

Information Clearinghouse Inventory

Item	Title	Description
CD	2002 Water Quality Technology Conference Proceedings	This CD-ROM contains the papers of the 2002 American Water Works Association Water Quality Technology Conference and Exhibition, <i>A New Era in Water Quality</i> , held November 10-14, 2002 in Seattle. Topics include water quality monitoring techniques, membrane integrity testing, taste and odour issues, distribution system water quality, ultraviolet (UV) disinfection, disinfection by-products, emerging pathogens, security issues, filtration performance and optimization, endocrine disruptors, ozone and chlorine dioxide disinfection, arsenic issues, and much more.
CD	2003 AWWA Quality Technology Conference Proceedings	The 2003 American Water Works Association Water Quality Technology Conference Proceedings contains the papers and posters presented during the conference on new water quality technologies, regulations, and water utility case studies.
CD	2004 Water Quality Technology Conference and Exposition	This CD includes the proceedings of the American Water Works Association Water Quality Technology Conference held November 14 - 18, 2004 in San Antonio, Texas. It includes papers and poster sessions presented at the conference.
CD	2005 Water Quality Technology Conference Proceedings	This CD includes technical papers presented at the 2005 American Water Works Association Water Quality Technology Conference and Exposition.
	2006 AWWA Source Book	The American Water Works Association Source Book offers utility managers in North America several ways to locate water and wastewater products and services by providing a quick and easy means to find important suppliers.
Book	2007 Canadian Almanac & Directory	The most comprehensive sourcebook in Canada with over 45,000 facts and figures, providing quick access to all the information you need. It's a directory, a client prospect list, a statistical handbook and an invaluable quick reference aid all rolled into one desk-sized volume. Sections provide full directories of financial institutions, media (print and broadcast), libraries and museums, hospitals, transportation and education (boards, universities and colleges, private schools, etc.).
Book	2007 OWWA/ OWWEA Membership Directory & Buyers' Guide	This membership directory and buyer's guide, provided by the Ontario Water Works Association and Ontario Water Works Equipment Association, is a valuable resource to professional water industry products and services for contractors, engineers, utility managers and operators.
Presentation Handouts	2007 World Congress on Ozone and Ultraviolet Technologies	This International Congress provided technical papers/presentations on global regulations, applications, current research, systems design, and operations training. Ozone and ultraviolet (UV) technologies are being added to public and private drinking water and wastewater treatment plants to meet ever tightening global regulations to protect public health and the environment. Both technologies bring unique benefits independently or in combined operation, to planning and operations professionals and the public. There are many water treatment plants utilizing ozone and UV processes operating in the western United States.
Book	2008 AWWA Sourcebook	The American Water Works Association Source Book offers utility managers in North America several ways to locate water and wastewater products and services by giving you a quick and easy means to find important suppliers.

Item	Title	Description
	2010 Ontario Municipal Directory	The Association of Municipal Managers, Clerks and Treasurers of Ontario prides itself on being the key resource for information related to municipal administration and management. The Ontario Municipal Directory is a testament to AMCTO's leadership role in this arena. The Municipal Directory is the most comprehensive source of key contacts and decision makers in Ontario's 444 municipalities.
CD	3rd Federal Drinking Water Providers' Workshop	This CD includes the agenda, <i>PowerPoint</i> presentations, and list of participants at the 3 rd Federal Drinking Water Providers' Workshop.
Leaflet	A Guide to Bruce Farm & Rural Contacts	This guide to farm and other rural contacts in Bruce County was compiled by the Ontario Ministry of Agriculture, Food and Rural Affairs.
Leaflet	A Guide to Home Water Treatment	This guide to home water treatment includes information on water treatment and processes.
Leaflet	A Guide to Huron Farm & Rural Contacts	This guide to farm and other rural contacts in Huron County was compiled by the Ontario Ministry of Agriculture, Food and Rural Affairs.
Brochure	A Personal Salt Reduction Guide	This guide on salt and de-icer alternatives for homeowners suggests using a product that is less damaging to the environment on your driveway, walkway, and sidewalks.
Presentation Handouts	A Review of Common Water and Wastewater Treatment Practices	<i>These PowerPoint</i> presentation handouts provide information from <i>A Review of Common Water and Wastewater Treatment Practices</i> presentation.
Journal	Accident Prevention	<i>Accident Prevention</i> is published quarterly by the Industrial Accident Prevention Association.
CD	ACE 07 Conference Proceedings	This two-CD set includes papers from poster sessions and four days of the American Water Works Association's 2007 Conference and Exposition.
Book	Addressing Concerns About Tastes and Odors and Cyanotoxins in Tap Water	This book develops a multi-barrier management plan to control taste and odour problems. It implements several algae control measures to reduce other algae-related problems such as potential health-related problems caused by algal biotoxins and develops proactive controls to minimize the growth of taste and odour producing algae. It also develops responsive controls to treat taste and odour compounds if proactive measures are not effective.
Book	Adsorbent Treatment Technologies for Arsenic Removal	The objectives of this study were to test the effects of water quality on the performance of 12 commercially available adsorbents for the removal of arsenate and arsenite, define adsorbent properties that will minimize the effects of water quality and/or maximize arsenic adsorption capacity, investigate the applicability of various adsorbents to arsenate removal as opposed to a need for preoxidation to arsenate, assess the (leaching) stability of spent adsorbents to promote their use as throwaway materials, and develop a decision framework for helping utilities determine the most appropriate adsorbent based on cost and performance. The report includes a CD-ROM containing the Arsenic Adsorbent Design and Costing Tool developed by the authors for this study. Based on user inputs, the program calculates adsorption capacities, capital costs, operations and maintenance costs, plant footprint, residuals quantities, and more. Users can experiment with various treatment scenarios and adsorbents to compare results.

Item	Title	Description
Book	Advanced Oxidation Processes for Water and Wastewater Treatment	This book provides an overview of the advanced oxidation processes currently used or proposed for the remediation of water, wastewater, odours and sludge. It contains two opening chapters which present introductions to advanced oxidation processes and a background to UV photolysis, seven chapters focusing on individual advanced oxidation processes and, finally, three chapters concentrating on selected applications of advanced oxidation processes. This book will prove invaluable to readers interested in water and wastewater treatment processes, including professionals and suppliers, as well as students and academics studying in this area.
Book	Advanced Processes for Simultaneous Arsenic and Manganese Removal	This research project demonstrates a treatment process that successfully removes both arsenic and manganese simultaneously from drinking water. Modifying the existing oxidation/filtration process at the Southern California Water Company's Centralia site tested the process, which includes oxidation, ferric chloride addition, backwash waste handling, and filtration. The report describes bench and pilot-scale testing, process design, construction and startup, full-scale testing, contaminant removal effectiveness, filter operations, treatment process residual handling, and cost analysis.
Book	Advances in Slow Sand and Alternative Biological Filtration	This book deals with the latest research developments in slow sand and alternative biological filtration processes for drinking water treatment, including advances in the understanding of the fundamental mechanisms of the processes. In addition, progress in the techniques of operation and upgrading of the processes are described, with case studies from around the world.
	Advancing <i>Cryptosporidium parvum</i> Detection Methodologies	The objectives of this research study were to optimize existing techniques and develop new methods for detecting <i>C. parvum</i> oocysts in both source and finished waters. The specific objectives were to: develop a continuous flow centrifugation (CFC) method for concentrating large volumes of source and finished water to recover <i>C. parvum</i> oocysts; optimize a polymerase chain reaction (PCR) method for detecting low numbers of <i>C. parvum</i> oocysts; compare various assays, such as cell culture, fluorescence in-situ hybridization (FISH), reverse transcriptase-PCR (RT-PCR), amylopectin assay to mouse infection for estimating the viability of <i>C. parvum</i> oocysts; determine the effect of long-term storage of <i>C. parvum</i> oocysts in water at 15 degrees Centigrade on viability and infectivity; apply cell culture and FISH to <i>C. parvum</i> oocysts that had been recovered from large volumes of source and finished water.
Book	Algae Detection and Removal Strategies for Drinking Water Treatment Plants	This water treatment guidance manual provides specific strategies, and the scientific research behind them, that any conventional water treatment plant can use to solve algae-related problems. This is the first operations guidance manual for water treatment facilities to provide both the detection strategies that will allow early detection of algal blooms in your drinking water sources, plus the treatment strategies that will minimize the adverse effects of algae on your unit process performance and finished water quality.

