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Introduction: Chemists Should Be Aware of the Environmental Implication of Their Chemistry

The cover of this issue of *Chemical Reviews* is green instead of the usual blue. When I first imagined a special issue dedicated to environmental chemistry, I looked for a simple means to attract potential readers browsing in the library. This "green" issue among the many blue ones is a visual reminder of the environment that surrounds us.

Environmental chemistry, which may be defined as the "study of the sources, reactions, transport, effects and fates of chemical species in water, soil, and air environments" (Manahan, S. E. *Environmental Chemistry*; Lewis Publishers, Inc.: Chelsea, MI, 1991), has become an important interdisciplinary field, with visible and often profound impacts on society. Chemists have been credited with many fundamental changes that have advanced the welfare of society. However, increasing public concerns over environmental degradation—sometimes based on complete and accurate information, but often based on hearsay and emotion—have blurred this positive image. Surprisingly, and in my opinion, unacceptably, even members of our own profession frequently are ill-informed on this subject. I have met chemists working on the chemistry of carbon-chlorine bonds who did not appreciate the relevance of their results to environmental issues.

I hope that dedicating an issue of *Chemical Reviews* to environmental chemistry will increase environmental awareness among chemists. For example, it is no longer sufficient to make "marvelous" new molecules solely on the basis of their marketable properties. Although marketability is an appropriate goal, we, as scientists, must also be concerned with our creations' potentials for environmental impact. At the same time, we should constantly tighten our scientific standards for generating experimental data,

so that any conclusions drawn from such are and will be unambiguous. Similarly, we should challenge conclusions based on questionable data, such as in instances where the "trend" one finds in the data is within the error of the data, itself. And, of course, we should challenge statements that begin "There is no scientific evidence to support this, but, nevertheless, ...".

It is in our interest, indeed, in the interest of all of society, to remain vigilant to the impacts of chemicals on the environment. We would strive to keep environmentally acceptable processes alive and minimize our activities that involve unmanageable environmental risks. However, the term "environmentally acceptable" can change, becoming more or less restrictive in light of new discoveries. We should always be ready to reanalyze our conclusions and adjust our positions accordingly.

This issue of *Chemical Reviews* contains nine articles addressing environmental aspects of chemistry. While many more review articles are to come, those included here present many challenges to contemporary chemistry. Environmental issues are pushing chemistry and other sciences to the frontiers. The new environmental initiatives involve application of state-of-the-art computational and experimental methods and require an open mind that is willing to accept the limitations demanded by the environment in which we live and will pass on to future generations.

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