CHAPTER 1

INTRODUCTION

Environmental policies, statutes, and regulations should be based on the technically sound and legally defensible science, which includes sufficient data and appropriate statistical analyses interpreted using established ecological theory. Policy makers, regulatory agency staff, executives and environmental managers in regulated companies, and attorneys practicing environmental, natural resource, and water law commonly do not have strong backgrounds in environmental science. Understanding these subjects without courses in geography, physics, chemistry, and biology allows them to be more effective in their professional efforts.

Over the past 40 years environmental science and tools for environmental data analyses have greatly improved; environmental regulatory science has not kept up at the same pace. This book explains environmental science for non-technical decision-makers and those who work with environmental data and want increased understanding of the underlying science.

1.1 Why environmental regulations generate controversy

Environmental regulations employ subjective terms (called linguistic variables) to describe their goals, objectives, and actions needed to achieve them. Linguistic variables cannot be directly measured or objectively quan-