Item	Title	Description
Book	Alternative Adsorbents for the Removal of Polar Organic Contaminants	The objective of this research was to compare the effectiveness of alternative adsorbents such as high-silica zeolites and carbonaceous resin to that of granular activated carbon (GAC) for the removal of methyl tertiary-butyl ether (MTBE) and emerging organic contaminants such as pharmaceutically active compounds and endocrine disrupting chemicals from drinking water sources. The removal of polar and ionizable organic contaminants is an emerging concern. Activated carbon adsorption is one treatment strategy to remove such contaminants, but high carbon usage rates may be required to meet treatment goals. Apart from niche applications, alternative adsorbents such as high-silica zeolites and carbonaceous resin cannot compete with the effectiveness of activated carbon. Isotherm results obtained showed that an activated carbon dose that might typically be added for taste and odour control (10 mg/L) is sufficient to achieve a 2-log removal of many emerging organic contaminants.
Book	Alternative Disinfectants and Oxidants Guidance Manual	This manual provides accurate technical data and engineering information on disinfectants and oxidants that are not as widely used as chlorine. The U.S. Environmental Protection Agency encourages drinking water treatment utilities and drinking water primacy agencies to examine all aspects of their current disinfection practices to improve the quality of their finished water without reducing microbial protection.
Book	Alternative Oxidants for the Removal of Soluble Iron and Manganese	Iron and manganese contamination is a problem for many water suppliers, particularly those serving 3,000 people or less. It is estimated that over 40 percent of the water supplies in the United States contain iron and manganese above the Environmental Protection Agency's recommended maximum concentration level. This report examines the use of alternative oxidants to solve this contamination problem.
Journal	American Water Works Association Journal	Both a professional and a scholarly publication, the American Water Works Association Journal publishes timely, technically accurate, peer-reviewed information about water quality, resources, supply, and about the management and operation of water utilities. The Journal provides information for a diverse, worldwide readership. As American Water Works Association's flagship publication, the Journal also serves the association and the drinking water industry as a whole.
Book	Ammonia from Chloramine Decay: Effects on Distribution System Nitrification	Many drinking water utilities in the United States are implementing chloramination for distribution system disinfection. This research report provides valuable new information to water system operators and managers who use, or plan to use, chloramines as a distribution system disinfectant. This book provides information on how to control nitrification in your distribution system and maintain chloramine residual, the surprising effects of pH adjustment on the inactivation of ammonia-oxidizing bacteria (AOB) by chloramines, how different seasonal water-quality conditions affect regular coagulation and enhanced coagulation, and whether removal of natural organic matter by enhanced coagulation and by pH adjustment are good strategies to decrease the disinfectant demand of the treated water and to reduce the likelihood of AOB growth in the distribution system.
Book	An Elephant in the Living Room	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
Book	An Investigation of UV Disinfection and Repair in <i>Cryptosporidium parvum</i>	This report investigates whether self-repair by <i>Cryptosporidium parvum</i> oocysts can occur following UV disinfection. It evaluates the implications for use of UV technologies, including identification of possible repair mechanisms following UV treatment to determine the kinetics of reactivation and the impacts of post-disinfection storage times and environmental conditions during distribution.

Item	Title	Description
	An Operators Guide to Bacteriological Testing	This book introduces five common bacteriological analysis techniques you need to understand before analyzing drinking water samples.
Book	Aqua's Water Well Adventures	Aqua's Water Well Adventures is a picture book aimed at children ages 5-11. This book introduces a water droplet character who helps the children understand the water cycle and different problems that can arise in rural wells.
Book	Assessment and Development of Low-Pressure Membrane Integrity Monitoring Tools	Studies have demonstrated that microfiltration (MF) and ultrafiltration (UF) membranes can provide an absolute or complete barrier to both <i>Giardia</i> and <i>Cryptosporidium</i> , as long as the integrity of the membranes is not compromised. This research assesses the methods for monitoring MF and UF membrane integrity, and makes recommendations for the best monitoring methods. Both existing and newly developed methods were tested for sensitivity, affordability, reliability, and ease of implementation.
Article	Assessment of an integrated membrane system for surface water treatment	With the promulgation of more stringent regulations to guarantee that drinking water presents minimal health risks, nanofiltration (NF) and low pressure reverse osmosis membrane (RO) processes are now considered for surface water treatment. However, NF and RO spiral wound membranes are sensitive to fouling, and an advanced pretreatment such as conventional train, microfiltration (MF) and ultrafiltration (UF) may be necessary to control productivity. This study was undertaken to evaluate the efficiency of the combined processes, know as Integrated Membrane Systems (IMS), for surface water treatment. Two IMS were evaluated on polluted low salinity water, UF and conventional train prior low fouling reverse-osmosis membranes (LFRO). The one-year study has revealed the efficiency of the IMSs for surface treatment. In terms of hydraulic performances both pretreatments, UF and clarification, were found to be effective to control RO fouling. Preliminary cost estimation is on-going in order to identify the water cost for both IMSs based on similar final water quality.
Book	Assessment of Auxiliary Backwash Method for Rapid Sand Filters	The overall cleanliness of water treatment filter media determines the long-term ability of the filter to produce excellent quality water. The life of the filter media, therefore, is prolonged with good backwash practices. However, simple hydraulic backwashing alone may not effectively clean the filter media; additional cleaning practices may be necessary. This study assessed two auxiliary backwash practices, air scour and surface wash. The objective of this research was to determine the differences in filter effluent water quality, media cleanliness, and costs between sand filters employing air scour and those employing surface wash (as compared to simple hydraulic backwash cleaning alone). Assessment of filter cleanliness was accomplished by filter coring and solids retention analysis. Cost effectiveness was evaluated by monitoring backwash frequency, unit filter run volume, electrical costs, chemical costs, media losses, and capital improvement costs. Recommendations are given as to which system may be optimal, depending on raw water quality, cost constraints, and retrofitting issues.
Book	Assessment of Blue-Green Algal Toxins in Raw and Finished Drinking Water	This report provides water utilities with the first systematic North American study for the potential of cyanobacteria toxin problems in drinking water supplies. The report makes recommendations to utilities for responding to health and safety aspects of cyanotoxins and taste and odour episodes.
Article	Assessment of the Effectiveness of Low-Pressure UV Light for Inactivation of <i>Helicobacter pylori</i>	Three strains of <i>Helicobacter pylori</i> were exposed to ultraviolet (UV) light from a low-pressure source to determine log inactivation versus applied fluence. Results indicate that <i>H. pylori</i> is readily inactivated at UV fluences typically used in water treatment regimens. Greater than 4-log ₁₀ inactivation was demonstrated on all three strains at fluences of less than 8 mJ cm ⁻²

