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Nota di contenuto	Title Page; Contents; Foreword; Introduction; Chapter 1. State of The Art on the Likelihood of Internal Erosion of Dams and Levees by Means of Testing; 1.1. An overview of the internal erosion process as it affects dams and levees; 1.1.1. A description of the overall process; 1.1.2. The four mechanisms of initiation and progression of internal erosion; 1.1.3. Concentrated leak erosion; 1.1.4. Backward erosion; 1.1.5. Contact erosion; 1.1.6. Suffusion; 1.2. Concentrated leak erosion; 1.2.1. Situations where concentrated leaks may occur; 1.2.2. Estimation of crack width and depth of cracking 1.2.3. The mechanics of erosion in concentrated leaks1.2.4. Commentary on the state of the art and the role of laboratory testing in assessing concentrated leak erosion; 1.3. Backward erosion piping;

1.3.1. The mechanics of backward erosion piping; 1.3.2. Soils that are subject to backward erosion piping; 1.3.3. Methods available for assessing whether backward erosion piping will initiate and progress; 1.3.4. Some field observations; 1.3.5. Global backward erosion; 1.3.6. Commentary on the state of the art and the role of laboratory testing in assessing backward erosion piping and global bac
1.4. Suffusion1.4.1. The mechanics of suffusion; 1.4.2. Methods of identifying soils that are internally unstable and potentially subject to suffusion (geometric criterion); 1.4.3. Hydraulic conditions where soils are internally unstable and potentially subject to suffusion; 1.4.4. Commentary on the state of the art and the role of laboratory testing in assessing suffusion; 1.5. Contact erosion; 1.5.1. The mechanics of contact erosion; 1.5.2. Methods available to assess the likelihood of contact erosion
1.5.3. Contact erosion or "scour" at the interface between open joints in rock foundations and the core of dams1.5.4. Commentary on the state of the art and the role of laboratory testing in assessing contact erosion; 1.6. Bibliography; Chapter 2. Contact Erosion; 2.1. Introduction; 2.2. General presentation; 2.2.1. Typical conditions of occurrence; 2.2.2. Specific nature of CE; 2.3. At sample scale: quantification of the CE threshold and kinetics; 2.3.1. Influence of geometry on the occurrence of CE; 2.3.2. Direct configuration; 2.3.3. Inverse configuration; 2.3.4. Summary
2.4. At pore scale: local hydrodynamics of CE and statistical modeling2. 4.1. Experimental characterization of local hydrodynamics; 2.4.2. Integration at macroscopic scale; 2.4.3. Contribution made by the local scale study; 2.5. At hydraulic structure scale: identification of failure scenarios by CE and scale effects; 2.5.1. Reasons for a study at this scale; 2.5.2. Description of the experimental rig and instrumentation; 2.5.3. Test protocol and the results obtained; 2.5.4. Proposed interpretation and description of the erosion process; 2.5.5. Scale effect; 2.5.6. Summary
2.6. Conclusion and outlook

Sommario/riassunto

Erosion is the most common cause of failures at earth-dams, dikes and levees, whether through overtopping and overflowing, or internal erosion and piping. This book is dedicated to the phenomenon of internal erosion and piping. It is not intended to be exhaustive on the subject, but brings together some of the latest international research and advances. Emphasis is placed on physical processes, how they can be studied in the laboratory, and how test results can be applied to levees and dams. The results from several research projects in Australia, France, the Netherlands and the United Stat