

Preface

*Frederick J. Passman, Ph.D*¹

The *Manual on Fuel and Fuel System Microbiology—Fundamentals, Diagnosis, and Contamination Control* augments Standard Guide D 6469². It is addressed to all liquid fuel production, transportation, and consumption stakeholders. The target audience includes management, supervisory, operational, quality assurance, maintenance, inspection, and technical personnel responsible for fuel quality, fuel handling equipment integrity, or both. The material presented in this Manual is equally applicable for gasoline, diesel (including biodiesel), aviation turbine, marine, industrial gas turbine, kerosene, gasoline, and aviation gasoline fuels. Much of the information is also applicable to other fuel grades ranging from bunker to natural gas.

This manual seeks to complement the Guide D 6469 in each of four areas. Chapter 1 provides an overview of the microbiological principles underlying fuel and fuel system biodeterioration. The information contained in this chapter will enable the reader to better understand why recognizing biodeterioration is difficult yet essential.

Sampling for microbial contamination detection presents unique challenges. Both the non-homogeneous distribution of microbes and the fact that they are living beings necessitate special handling, not discussed in Standard Practice D 4057 Manual Sampling of Petroleum and Petroleum Products³. Consequently, Chapter 2 provides the detailed information personnel need to collect and handle samples intended for biodeterioration diagnosis.

Chapter 3 provides specific, practical recommendations for disinfecting and removing microbial contamination from fuels and fuel systems.

As noted earlier, D 6469 recommends a variety of diagnostic tests, many of which do not appear in the Annual Book of Standards, Volume 5. Since quite a few of the tests examine bottom water properties, they aren't run at fuel labs routinely. Nearly all of the methods that aren't drawn from Volume 5 come from the Annual Book of Standards, Volumes 10, 11, or 14. By incorporating the Standards from these three volumes into this Manual, it was our intention to improve test method accessibility, which would expand the diagnostic capabilities of fuel quality labs.

Our objective in developing the *Manual on Fuel and Fuel System Microbiology—Fundamentals, Diagnosis, and Contamination Control* was to provide a broad range of stakeholders with a readable, accessible insight into the nature of fuel and fuel system biodeterioration, sampling requirements, test methods and remediation practices.

As the Editor of this Manual and Chair of the D.02.14 Task Force on Microbial Contamination, I thank those ASTM International colleagues who have been indispensably helpful in the development of both D 6469 and this document. Harry Giles and Erna Beal, Chair and Secretary of D.02.E.05 and D.02.14 have been remarkably supportive since my friend and

¹ President, Biodeterioration Control Associates, Inc., PO Box 3659, Princeton, NJ 08543-3659.

² Annual Book of ASTM Standards, Vol. 05.04.

³ Annual Book of ASTM Standards, Vol 05.02.

2 PREFACE

colleague Howard Chesneau first proposed inclusion of microbial contamination in each of the product standards under the cognizance of Subcommittees D.02.A, E, and J. I offer my sincerest thanks also to Howard Chesneau, Andy Pickard, and John Bacha, who each contributed tremendously to the development of the Guide and the Manual. Sadly, John Bacha's untimely death in August, 2001 prevented him from seeing the publication of this manual. I dedicate this manual to him in appreciation for his contributions and many years of dedication and commitment to fuel quality science.

Finally, without the guidance and support of ASTM Staff Members Kathy Dernoga, Monica Siperko, and Holly Stupak, the Manual would never have been created. Thank you all.

*Fredrick J. Passman
Princeton, New Jersey, USA*