Item	Title	Description
Book	Atomic Force Microscopy In Process Engineering	This is the first book to bring together both the basic theory and proven process engineering practice of Atomic Force Microscopy (AFM.) It is presented in a way that is accessible and valuable to practising engineers as well as to those who are improving their AFM skills and knowledge, and to researchers who are developing new products and solutions using AFM. This book takes a rigorous and practical approach that ensures it is directly applicable to process engineering problems. Fundamentals and techniques are concisely described, while specific benefits for process engineering are clearly defined and illustrated.
Book	AWWA Research Foundation Project Profiles	This book summarizes research projects sponsored by the American Water Works Association Research Foundation.
Book	AWWA Water Operator Field Guide	This book provides chemical and mathematic formulas, chemical feed rates, US/metric conversions, pipe and equipment data, operational parameters, construction and installation information, Occupational Safety and Health Administration and U.S. Environmental Protection Agency regulations, and much more. Major sections include math, conversion factors, chemistry, safety, water quality, water treatment, distribution, wells, pumps, pressure, flows, and meters.
Book	Basic Chemistry for Water and Wastewater Operators	Water and wastewater operators need an understanding of chemistry to properly carry out the chemical phases of treatment, including coagulation, sedimentation, softening, and disinfection. Knowledge of basic chemistry is also required to pass operator certification examinations. Operators will get the training they need in this chemistry primer tailored just for operators of drinking water or wastewater systems. Ideal for either self-education or classroom instruction, this book covers all basic areas of chemistry that an operator should know: measurements, elements, compounds; equations; acids, bases, salts; solutions, colloids, coagulation; water, ionization theory, gas laws; organic chemistry; hardness, corrosion and its control; disinfection.
Book	Basic Microbiology for Drinking Water Personnel	This guide for operating personnel and non-scientists provides clearly written descriptions of the bacteria, viruses, protozoa, amoebae, and algae that pose human health threats. The book provides the scientific name of each, where in nature it is found, how the microbe is transmitted, what types of health problems it can cause, lab detection methods, and how it challenges water treatment.
Book	Basic Science Concepts and Applications: Student Workbook	This self-study workbook for <i>Basic Science Concepts and Applications</i> , covers mathematics, chemistry, hydraulics, and electricity, and includes examples of many specific water system operations problems.
Book	Biodegradable Organic Matter in Drinking Water Treatment and Distribution	Biodegradable organic matter (BOM) forms disinfection by-products when it reacts with chlorine and other disinfectants. BOM also is consumed by bacteria, which means it can cause bacterial regrowth in distribution system pipes. This book discusses characteristics of BOM and natural organic matter, BOM measurement techniques, water quality problems caused by BOM, treatment options to remove BOM, and maintaining water quality in distribution systems. You will understand how to achieve biostability in water distribution systems, a cornerstone of maintaining water quality all the way to the consumer. By removing BOM in the treatment plant, bacterial regrowth and disinfection by-products (DBPs) formation in the distribution system can be minimized simultaneously. Removing BOM also reduces chlorine demand and stabilizes chlorine/chloramine residuals. However, BOM removal alone is not sufficient to assure the maintenance of water quality in distribution systems. Pipe materials, storage time, corrosion, and other factors impact biostability. Full-scale distribution system case studies are provided in this book.

Item	Title	Description
Book	Bridging Pilot Scale Testing to Full-Scale Design of UV Disinfection Systems	Much research has been conducted in the use of ultraviolet (UV) light in water disinfection - its effectiveness against pathogens (particularly <i>Cryptosporidium oocysts</i>), equipment reliability, system design and operation, construction, operating costs, and other basic issues. The objective of this report was to develop and translate pilot-scale research in the use of UV light for water disinfection to full-scale design. The report describes: design scenarios, configurations, and detailed capital cost estimates for retrofitting UV into an existing treatment plant; medium power (MP), and low power high output (LPHO), types of UV reactors from several manufacturers; long-term performance, process control, reliability, and operations and maintenance costs of UV disinfection; the impact on UV system performance of flow rate, treatment chemicals, feed water characteristics, and UV lamp fouling, aging, and cleaning; regulatory agency acceptance of UV disinfection in drinking water systems. This report will help design engineers and managers make informed decisions about the choice, configuration, operation, and cost of UV disinfection systems.
Book	Buffer Strips: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Buffer strips are permanent grass borders on field boundaries or along watercourses that help reduce soil input into streams. Buffer strips can act as filters to slow water and catch soil particles (should be a minimum of 3 to 6 metres to provide proper filtering action, reduce the sediment that reaches ditches and streams), and help maintain soil structure in heavy traffic areas (grow crops with a good root system if traffic is frequent.)
Book	CAN/CSA ISO 14064 Greenhouse Gases	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
Book	Canadian Environmental Law Guide: Part 1	This guide outlines the laws and regulations of the federal, Ontario, British Columbia, and Alberta governments so that the business and legal professional has clear and detailed explanations readily available.
Book	Canadian Environmental Law Guide: Part 2	This guide outlines the laws and regulations of the federal, Ontario, British Columbia, and Alberta governments so that the business and legal professional has clear and detailed explanations readily available.
Book	Canadian Standards Association B483.1-07 Drinking water treatment systems	This Standard was developed in response to a request to specify plumbing, mechanical, requirements for drinking water treatment components and complete systems. This Standard covers drinking water treatment systems that are point-of-use or point-of-entry plumbed systems and point-of-use non-plumbed systems. Drinking water treatment systems covered by this Standard are intended to be used for the reduction or inactivation of harmful substances that can be present in drinking water. This Standard includes electrical requirements for drinking water treatment systems that are intended: to be permanently connected, cord and plug connected, or connected through a Class 2 plug-in power supply to an electrical supply circuit of 250 V or less (i.e., 150 V maximum to ground); and for use indoors in non-hazardous locations in accordance with the Canadian Electrical Code, Part I.
Journal	Canadian Water News	Canadian Water News is a publication dedicated to the Canadian Water Network's outstanding students and young professionals.

Item	Title	Description
Magazine	Canadian Water Treatment	This magazine is about Canada's water and waterworks industry. From testing, distribution, packaging and monitoring to wastewater treatment, this magazine covers many water-related issues.
DVD	Careers in Drinking Water	This DVD shows students the excitement and opportunities of seven rewarding occupations in the drinking water profession: treatment plant operator, distribution system operator, treatment plant design engineer, laboratory chemist, utility customer service representative, information technologist, and water resources specialist. It is shot with worker interviews and on-the-job scenes.
Book	Case Studies of Modified Treatment Practices for Disinfection By-product Control	This research report provides case studies from 10 utilities that have implemented treatment modifications to comply with the Disinfectants/Disinfection By-Products (D/DBP) Rule and Enhanced Surface Water Treatment Rule. It documents the modifications made, associated costs, and lessons learned through implementation.
Book	Challenges for Drylands in the New Millennium: A Cross-Cutting Approach for Assessment (workshop proceedings)	This book provides information on an International Workshop, "Challenges for Drylands in the New Millennium: A Cross-Cutting Approach for Assessment." This workshop was held in Tashkent, Uzbekistan, on August 11-15, 2004. Over 30 experts in dryland management from 15 countries participated in the workshop to capitalize on existing efforts aimed at sustainable development of drylands, explore the role of dryland ecosystem goods and services in promoting such development, and address the challenge of desertification from the perspective of "human-induced impairment of the provision of ecosystem goods and services." It was organized jointly by United Nations University (UNU), Millennium Ecosystem Assessment (MA), and International Center for Agricultural Research in Dry Area (ICARDA.)
Book	Characterization of Particles in Filter Effluents	Although granular media filtration of water is a centuries-old technology, it arguably remains the most important step in drinking water treatment. However, we know surprisingly little about the characteristics of particles, particularly ultrafine particles, which enter and subsequently pass through these filters. This report provides an in-depth analysis of inorganic and organic constituents in influent and effluent streams to granular media filters at a variety of drinking water treatment plants. The analysis characterizes the material composition and size of the particles, with particular attention paid to particles so small as to be invisible to particle sizing and counting instruments commonly used at water treatment plants. The report describes potential threats posed by these submicron-size particles, and the impacts of pretreatment and filter operation on downstream processes, such as membranes.
Book	Characterization of Total Organic Halogen Produced During Disinfection Processes	This book provides information on the nature and chemical characteristics of the unknown fraction of the total organic halogen (TOX) produced during chlorination and alternative disinfection processes (i.e., chloramination, chlorine dioxide, ozone disinfection). It also determines the apparent molecular weight distribution of the TOX, differentiates the amounts of total organic bromine (TOBr), total organic chlorine (TOCl), and total organic iodide (TOI) in TOX, and identifies the fraction of the TOX that is hydrophobic and hydrophilic for each disinfection process.
Book	Chemical Feed Field Guide for Treatment Plant Operators	This pocket field guide explains dry, liquid, and gas chemical feed systems, calibrations, and handling and storage requirements for various types of chemicals. It also includes handy feed calculators for gas, liquid, and dry chemicals.

