BACKGROUND
This report updates one first published in June 1985 by the AWWA Research Foundation and the Engler-Bunte Institute of Karlsruhe, Germany. Over the past few years concern has grown for corrosion in water distribution systems. The focus of this concern has been primarily on corrosion's effects on water quality and the implications for public health. With this growing concern, it became evident that the first edition of this report needed to be updated. So, true to its philosophy of assembling expert committees to address complex issues such as corrosion, the AWWA Research Foundation funded a cooperative project to revise the report. The Foundation again coordinated the work with the German gas and water association (Deutscher Verein des Gas- and Wasserfachen or DVGW) through its water technology center (Technologiezentrum Wasser or TZW).

The Foundation and TZW organized a volunteer committee of American and European corrosion experts. Working over the last several years, these experts expanded and improved the first edition's coverage of corrosion in water supply systems.

CONTENTS
The second edition consists of 10 chapters that cover corrosion principles, corrosion of various materials including copper alloys and solder, mitigation of corrosion impacts, assessment technologies, and approaches to corrosion control studies. This new report differs in three significant ways from the original report: (1) There is now a separate chapter on copper alloys and solders. (2) The topics of inhibitors and low-mineral-content waters have been consolidated into a single chapter covering mitigation of corrosion impacts. And, (3) a new chapter describes a technical approach to studying corrosion and implementing a control program.

Throughout the book, the authors emphasize the importance of considering secondary effects of approaches to corrosion control. Such effects can increase corrosion problems or adversely affect water quality. The authors also greatly enhanced the usefulness of the report by developing numerous summary tables that appear principally in the latter chapters (chapters 8 through 10). These tables provide information on topics such as

* water quality conditions that affect corrosion of various types of materials
* chemicals used for corrosion control
* corrosion assessment options for metal plumbing materials
* coupon protocols for distribution system corrosion measures
* electrochemical corrosion assessment methodologies
* benefits and drawbacks of various levels of corrosion testing
* benefits and drawbacks of bench testing versus flow-through pipe loops