



Standard Guide for Investigation of Equipment Problems and Releases for Petroleum Underground Storage Tank Systems¹

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INTRODUCTION

This guide provides a framework for the development of procedures and directions for the investigation of equipment problems associated with petroleum underground storage tank (UST) systems and releases. It gives the user practical suggestions of how to investigate equipment and installation problems, document findings, and in some cases prepare samples of failed equipment for laboratory analysis. Use of this guide may result in the identification of equipment and installation problems that can be corrected in future tank system designs and equipment maintenance programs to prevent releases to the environment.

1. Scope

1.1 Overview—This guide is an organized collection of information and series of options for industry, regulators, consultants and the public, intended to assist with the development of investigation protocols for underground storage tank facilities in the United States. While the guide does not recommend a specific course of action, it establishes an investigation framework, and it provides a series of techniques that may be employed to: identify equipment problems; in some cases prepare samples of failed equipment for laboratory analysis; and document the investigation. The guide includes information on methods of investigation, documentation, taking samples of problem equipment; preservation of equipment samples; chain of custody; storage; shipping; working with equipment manufacturers; and notification of regulators and listing laboratories. The goal in using the guide is to identify the appropriate level of investigation and to gather and preserve information in an organized manner, which could be used in the future to improve system design or performance. While this guide may act as a starting point for users with limited experience in failure investigation, the user is encouraged to consult with failure analysis experts for specific investigation procedures that may be needed for certain equipment and the investigation should be conducted by a qualified professional. As users develop their specific investigation

protocols, they may find that the investigations can be streamlined for certain types of facilities.

1.2 Limitations of This Guide:

1.2.1 Given the variability of the different investigators that may wish to use this guide and the different types of facilities and failures that will be investigated, it is not possible to address all the relevant standards that might apply to a particular investigation. This guide uses generalized language and examples to guide the user. If it is not clear to the user how to apply standards to their specific circumstances, it is recommended that users seek assistance from qualified professionals.

1.2.2 This guide does not address safety issues associated with the investigation, taking samples and storing equipment. users are cautioned to exercise proper care in handling equipment that was in contact with flammable and combustible liquids and vapors. Some of the activities described in this guide may be subject to OSHA (Occupational Safety and Health Administration) regulations or may only be conducted by individuals with appropriate HAZWOPER (Hazardous Waste Operations and Emergency Response) training certifications recognized by federal and state regulatory authorities, such as HAZWOPER training.

1.2.3 This guide does not address laboratory investigations of material properties and detailed failure analysis.

1.2.4 This guide does not cover underground storage tank systems storing liquefied petroleum gas (LPG).

1.2.5 This guide does not replace state-required closure assessments and investigations. Requirements vary from state to state and often include specific sampling requirements.

¹ This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.04 on Corrective Action.

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