Item	Title	Description
Book	Chemistry for Environmental Engineering and Science	This book has a two-fold purpose: to bring into focus those aspects of chemistry which are particularly valuable to environmental engineering practices; and to lay a groundwork of understanding in the area of specialized quantitative analysis, commonly referred to as 'water and wastewater analysis.'
Book	Chemistry of Water Treatment	A favourite of water treatment professionals and educators, this text contains the essential information needed to choose the most effective unit processes for specific raw water characteristics. The text is organized by types of contaminants, as well as by types of treatment processes. This allows the reader to quickly find information on the contaminant of interest and its removal from water. Chapters cover: particulate matter; hardness and other scale-forming substances; organic and inorganic contaminants; corrosion and corrosive substances; toxic chemicals; pathogenic bacteria, viruses, and protozoans; objectionable tastes and odours.
DVD	Chlorine Safety	When chlorine gas leaks, seconds can mean the difference between life and death. Everyone at your utility needs to know what to do in the event of a chlorine leak. This DVD provides vitally important safety information for all utility employees. This DVD covers: the characteristics of chlorine gas; health effects of exposure to chlorine gas; gas masks and other safety equipment; storing, handling, transporting, and inspecting chlorine containers; proper procedures to follow in case of an emergency; setting up a training program.
Book	Chloroacetamide Herbicides and Their Transformation Products in Drinking Water	The objective of this project was to determine the occurrence of neutral chloroacetamide degradates in drinking water sources and their removal. Chloroacetamide herbicides (acetochlor, alachlor, metolachlor, dimethenamid, atrazine, cyanazine, and simazine) are the most widely used herbicides in the United States. Their occurrence has been well documented in surface water and groundwater. However, relatively little is known about neutral chloroacetamide degradates, which are thought to be as toxic as the parent herbicide.
Book	Cleaner Water Through Conservation	The document explains the relationship between the quantity of water and its quality and discusses how developing water-use efficiency programs can help states and local communities achieve cleaner water through conserving water.
Book	Coagulation Pretreatment for Membrane Filtration	Membranes foul rapidly while filtering natural waters. This report describes the effectiveness of coagulation pretreatment in reducing membrane fouling for drinking water treatment. It provides an understanding of the conditions under which coagulation can improve membrane performance, which will allow membrane filtration to be applied to a wider variety of water treatment situations. It also explores the reasons for membrane fouling, as well as the cost effectiveness of coagulation pretreatment.
Book	Coliforms in Distribution Systems: Integrated Disinfection and Antimicrobial Resistance	The objective of this project was to understand the potential mechanisms of anti-microbial resistance of E. coli and opportunistic pathogens under disinfection conditions that are relevant to drinking water distribution systems. The project involved molecular techniques to understand genetic changes in microbial population in response to different disinfectant conditions. The researchers recommend implementing ultraviolet (UV) light as a primary disinfectant with chlorine-based secondary disinfection to enhance removal of heterotrophic plate count (HPC) bacteria due to synergistic effects. There would also be potential for lower contact times (CTs) to achieve higher reductions than chemical disinfectant alone at high CT. However, utilities would not be able to depend on UV pre-treatment to lower required dosages of chlorine-based disinfectant to maintain minimum residual concentrations. The researchers also recommend that UV light not be used as the primary and only disinfection because bacteria counts actually increased with UV-treated water when no residual protection was supplied.

Item	Title	Description
Presentation Handouts	Common and Emerging Pathogens in Drinking Water and Wastewater	<i>PowerPoint</i> handouts from <i>Common and Emerging Pathogens in Drinking Water and Wastewater</i> presented by Conestoga-Rovers & Associates.
Book	Comparative Genotoxicity Assessment of DBPs in Drinking Water	This research report determines toxicity of individual disinfection by-products (DBPs), mixtures of DBPs, and concentrates of disinfected water in bacterial and mammalian cells. It examines chlorine, ozone, and the sequence of ozone plus chlorine in addition to chloramination and chlorine dioxide treatment.
Book	Computer Modeling of Water Distribution Systems	Computer models can help water utilities identify a wide variety of distribution system problems and experiment with different scenarios to solve the problems, without actually entering or changing the physical distribution system. This manual provides an introduction to computer modeling of water distribution systems. It covers data collection, model design, calibration, and the many uses for distribution system computer models.
Book	Contribution of Service Line and Plumbing Fixtures to Lead and Copper Rule Compliance Issues	This project researched and quantified the contribution of lead service lines, utility-owned plumbing fixtures, and customer-owned plumbing fixtures to Lead and Copper Rule compliance issues.
Book	Controlling Disinfection By-Products and Microbial Contaminants in Drinking Water	Coincident with the passage of the Safe Drinking Water Act (SDWA), of 1974 it was discovered, that chloroform was a disinfection by-product (DBP) resulting from the interaction of chlorine with natural organic matter in water. This finding posed a serious dilemma because it raised the possibility that chemical disinfection might result in the formation of potentially harmful chemical by-products. Since 1974, additional DBPs have been identified and concerns have intensified about health risks resulting from exposures to them. Although a causal relationship between DBP exposures and these health risks has not been conclusively established, risk managers have responded by developing alternative treatment systems and issuing rules and regulations designed to maintain protective levels of disinfection while reducing potentially harmful levels of DBPs. This document summarizes the technology research that has been conducted by the USEPA.
DVD	Converting Distribution Systems from Chlorine to Chloramine	Chloramines produce fewer disinfection by-products (DBPs) than chlorine when used correctly. Advantages of disinfection with chloramines include little or no creation of trihalomethanes, simplicity of use, formation of a long-lasting measurable residual, and a proven history of success. This video educates drinking water professionals about the use of chloramines as a secondary disinfectant following primary disinfection. It explains the basic issues of DBP formation, DBP regulations, the advantages and drawbacks of chloramines to reduce DBP formation, and central issues to consider in planning and implementing a chloramination system in your treatment train.
Leaflet	Copper, Drinking Water, and You	This fact sheet describes what copper is, how it affects our drinking water and health, and ways that we can reduce our exposure to copper.

Item	Title	Description
Book	Corrosion Manual for Internal Corrosion for Water Distribution Systems	Corrosion of distribution piping and of home plumbing and fixtures has been estimated to cost the public water supply industry more than \$700 million per year. Two toxic metals that occur in tap water, almost entirely because of corrosion, are lead and cadmium. Three other metals, usually present because of corrosion, cause staining of fixtures, metallic taste, or both. These are copper (blue stains and metallic taste), iron (red-brown stains and metallic taste), and zinc (metallic taste). This manual was written to give the operators of potable water treatment plants and distribution systems an understanding of the causes and control of corrosion. The many types of corrosion and the types of materials with which the water comes in contact make the problem more complicated.
Book	Cost and Benefit Analysis of Flushing	Most water utilities flush their distribution system pipes about once a year. Pipe flushing is done to improve water quality at the tap, exercise fire hydrants, uncover potential problems, and remove pipe tuberculation. Until now, there has been no way for utilities to perform an accurate cost-benefit analysis of flushing in order to develop more cost-effective flushing programs. This report provides such a method. The report provides a step-by-step procedure and an associated software package to perform cost-benefit analysis of an existing or proposed pipe flushing program. It quantifies in both monetary and nonmonetary units costs and benefits of flushing. You'll be able to see in hard numbers your current flushing program costs and benefits, and then model different flushing scenarios and strategies. The program is flexible, it lets you focus on the flushing objectives you believe to be most important, it allows you to define what benefit and cost measures are most relevant to those objectives, and it guides you in defining practical data collection efforts so that the benefits and costs can be quantified in monetary or nonmonetary units.
Book	Costs of Infrastructure Failure	When a water main goes down, a utility's direct costs for labour and materials to return that main to service are relatively easy to estimate. But what about the hidden costs resulting from a water infrastructure failure? How can you assign a cost to customer inconvenience, traffic delays, police and emergency services, lost economic activity, diminished fire-fighting capacity, and human injury? Such social costs incurred by water infrastructure failure are very real, but because of their nature, they have been impossible to estimate accurately. Until now. This report and modeling software provides water system managers with the first comprehensive method for quantifying social costs of water infrastructure downtime. For the first time, it is possible to estimate not only the direct utility costs of a water infrastructure failure but also response and recovery costs to other parties or city departments, costs of damage to property, costs of illness caused by the failure, and even the dollar cost of traffic delays and customer inconvenience.

