

VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

Edita Baltrėnaite

# Manufacturing Industries and Environmental Impact

Study book

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Knygoje apžvelgiamos pagrindinės gamybinės pramonės šakos ir jų poveikis aplinkai: pagrindiniai teršalų šrantai į orą, nuotekų šrantai, tipinės atliekos, triukšmo šaltiniai. Gamybinė pramonė pasirinkta todėl, kad yra ypač reikšminga visam pramonės sektoriui ir kiekvienos šalies ekonomikai.

Skaitytojai joje ras glaustus gamybinių procesų aprašymus ir sąsajas su aplinkos apsaugos klausimais.

Mokomoji knyga skirta magistro studijų studentams, kurie nagrinėja gamybinius procesus ir poveikį aplinkai.

Leidinį rekomendavo VGTU Aplinkos inžinerijos fakulteto studijų komitetas

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## FOREWORD

This book is intended for those who need brief information about manufacturing industry as one of the most popular industries. The reader will find interesting facts, photos and other data. Attention is focussed on the environmental impact of manufacturing industry, especially on its negative effects. Industrial progress should not be neglected, but natural laws regulating our lives must be regarded as well.

Another objective of the book is to show manufacturers and all the people working in the industrial sector how manufacturing industry may affect the environment.

The present book will help students in the study process, providing theoretical information, case studies, examples and journalistic stories.

The author of the book is grateful to the reviewers of the book – Dr Assoc Prof Vaidotas Vaišis (Vilnius Gediminas Technical University) and Dr Colin A. Booth (University of Wolverhampton, School of Engineering and the Building Environment) and the editor – Almutė Teresėlė Gurskienė – for their useful comments and the recommendations.

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## **INTRODUCTION**

There are several forces that encourage manufacturing industry to consider environmental management more carefully. They include environmental legislation such as directives on Waste of Electrical and Electronic Equipment, Restriction of the use of certain hazardous substances in electrical and electronic equipment; Environmental Impact Assessment, Integrated Pollution Prevention and Control, Hazardous Waste, Waste Incineration, etc. In addition, resource costs, such as for aluminium and zinc, have risen, and waste disposal (landfill tax), energy use and water consumption have also increased significantly over the recent years. Companies are seeking to save their costs and are also interested to take their environmental responsibilities seriously as a way of improving their brand and reputation.

In present book the main attention is given to manufacturing industry and related environmental impact issues. Manufacturing industry is chosen because of its large role in the whole industry and economy of the country as described later. Manufacturing industry also deserves special attention as a significant contributor to environmental problems. Therefore, such terms as “clean production”, “zero emissions”, “sustainable development” were firstly associated with manufacturing. From business side, manufacturing associated with less waste was named “lean manufacturing”. In other words “lean manufacturing” is a business model and collection of different methods that assist to eliminate waste while handing over quality products in time and at the least cost.

This book is intended for master students who are interested in manufacturing processes and their relation to environmental issues. Students will find the brief information about the processes of the particular manufacture and associated environmental issues. Main historical facts, case studies and practical tasks are given to make the study process more interesting.