases from aboveground storage tanks that would be addressed by diked-area liners. In addition, liner systems are expensive to install and maintain.

Several states have enacted requirements to install liners within the tankfield diked area during the past decade. However, there is little published information on the performance of diked-area liner systems once installed. Because such liners are costly and because changes must be made to facility operations to accommodate the liner system, API members decided to gather information on the performance of diked-area liners after installation.

API's Storage Tank Task Force conducted a survey designed to evaluate the effectiveness of diked-area liner systems and document operational problems involved with their use. Responses were received from 32 facilities in the marketing and transportation sectors of the petroleum industry.

The data show that liner systems are frequently damaged by day-to-day operations and, thus, would be ineffective in containing a liquid release. Twenty-nine facilities or 91 percent of respondents indicated that the liner system had failed to maintain its integrity over time. Among the responding facilities, however, there were few releases of the type that would be addressed by diked-area liners. Ninety-one percent of all responding facilities indicated there had been no release since the liner had been installed. Because there were few releases, the data do not directly demonstrate the effectiveness or ineffectiveness of liner systems in containing releases.

Eighty-eight percent of respondents indicated that they thought there were alternatives to diked-area liners that would be more effective at protecting the environment. The survey data indicated that operators would prefer to use preventive measures, which are generally more effective in terms of both cost and environmental protection. API survey data also indicated that operators prefer flexible, multi-option approaches, such as those contained in API standards.

The data collected by the API survey led to the conclusion that diked-area liners are not the most efficient means of protecting the environment given

- the tendency of liner systems to fail under day-to-day operating conditions;
- the difficulty of assuring liner integrity;
- the limited benefit derived from the system in addressing oil discharges; and
- the high costs associated with installing, as well as operating and maintaining the liner system.

Measures that prevent aboveground storage tank releases are more effective in protecting the environment and are more cost-effective in the long run.