Preface

This work reviews effective environmental impact mitigation for petroleum-based lubricants to reduce their negative persistence during usage and upon end-of-life disposal. The book explores the basic tribology of lubricants as well as initiatives that may enhance the environmental and economic effectiveness of lubricating oils from the composition design perspective. Reference is made to mineral base oil processing, blending, application and disposal of petroleum lubricants, and the book presents and extends current best practices that minimize or eliminate adverse environmental impact throughout the product's life cycle. The book also presents some in-depth insight into base oil/additive substitution, use of biolubricants in total loss application which are biodegradable, consideration of synthetic lubricants to extend drainage interval, use of quality bases in Group III and Group IV to achieve fuel economy and reduce emissions, rerefining of used oils, as well as recommending environmentally friendly disposal of used lubricating oils. Some effort was made to equip readers with technical understanding of lubricating oils' chemical and physical properties in terms of their potential hazardous nature to humans, acquatic species, water bodies and soil properties, where mitigatory initiatives were equally presented from base oil selection, additive development especially for total loss use. The book ends with a review of solid lubricants in severe space operations as the way forward to minimze environmental impact. Issues highlited are of benefit in terms of achieving both environmental legal compliance and eco-labelling business competitiveness—all the while preserving the environment for sustainability. It is in this regard that the book is therefore of interest to both manufacturers and consumers in the lubricants industry.

http://www.springer.com/978-3-319-31357-3

Mitigating Environmental Impact of Petroleum Lubricants

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2016, XXVIII, 239 p. 73 illus., 30 illus. in color., Hardcover
ISBN: 978-3-319-31357-3