Item	Title	Description
Book	Cross-Connection Control Manual	Plumbing cross-connections, which are defined as actual or potential connections between a potable and non-potable water supply, constitute a serious public health hazard. There are numerous, well-documented cases where cross-connections have been responsible for contamination of drinking water, and have resulted in the spread of disease. The problem is a dynamic one, because piping systems are continually being installed, altered, or extended. Control of cross-connections is possible, but only through thorough knowledge and vigilance. Education is essential, for even those who are experienced in piping installations fail to recognize cross-connection possibilities and dangers. All municipalities with public water supply systems should have cross-connection control programs. Those responsible for institutional or private water supplies should also be familiar with the dangers of cross-connections and should exercise careful surveillance of their systems.
Book	Data Processing and Analysis for Online Distribution System Monitoring	This research report examines data processing methods that can distinguish normal variability from patterns related to specific contamination events. It develops a general data processing approach to assist water quality managers and water system operators detect abnormal patterns in online monitoring data.
Book	DBP Control in High Bromide Water While Using Free Chlorine During Distribution	This report evaluates integration and potential synergies among GAC adsorption, MIEX® resin, and fixed-bed ion exchange. It determines the performance of combinations of these processes, regeneration frequencies, residuals disposal requirements, and costs to achieve compliance with the Stage 1 and 2 Disinfection By-Product Rules while maintaining a free chlorine residual in the distribution system.
Book	DBP Formation Control by Modified Activated Carbons	This report developed fundamental knowledge about the preparation of carbonaceous sorbents (i.e., activated carbons or carbon fibres) selective for dissolved organic matter (DOM) removal and an improved understanding of how activated carbon pore structure and surface chemistry influence adsorption of DOM from natural waters. This report also determined optimum carbon preparation conditions that will maximize the removal of DOM.
Book	Demonstrating Benefits of Wellhead Protections Programs	Wellhead protections programs help to protect public groundwater supplies from contamination. The underlying principle of a wellhead protections program is that it is less costly to protect a groundwater supply than to restore water quality after it is compromised. This report gives water utilities a method to critically evaluate the effectiveness of their wellhead protections programs. This book: identifies key elements of wellhead protections programs; identifies the costs to develop and implement local wellhead protections programs; identifies their economic, health, and environmental benefits to communities; and provides 14 criteria by which a water utility can evaluate the effectiveness of its program. The report includes case studies of wellhead protections programs in nine small to large cities, which demonstrate to the reader how to use the measurement criteria. Water utilities that want to develop wellhead protections programs will find the information and recommendations useful for planning, cost estimation, and implementation and helpful to educate, and build support among, consumers, businesses, landowners, and public officials.

Item	Title	Description
CD	Demonstrating Benefits of Wellhead Protections Programs	Wellhead protections programs help to protect public groundwater supplies from contamination. Water utilities have had no criteria or methods to evaluate the effectiveness of wellhead protection programs, until now. This report gives water utilities a method to critically evaluate the effectiveness of their wellhead protections programs. This CD: identifies key elements of wellhead protections programs; identifies the costs to develop and implement local wellhead protections programs; identifies their economic, health, and environmental benefits to communities; and provides 14 criteria by which a water utility can measure and evaluate the effectiveness of its program. The report includes case studies of wellhead protections programs in nine small to large cities, which demonstrate to the reader how to use the measurement criteria. Water utilities that want to develop wellhead protections programs will find the report's information and recommendations useful for planning, cost estimation, and implementation. They will also find the information helpful to educate, and build support among, consumers, businesses, landowners, and public officials.
Book	Demonstration of Emerging Technologies for Arsenic Removal Volume 1: Bench Scale Testing	This report provides a comprehensive evaluation of most currently available arsenic removal technologies. It can assist water utilities, especially small systems, in planning, process selection, system design, operation, and maintenance. The methodologies in the report also provide useful guidance on pilot testing and full-scale implementation. Many of the known technologies for arsenic removal have serious drawbacks for small utilities because their capital and maintenance costs are high, their equipment footprints are quite large, and disposing of residuals is a problem. This project is the first research effort to emphasize long-term, simultaneous evaluations of a wide range of technologies for arsenic removal. Arsenic treatment processes evaluated in this project included adsorption media, coagulation-assisted membrane filtration, advanced ion exchange with an effective brine recycling scheme, ballasted sedimentation, ceramic high-rate filtration, and a fluidized-bed reactor. Fundamental process studies were conducted at three research universities, and field demonstrations, at both pilot and field scale, were conducted at four testing sites.
Book	Demonstration-Scale Evaluation of Ozone and Peroxone	This report evaluates ozone and peroxone (ozone in combination with hydrogen peroxide) processes to confirm pilot-plant results for taste and odour control, disinfection by-product control, disinfection, and turbidity removal. This book also determines mass transfer efficiencies of the processes and evaluates various process considerations and equipment alternatives.
Article	Desalting water in Florida	During the past 10 years, water suppliers in Florida have installed some 85 desalting treatment plants, most of which use reverse osmosis. The usual application for treating brackish groundwater in heavily populated coastal areas has been shallow groundwater resources, which are presently used to their ultimate potential. Alternative methods for desalting water include flash distillation and electrodialysis plants; however, reverse osmosis has proven to be the most satisfactory and widespread technique for development of potable water. These techniques for treating alternative sources of water are also being considered for waste treatment and for removal of organics.
Book	Desertification and the International Policy Imperative	This book includes the proceedings of a Joint International Conference on Desertification and the International Policy Imperative organized by the United Nations University and international agencies. This conference focused on the international policy imperatives raised by droughts and desertification and how best to meet the challenges.

Item	Title	Description
Book	Design and Construction of Small Water Systems	Ideal for small water systems, this book covers design, construction, operation, and maintenance of small systems. It provides the basic information a manager in a small community or a small utility needs to plan and oversee the construction of a new water system or the expansion of an existing system. Coverage includes source water selection and development (groundwater and surface water sources), water quality regulations, water rights, water quality sampling and testing, water treatment, water storage, and water distribution. It will help the manager understand the basics of municipal water supply and communicate effectively with civil and environmental engineers, health department personnel, and building contractors.
Presentation Handouts	Design Considerations for UV Disinfection Installation in WTPs	<i>PowerPoint presentation</i> handouts from <i>Design Considerations for UV Disinfection Installation in WTPs</i> .
Book	Design of Early Warning and Predictive Source-Water Monitoring Systems	This report provides expert guidance and specially developed software for assessing your risk of unexpected contamination of raw water sources. It also provides a recommended plan of action to help you design an early-warning monitoring system for detecting and responding to contamination spills in your source waters.
Book	Development and Standardization of a Cryptosporidium Genotyping Tool for Water Samples	Many <i>Cryptosporidium</i> species and genotypes have been found in domestic and wild animals but only five are major human pathogens: <i>C. parvum</i> , <i>C. hominis</i> , <i>C. meleagridis</i> , <i>C. canis</i> , and <i>C. felis</i> . Because oocysts of all <i>Cryptosporidium</i> spp. have potential to be present in water, and since most of them are morphologically similar, correct diagnosis of <i>Cryptosporidium</i> oocysts to species and genotypes are needed. The current practice of detecting <i>Cryptosporidium</i> oocysts by microscopy may lead to serious overestimation of the hazardous potential of oocysts found in source water samples or during treatment. Microscopic differentiation is very difficult even for experienced parasitologists. Only molecular analysis can provide definitive results. In this study, researchers: developed and validated one molecular technique as the most appropriate method for <i>Cryptosporidium</i> differentiation and genotyping; established a genetic database that allows correct interpretation of molecular data; and developed quality control procedures for DNA extraction and contamination reduction to assure correct identification of <i>Cryptosporidium</i> oocysts.
CD	Development and Standardization of a Cryptosporidium Genotyping Tool for Water Samples	Many <i>Cryptosporidium</i> species and genotypes have been found in domestic and wild animals but only five are major human pathogens: <i>C. parvum</i> , <i>C. hominis</i> , <i>C. meleagridis</i> , <i>C. canis</i> , and <i>C. felis</i> . Because oocysts of all <i>Cryptosporidium</i> spp. have potential to be present in water, and since most of them are morphologically similar, correct diagnosis of <i>Cryptosporidium</i> oocysts to species and genotypes are needed. The current practice of detecting <i>Cryptosporidium</i> oocysts by microscopy may lead to serious overestimation of the hazardous potential of oocysts found in source water samples or during treatment. Microscopic differentiation is very difficult. Only molecular analysis can provide definitive results. In this study, researchers: developed and validated one molecular technique as the most appropriate method for <i>Cryptosporidium</i> differentiation and genotyping; established a genetic database; and developed quality control procedures for DNA extraction and contamination reduction to assure correct identification of <i>Cryptosporidium</i> oocysts. This CD-ROM provides standard operating procedures, the genetic database, and research data.

