

WATER PURIFICATION AND SEWAGE DISPOSAL

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649530922

Water Purification and Sewage Disposal by J. Tillmans & Hugh S. Taylor

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

J. TILLMANS & HUGH S. TAYLOR

**WATER
PURIFICATION AND
SEWAGE DISPOSAL**

WATER PURIFICATION
AND
SEWAGE DISPOSAL

BY
DR. J. ^{van der} TILLMANS

DIRECTOR OF THE CHEMICAL DEPARTMENT OF THE
MUNICIPAL INSTITUTE OF HYGIENE, FRANKFORT-ON-MAINE

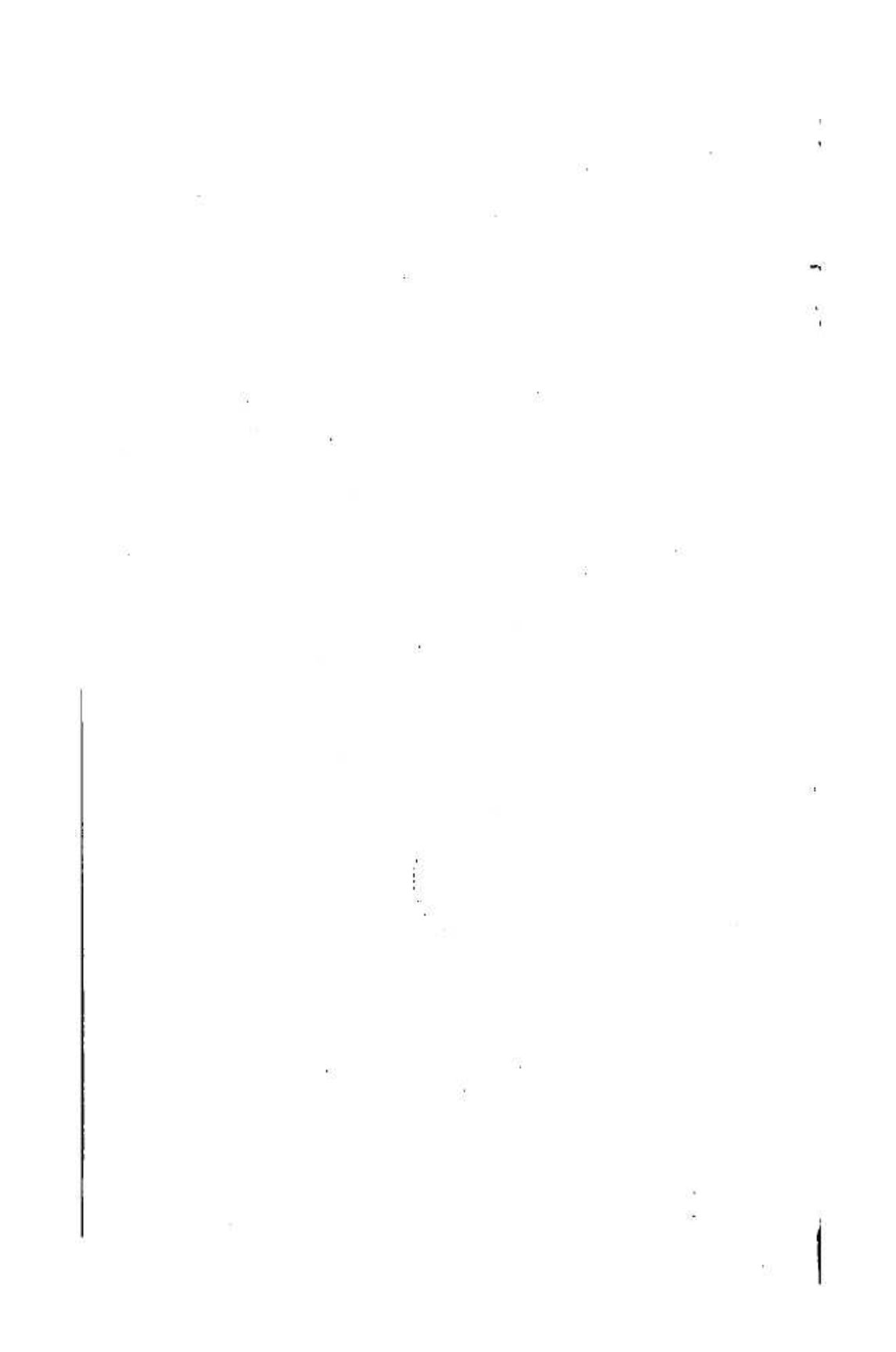
TRANSLATED BY
HUGH S. TAYLOR, M.Sc.
UNIVERSITY OF LIVERPOOL.

With 21 Illustrations in the Text



NEW YORK
D. VAN NOSTRAND CO.
TWENTY-FIVE PARK PLACE

1913



186003-25-42 DLH

PREFACE TO THE ENGLISH TRANSLATION

SINCE the recognition of their significance in the promotion of the public health, methods of water purification and sewage disposal have earned a steadily increasing importance. Consequently, these branches of industry have enjoyed the most zealous attention of the scientist and of the engineer.

