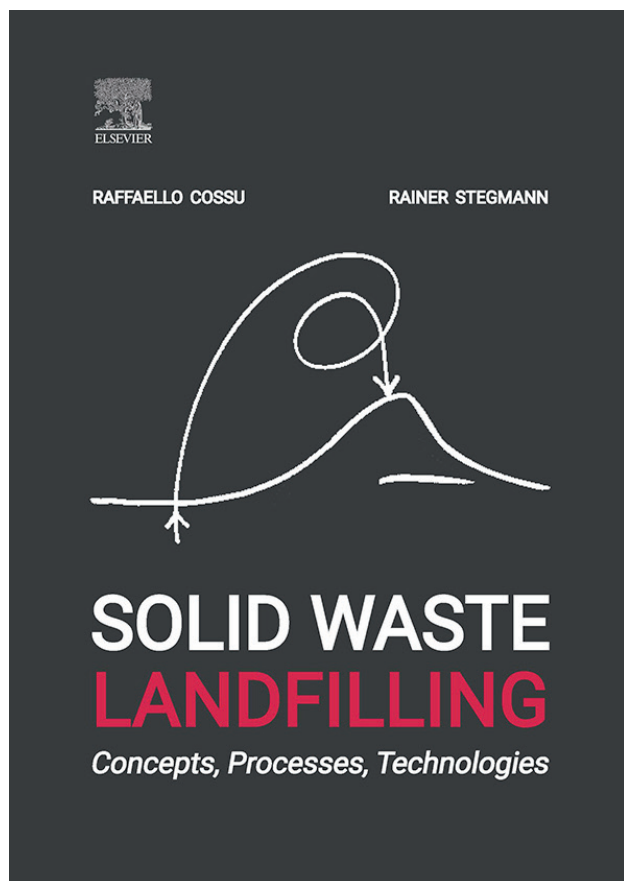


BOOKS REVIEW



SOLID WASTE LANDFILLING. CONCEPTS, PROCESSES, TECHNOLOGIES

Edited by Raffaello Cossu and Rainer Stegmann

Material management, however efficient and cyclical it is, will generate waste. Even solid waste management, including recycling or energy recovery, generates waste that can no longer be recycled, re-used or exploited in any other way. To complete the waste management system we must have a way out of the cycle, so part of the system must take care of the “rejected” material flows. That is what we need a landfill for. Landfilling, despite tendencies to diminish its importance, is an inevitable element of any waste management system. A landfill is the society’s liver helping to eliminate toxins or detoxify it. Knowledge, skills and experience in landfilling of waste must be maintained and transferred to coming generations to ensure safe and qualified landfill operations and to minimize risks to the environment and human health.

This book presents a comprehensive overview of all

aspects of landfilling, including concepts, processes, technologies, planning, design, and the afterlife of a landfill when landfilling has ceased.

The introductory chapter describes general aspects of waste management strategies and the role of landfilling in them. It also covers issues related to global flows and fates of contaminants in the environment. The importance of raising awareness among politicians and society at large on waste avoidance, collection, reuse, and recycling is highlighted, and the need for a landfill as the final sink for materials (contaminants) is described and graphically illustrated. The generation, properties and categories of waste, as well as classification of landfills, are introduced, along with descriptions of legal frameworks of landfilling in various regions of the world.

The following chapters introduce the terminology, main concepts and design strategies for landfills; more deeply describe the biochemical and physico-chemical processes that occur in them, and highlight new challenges related to emerging contaminants in landfills. The chapters further cover the traditional areas of landfill technologies, such as: pre-treatment of waste prior to landfilling; geotechnical and hydraulic aspects of landfills; liner, drainage and cover systems; and management of emissions from landfills, including ways to trace, quantify and monitor uncontrolled emissions of landfill gases and leachates.

When more waste goes to energy recovery rather than directly to landfilling, new types of waste – incineration residues – are increasingly generated. Management of such waste requires additional knowledge and new strategies, which are presented in chapter 20.

Eventually, a landfill must be closed, and all active control measures should be safely removed. Thus, the book also describes approaches for aftercare of a closed landfill and describes several afteruse scenarios for landfills.

The book further describes methodologies for Environmental Impact and Life Cycle Assessment (LCA) of landfilling and exemplifies their applications by describing several case studies.

Even closed landfills require further investigation and remedial actions might be needed. Thus, the book provides a roadmap for investigating closed landfills, describes principles of their remediation and presents the concept of landfill mining.

The book concludes with an overview of the essential economic aspects of landfills and presents reference examples of case studies in various regions of the world.

The book covers decades of experience and worldwide expertise in landfilling of solid waste. It has potential to become a central piece of the library of any practitioner

in the waste management sector, as well as core teaching material for scholars worldwide.

Jurate Kumpiene
Luleå University of Technology, Sweden
e-mail: Jurate.kumpiene@ltu.se

ABOUT THE EDITORS

Raffaello Cossu

Innovator and visionary, outstanding scientist and leader, he contributed like no other to the development and dissemination of new concepts and to the end of well-established wrong ideas.

Full Professor of Solid Waste Management, he retired in September 2018 from the University of Padova, Italy, where he led the Research Center of Environmental Engineering for 20 years. Former President of the School of Environmental Engineering at the same University from 2000 to 2013.

Founding member and President of IWWG (International Waste Working Group) from 2004 until 2009, he is currently a member of the Managing Board.

From 2009 to 2017 he was Editor in Chief of Waste Management, the IWWG international scientific journal on waste management, published by Elsevier. From 2018 he is Editor in Chief of DETRITUS, the new IWWG international scientific journal for Waste Resources and Residues, CISA Publisher. Invited and keynote speaker in conferences on Waste Management and landfilling throughout the world.

He is author of more than 200 scientific papers and five international books on waste management, published by Academic Press, Elsevier, EF and Spon.

Rainer Stegmann

Rainer Stegmann retired in 2008 as Professor. Head of the Institute of Waste Management at the Hamburg University of Technology, Germany.

His main research interest is waste management, biological waste treatment, sanitary landfilling and contaminated sites. He has been visiting professor at several international universities, was director of the research centre R3C at NTU in Singapore, and has coordinated several international and national research projects.

He was for more than 10 years a member of the environmental advisory board for Shanks, UK, chairman of IWWG (International Waste Working Group).

Dr. Stegmann is co-chairman of various international waste management conferences (e.g. "Sardinia", "Venice" and "Crete" Symposia). He has authored more than 300 papers and 5 international books on landfilling and contaminated sites.

Book Info:

Editors: Raffaello Cossu, Rainer Stegmann
Imprint: Elsevier
Year of publication: 2018
Page Count: 1190
Paperback ISBN: 9780128183366