Item	Title	Description
Book	Development of a Microfiltration and Ultrafiltration Knowledge Base	This report is a compilation of current industry knowledge about microfiltration and ultrafiltration (MF/UF) in drinking water treatment, water reuse, and seawater pretreatment. The report documents the current state of MF/UF membrane development, identifies recent trends in membrane application in drinking water treatment, and provides an information knowledge base for drinking water utilities considering the use of these membranes. Included in this report: a comprehensive survey of MF/UF literature provides abstracts of 223 publications; a survey of MF/UF membrane system vendors provides information on 450 MF/UF installations. A worldwide survey of MF/UF membrane plant owners and operators provides operating information on 87 MF/UF water treatment plants. This knowledge base will be helpful in selecting membrane products, streamlining the regulatory approval process, optimizing plant operations, and minimizing costs. It provides specific recommendations on pilot testing, minimizing startup problems, estimating operations and maintenance costs, and reducing membrane fibre breakage.
Book	Development of Distribution System Water Quality Optimization Plans	This report offers step-by-step guidance to help water utilities manage their distribution systems for optimum water quality. Why should utilities that are in compliance with regulatory requirements be concerned with distribution system water quality? Optimizing distribution system water quality management can assist utilities in: reducing the potential that waterborne pathogens may reach customers' drinking water; improving distribution system water quality above and beyond regulatory requirements; preparing for future revisions of the Total Coliform Rule that may focus on distribution system operation and maintenance, instead of numeric evaluation of coliform bacteria; identifying and addressing water quality concerns that can be attributed to the distribution system; addressing customer expectations above and beyond meeting drinking water regulatory requirements; developing programs and practices as recommended by American Water Works Association's distribution system accreditation program. Includes a CD-ROM that contains examples of programs and practices utilities can implement.
Booklet	Discover Ground Water & Springs	This is an illustrated activity booklet that was designed to help children learn about the importance of water.
Standard	Disinfecting Water Mains	This standard presents essential procedures for the disinfection of new and repaired potable water mains. Topics covered include forms of chlorine disinfection, a description of the disinfection procedure, preventive and corrective measures during construction, methods of chlorination, final flushing, bacteriological testing, redisinfection, final connections to existing mains, disinfection procedures when cutting into or repairing existing mains, and special procedures for caulked tapping sleeves. Appendixes cover chlorine residual testing, chlorine dosages, and disposal of heavily chlorinated water.
Book	Disinfection By-Product Formation and Control During Chloramination	This research report identifies and develops a better understanding of the factors that influence disinfection by-product (DBP) formation, especially dihalogenated species, during chloramination. The report also develops practical strategies for minimizing DBP formation.
Book	Disinfection Byproducts in Drinking Water: Formation, Analysis, and Control	This book brings together the findings of many notable researchers in the field and serves as a practical guide to understanding the formation of disinfection byproducts and explaining how they are analyzed and controlled. Chemists in plants and laboratories will value the analytical techniques offered in the book, and plant engineers will benefit from the formation and control information.

Item	Title	Description
Book	Disinfection By-Products in Drinking Water: Occurrence, Formation, Health Effects, and Control	Since their discovery, disinfection by-products (DBPs) have become one of the major driving forces in drinking water regulations, research and water utility operations throughout the world. This book documents the latest DBP research findings, including emerging issues and state-of-the-art studies. Specifically, papers on the occurrence, formation, control, and health effects of emerging (unregulated) halogenated (e.g., brominated) and nonhalogenated (e.g., nitrosamines) DBPs (e.g., emerging nitrogenous vs. regulated carbonaceous DBPs) are presented. In addition to the characterization and reactivity of natural organic matter to form DBPs, new studies on algal organic matter and treated wastewater as sources of DBPs and their precursors are discussed.
Book	Disinfection of Pipelines and Storage Facilities Field Guide	According to the Centers for Disease Control and Prevention, 32 percent of waterborne disease outbreaks are caused by pathogen intrusion in the water distribution system. Incorporating disinfection practices for water mains and storage facilities can reduce the risk of microbial contamination. This handy guidebook is designed for use by water system workers and contractors to instruct them in proper field practices for preventing microbial contamination of the water flowing in water mains, storage tanks, and other distribution system components. It covers chlorine disinfection and keeping pipes clean prior to installation, flushing, testing, and dechlorination.
Book	Disinfection Profiling and Benchmarking Guidance Manual	This document provides public water systems and States with Environmental Protection Agency's (EPA's) current technical and policy recommendations for complying with the disinfection profiling and benchmarking requirements of the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). The statutory provisions and EPA regulations described in this document contain legally binding requirements. This document is not a regulation itself, nor does it change or substitute for those provisions and regulations. Thus, it does not impose legally binding requirements on EPA, States, or public water systems. This guidance does not confer legal rights or impose legal obligations upon any member of the public.
Leaflet	Distillation For Home Water Treatment	Distillation is one of the oldest methods of water treatments and is still in use today, though not common as a home treatment method. This package includes information on the process, cost and maintenance and a brief summary of the options and why some are better suited than others.
Book	Distribution Generated Taste-and-Odor Phenomena	Conducted by a diverse group of international experts, this research study creates a vast knowledge base about taste and odour issues in drinking water distribution systems. You'll discover: how distribution system components, from pipes to tanks, can cause taste and odour problems; what kinds of tastes and odours are caused by the hundreds of chemicals, organics, microbes, plastics, and metals in which the water comes in contact while in the distribution system; how to prevent or mitigate specific taste and odour problems. Very little was known about how the distribution system can affect the aesthetic qualities of water, until now, and knowing how tastes and odours develop in your distribution system is the first step in getting rid of them.
Book	Distribution System Water Quality Challenges in the 21st Century: A Strategic Guide	Maintaining water quality after the water leaves the treatment plant is increasingly important to water utilities who must meet stringent water quality regulations. This book provides strategic options for water utilities to help them choose among various technologies and solutions. Topics of discussion include microbiology, chemistry, hydraulics, modeling, monitoring, disinfection, maintenance, and security, as each relates to water quality in distribution systems.