I have endeavoured in the present monograph to give a survey, short perhaps, but as complete as possible, of the present position in regard to Water Purification and Sewage Disposal.

Owing to the wide range of this subject particular processes could only be treated shortly in the space at disposal.

One chapter, which is very fully treated in the present volume, though slightly elsewhere, is the disposal of industrial sewage. Many of the processes of purification are of quite recent date, and fresh experience is being obtained daily and reported upon in the most diverse publications. I have endeavoured to collect such information.

In the translation some small changes and additions have been made in the chapters on sand filtration, the removal of manganese, and Travis and Emscher wells.

The extensive literature supplied in the German original, which served as the basis in the composition of the book, has not been printed in the English translation, as it treats in the main of German literature.

THE AUTHOR.

FRANKFORT-ON-MAINE,
October, 1912.



TRANSLATOR'S PREFACE

ENGLAND, as the author points out, is the classic country for sewage disposal. As a consequence, the translation of a book on the subject of water purification and sewage disposal from the German point of view, might at first sight seem unnecessary. It is to be hoped, however, that a study of the present volume will prove that view to be incorrect. The careful attention which has been paid by the German authorities during the past few decades to the provision of suitable water supplies and the adequate disposal of sewage, renders the present critical survey of modern methods at once interesting and useful to the English reader. Especially should this be true of the chapter on the disposal of industrial sewage.

I have to express my thanks to the author, Dr. Tillmans, for a revision of the present text, and to Messrs. Hubers and Mond. I desire also to record my indebtedness to my friends Mr. J. W. Yates, M.Sc., and Mr. A. Shacklady, B.Sc., for valuable guidance and assistance in the correction of the proofs.

HUGH S. TAYLOR.

LIVERPOOL,
October, 1912.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific requirements for record-keeping, including the need to maintain original documents and to keep copies of all records for a minimum of seven years. It also discusses the importance of ensuring that records are accessible and retrievable at all times.

3. The third part of the document discusses the role of the auditor in verifying the accuracy of the records. It emphasizes that the auditor must exercise due diligence and must be satisfied that the records are complete and accurate before issuing an audit opinion.

4. The fourth part of the document discusses the consequences of failing to maintain accurate records. It notes that failure to do so can result in the disallowance of tax deductions and penalties, and it can also lead to the loss of the company's reputation and the ability to obtain financing.

5. The fifth part of the document discusses the importance of training and education for all employees involved in the record-keeping process. It emphasizes that all employees must be aware of their responsibilities and must be trained in the proper procedures for maintaining records.

6. The sixth part of the document discusses the importance of regular audits and reviews of the record-keeping system. It notes that regular audits can help to identify and correct errors and can also help to ensure that the system is up-to-date and effective.

7. The seventh part of the document discusses the importance of maintaining a strong internal control system. It emphasizes that a strong internal control system is essential for the accuracy and reliability of the financial records.

8. The eighth part of the document discusses the importance of maintaining a strong relationship with the auditor. It notes that a strong relationship can help to ensure that the auditor is able to perform its duties effectively and can also help to prevent and detect fraud.

9. The ninth part of the document discusses the importance of maintaining a strong relationship with the tax authorities. It notes that a strong relationship can help to ensure that the company is able to comply with all tax requirements and can also help to prevent and detect fraud.

10. The tenth part of the document discusses the importance of maintaining a strong relationship with the financial institutions. It notes that a strong relationship can help to ensure that the company is able to obtain financing and can also help to prevent and detect fraud.

TABLE OF CONTENTS

WATER PURIFICATION.

GROUND-WATER, SPRING-WATER, SURFACE-WATER.

	PAGE
A. <i>Purification of Water for Drinking Purposes</i>	2
Bacteria and disease germs in water	3
I. PURIFICATION OF WATER FOR DRINKING PURPOSES ON A LARGE SCALE	4
(i) Filtration Processes	4
(a) Slow sand filtration	5
Preparation, composition, and working of the filter	5
Uniformity of the sand, filtration pressure, covered and uncovered filters	6
Washing and renewal of the sand	7
Filter film, filtration pressure, Fränkel and Piefke's fundamental investigations, double filtration according to Götze, and preliminary filtration, Puëch-Chabal system	8
Cost; control by estimation of the germ-content	9
(b) Percolating sand filters	10
(c) Mechanical filters	10
Nature and control of the mechanical filter, old and new systems	11
The Jewell Export Mechanical Filter	11
Experience with the Jewell Export Mechanical Filter	13
(d) Artificial preparation of ground-water from surface-water	14
Natural bank filtration, infiltration	14
Application of the process in various towns	16
(e) Importance of water filtration in the maintenance of public health, and a critical examination of the value of sand and mechanical filtration	16
(ii) Sterilisation Processes	18
(a) The Ozone Process	18
Siemens' Ozone plant at St. Petersburg	20
Investigations on the action of Ozone	22
(b) The Ferric Chloride Process	24