Item	Title	Description
Leaflet	Drinking Water and MTBE: A Guide for Private Well Owners	This brochure provides private well-owners with basic information about the gasoline additive chemical methyl tertiary-butyl ether (MTBE).
Book	Drinking Water Chlorination	Chlorine provides good disinfection and is effective against a wide range of pathogens in drinking water. Recently, however, many water treatment plants have altered their disinfection strategies because of regulation changes concerning disinfection byproducts. Nevertheless, chlorination remains the most cost-effective and reliable disinfection method available.
Book	Drinking Water Disinfection By-Products and Pregnancy Outcome	This research report investigates whether exposure to trihalomethanes (THMs) - especially bromodichloromethane (BDCM) - haloacetic acids species (HAAs), or other disinfection by-products may be associated with an increased risk of spontaneous abortions.
Book	Drinking Water Distribution Systems: Assessing and Reducing Risks	The US Environmental Protection Agency has renewed its interest in water quality degradation occurring during distribution, with the goal of defining the extent of the problem and considering how it can be addressed via both regulatory and nonregulatory channels. The agency requested that the National Academies Water Science and Technology Board conduct a study of water quality issues associated with public water supply distribution systems and their potential risks to consumers. This book provides the results of the study. The study investigated the following distribution water quality issues: regulations, nonregulatory approaches, and their limitations; public health risk from distribution system contamination; physical integrity; hydraulic integrity; water Quality integrity; integrating approaches to reducing risk from distribution systems; and alternatives for premise plumbing.
Leaflet	Drinking Water From Household Wells	This pamphlet provides general information about drinking water from home wells. It describes activities that can create threats to your water supply. It also describes problems to look for and offers maintenance suggestions. Sources for more help and information are also included.
Booklet	Drinking Water Quality Reports: Your Right To Know	This package includes information on the rights of consumers and important things they should know when it comes to their drinking water.
Book	Drinking Water Regulation and Health	Proliferating federal drinking water regulations in the United States may confuse water utility managers, regulators, and consultants. At the very least, the regulations can be difficult to understand. This volume fills the current need for a professional reference regarding regulation of US drinking water. An expert on water regulations and compliance, the author explains basic principles of the Safe Drinking Water Act (SDWA) and drinking water regulation, forecasts future trends, and gives the latest developments in regulations in this timely resource on the current regulatory climate in the US. The book is divided into four sections: the SDWA and public health; regulation development; contaminant regulation and treatment; compliance challenges. This is a practical book. It will tell you how drinking water regulators craft regulations, how to select treatment for SDWA compliance, how to control pathogens and disinfection by-products (DBPs), how to meet consumer expectations (especially sensitive subpopulations), and how to achieve technical, managerial, and financial capacity to comply.
DVD	<i>Drinking water treatment and quality monitoring</i> video: Drinking Water Disinfection	This DVD was compiled for use with the <i>Drinking water treatment and quality monitoring</i> course offered onboard the Walkerton Clean Water Centre's Mobile Training Unit.

Item	Title	Description
Book	Early Warning and Management of Surface Water Taste-and-Odor Events	The primary objectives of a taste-and-odour early warning program are to detect and manage taste-and-odour events before consumer complaints begin. However, sensitive individuals can detect geosmin and MIB in drinking water - the algae-related compounds that cause common "earthy/musty" complaints - at almost unbelievably low levels of < 5 parts per trillion (ng/L). Fortunately, numerous monitoring and management strategies exist that allow a utility to head off taste-and-odour problems. The report: describes and illustrates the MIB- and geosmin-producing blue-green algae species; reviews the sensory and analytical methods for detecting and measuring MIB and geosmin (comparing the strengths and weaknesses of each); provides a simplified method of Flavor Profile Analysis; describes two new sensory methods that are easy to perform, require minimal training, and have low operational costs; describes design guidelines for new facilities that can help utilities avoid taste and odour problems; reviews several readily available lake simulation models for their value in taste-and-odour management.
Book	Eau Canada – The Future of Canada's Water	Eau Canada assembles the country's top water experts to discuss our most pressing water issues. Perspectives from a broad range of thinkers — geographers, environmental lawyers, former government officials, aquatic and political scientists, and economists — reflect the diversity of concerns in water management. Arguing that weak governance is at the heart of Canada's water problems, this timely book identifies our key failings, explores debates over jurisdiction, transboundary waters, exports, and privatization, and maps out solutions for a more sustainable future. Eau Canada provides a powerful discussion of the most controversial and pressing water issues facing Canadians today.
Book	Effect of Pathogen Load on Pathogen Removal by Conventional Treatment	This research report studied continuous separation channel centrifugation and flow cytometry with cell sorting to evaluate pathogen removals in water treatment processes at pathogen concentrations nearer to those found in the aquatic environment.
Book	Effects of Activated Carbon Characteristics on Organic Contaminant Removal	This research report develops a fundamental understanding of the effects of activated carbon surface chemistry and pore structure on the adsorption of organic micropollutants in the presence of natural organic matter (NOM). It elucidates mechanisms by which NOM reduces adsorption of micropollutants onto activated carbon. This report also determines activated carbon characteristics that minimize the adverse impacts of NOM on micropollutant adsorption.
Book	Effects of Blending on Distribution System Water Quality	This research report determines the effect of blending waters on final distribution system water quality. It examines the variations in aesthetic and regulated water quality from blended waters with the seasons, including parameters use of corrosion inhibitors. It also explores techniques to mitigate these variations. This report includes bench and pilot studies in field evaluations.
DVD	Emergency Survival Kit Video	This DVD offers suggestions for compiling an emergency survival kit.
Book	Emotional Rescue: Responding to Traumatic Mental Stress Claims	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
	Endocrine Disruptors, Pharmaceuticals & Personal Care Products: Selected Papers	This CD contains 25 papers selected by the American Water Works Association engineering staff as the best and most recent work on the subject of endocrine disruptors and pharmaceuticals in water.

Item	Title	Description
Book	Enhanced Coagulation Impacts on Water Treatment Plant Infrastructure	This research report investigates and summarizes corrosion problems related to changing treatment parameters for enhanced coagulation in pursuit of improved natural organic matter (NOM) removal. In addition, it provides mitigation strategies to minimize corrosion problems in water plant infrastructure while utilities comply with the enhanced coagulation requirements of the disinfection by-products rule.
Book	Environmental Fact Sheet: Lead Leaching from Submersible Well Pumps	This fact sheet is concerned with drinking water submersible well pumps. Some submersible well pumps are made of stainless steel and plastic components but the majority are constructed with brass fittings contained in a cast brass housing. While the plastic and stainless pumps do not pose a problem with lead leaching, U.S. Environmental Protection Agency (USEPA) is concerned for residents of homes and other buildings with submersible well pumps made with brass fittings, because the brass alloys used in such pumps contain lead. These pumps have the potential to leach high levels of lead into drinking water, especially if the water is soft and corrosive.
Book	Environmental Management Systems: A Tool to Help Water Utilities Manage More Effectively	This research project identifies benefits to water utilities of the use of an environmental management system. An environmental management system is a linked set of procedures used to systematically identify significant environmental issues within an organization and improve the management of these issues. Environmental management systems were first developed for large manufacturing companies for planning, implementing, monitoring, and evaluating their environmental management actions. The study provides steps based on ISO 14001 for developing a water utility-specific environmental management system.
Book	Environmental Pollution Control Alternatives: Drinking Water Treatment for Small Communities	The document provides information for small system owners, operators, managers, and local decision makers, such as town officials, regarding drinking water treatment requirements and the treatment technologies suitable for small systems. It is not intended to be a comprehensive manual for water treatment and protection of public water supplies from sources of contamination. Rather, it is designed to give an overview of the problems a small system may face, treatment options that are available to solve specific problems, and resources that can provide further information and assistance. For the purpose of the document, small systems are defined as systems that serve 25 to 1,000 people, or that have a flow of 9,500 to 380,000 litres (2,500 to 100,000 gallons) per day. They include small community systems as well as noncommunity systems, such as campgrounds and restaurants.
Book	Environmental Resources Canada: 2008 Industry Guide	This guide is intended to facilitate governments, agencies and companies in addressing the environmental issues we face in Canada. This annual industry information resource is the only comprehensive, national year-long desktop reference guide dedicated to the environmental industry in Canada.
Journal	Environmental Science & Engineering Magazine	<i>Environmental Science & Engineering</i> is a bi-monthly business publication of Environmental Science & Engineering Publications Inc. An all Canadian publication, <i>ES&E</i> provides authoritative editorial coverage of Canada's municipal and industrial environmental control systems and drinking water treatment and distribution.
Brochure	EPA Bottled Water: Helpful Facts and Information	The purpose of this pamphlet is to provide basic information about bottled water, to help you become a better informed consumer of drinking water of any kind and to provide helpful references for obtaining more information.
Leaflet	EPA Citizen Monitoring: Recommendations to Household Well Users	This fact sheet is designed to provide you with information about the types of substances and activities that represent potential threats to your water supply and health and the steps you might take as a consumer to protect your well and become more informed of drinking water issues.

Item	Title	Description
Leaflet	EPA Community Involvement in Drinking Water Source Assessments	This fact sheet explains the four steps of source water assessments and how communities can participate in the assessment process. It then describes how communities can utilize assessment information to protect their local sources of drinking water.
Booklet	EPA Drinking Water Treatment for Small Communities	This pamphlet focuses on treatment technologies for small systems, including prefabricated central treatment systems (package plants) and home treatment units, to reduce biological, chemical, and radiological contaminants to acceptable levels in water supplies.
Brochure	EPA Ensuring Safe Drinking Water for Tribes	EPA and Tribes are working together to ensure that everyone served by Tribal public water systems has a safe and adequate supply of drinking water. EPA's goal is to ensure that everyone served by a Tribal system enjoys the full measure of public health protection envisioned by the Safe Drinking Water Act. This brochure provides details and contact information.
Leaflet	EPA Environmental Education: Role of Plants in Water Filtration	This is an experiment sheet provided by the EPA for students in grades 4-7. It provides a brief background on the topic, the objective of the experiment and the materials needed in order to conduct it. It then tells you the process and procedure in order to complete the experiment and includes follow up reflection questions to be answered after the experiment has been completed.
Booklet	EPA Helping Small Systems Comply with the Safe Drinking Water Act: The Role of Restructuring	This information booklet provides questions and answers on the subject of restructuring. It also includes a list of different drinking water programs and their contact information.
Booklet	EPA Legionella: Risk for Infants and Children	This document is an addendum to the 1998 legionella Human Health Criteria document, which covers all aspects of Legionella, except risk that may be posed to children. In response to that lack of information, this document evaluates the risk that may be posed to children.
Leaflet	EPA Safewater	This leaflet includes information about the Environmental Protection Agency's ground water and drinking agencies.
Booklet	EPA Water Drop Patch Project	This project was jointly developed by the United States Environmental Protection Agency and the Girl Scout Council of the Nation's Capital. The purpose of the project is to encourage girls to make a difference in their communities by becoming watershed and wetlands stewards, use their skills and their knowledge to educate others in their communities about the need to protect the nation's valuable water resources, explore the natural world to gain an interest in science and math and to use internet as a source of information.
Book	Essential Water and Wastewater Calculations for Engineers and Operators	This book contains hundreds of water and wastewater engineering calculation procedures ranging from simple to complex. Each calculation provides easy-to-follow steps for solving and an example that demonstrates important concepts. This approach allows engineers to study the basic calculations and principles involved and apply them to actual problems they encounter in water and wastewater engineering applications. Chapters on fluid fundamentals, steady flow in pipes, steady flow in open channels, flow measurement and control, pumping systems, water supply systems, wastewater systems, and stormwater systems. Unit-conversion tables are included.

Item	Title	Description
Book	Estimating Health Risks From Infrastructure Failures	The World Health Organization defines health as "...a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Thus, public health consequences from water infrastructure failures--such as fear or panic, loss of business or income, loss of fire protection, loss of water for sanitation--must be considered along with the spread of waterborne disease. In this research, representatives of water utilities met with those from a variety of agencies--public health, environmental, medical, engineering, regulatory, and first response--to mutually explore the detection, prevention, and correction of adverse health outcomes caused by water infrastructure failures. The resulting report provides checklists, matrices, techniques, and recommendations for building a collaborative network of agencies, identifying infrastructure vulnerabilities, failure prevention, and health risk assessment.
CD	ETC Workshops	A CD prepared by the Environmental Training Center at Pennsylvania State University. This CD covers a variety of topics, including: basic electricity; basic math; centrifugal pumps; chemical feed pumps; confined spaces safety; conventional filtration; create day tank; instrumentation; jar testing; turbidity optimization; valves; water analysis; water chlorination; water meters.
Book	Evaluating Water Loss and Planning Loss Reduction Strategies	Evaluates the definition, measurement, and reporting methods for utility water losses. Provides guidance to water utilities on leakage identification, leakage control methods, and water loss management that can be used as a measure of best utility practices. Recommends use of the International Water Association (IWA)/American Water Works Association (AWWA) Water Audit Method as a best practice for North American water utilities.
CD	Evaluating Water Loss and Planning Loss Reduction Strategies	Evaluates the definition, measurement, and reporting methods for utility water losses. Provides guidance to water utilities on leakage identification, leakage control methods, and water loss management that can be used as a measure of best utility practices. Recommends use of the International Water Association (IWA)/American Water Works Association (AWWA) Water Audit Method as a best practice for North American water utilities.
Article	Evaluation of an MBR-RO system to produce high quality reuse water: Microbial control, DBP formation and nitrate	A membrane bioreactor and reverse osmosis (MBR-RO) system was developed to assess potential reuse applications of municipal wastewater. The objective of the study was to examine the water quality throughout the system with a focus on waterborne pathogens, disinfection by-products (DBPs) and nitrate. This paper discusses the presence of these contaminants in MBR effluent and focuses on their subsequent removal by RO. This study has shown that high quality reuse water can be produced from municipal wastewater through the use of an MBR-RO system. However, trihalomethane (THM) formation attributed to cleaning of the MBR with chlorine and incomplete removal by subsequent RO treatment resulted in reuse water with THM levels high enough to present a potential concern when considering drinking water applications. Nitrate levels, which resulted from incomplete removal by the RO membrane, are also a potential concern. A denitrification step in the MBR should be considered in potable water applications.
Book	Evaluation of Dynamic Energy Consumption and Advanced Water and Wastewater Treatment Technologies	This research report documents the energy use, cost, and efficiency of water and wastewater unit operations. It includes a comparison with theoretical efficiencies and an identification of the largest energy usages. This project conducted a comparison of 12 different plants to include a range of advanced water and wastewater treatment processes including desalination.

Item	Title	Description
Book	Evaluation of Ozone and Ultraviolet Light	This research report compares the relative treatment performance of two treatment schemes -- ozone followed by medium pressure ultraviolet light (UV) and medium pressure UV alone -- for both finished and distributed water quality. It determines disinfection effectiveness, synergistic impacts on disinfection by-product formation, biostability, corrosion control and red water, and design and operational guidance for implementing the optimum primary disinfection scheme.
Book	Examining the Impact of Water Quality on the Integrity of Distribution Infrastructure	This document identifies how changes in the treatment process can physically impact the distribution system infrastructure. As well, a research-needs workshop was conducted to review current knowledge and outline research gaps in order to address how changing water quality requirements impact infrastructure integrity and appurtenances.
Book	Excellence in Water Quality Distribution: AWWA Satellite Teleconference	This discussion covers practical ways to protect the water quality in water distribution systems. The discussion covers the new challenges facing operators with a specific focus on drinking water regulations that are affecting the way you operate your system. You'll also hear about security, learn how to work with customers, and look at these issues from the perspective from a small system. You'll get insight from a utility manager, an operator, a water regulations professional from the US and Canada, and a small systems utility manager on how to achieve excellence in water quality distribution.
VHS	Excellence in Water Quality Distribution: AWWA Satellite Teleconference Tape 1	This video of American Water Works Association's March 2005 satellite teleconference discusses practical ways to protect the water quality in water distribution systems. The discussion covers the new challenges facing operators with a specific focus on drinking water regulations that are affecting the way you operate your system. You'll also hear about security, learn how to work with customers, and look at these issues from the perspective from a small system. You'll get insight from a utility manager, an operator, a water regulations professional from the US and Canada, and a small systems utility manager on how to achieve excellence in water quality distribution.
VHS	Excellence in Water Quality Distribution: AWWA Satellite Teleconference Tape 2	This video of American Water Works Associations' s March 2005 satellite teleconference discusses practical ways to protect the water quality in water distribution systems. The discussion covers the new challenges facing operators with a specific focus on drinking water regulations that are affecting the way you operate your system. You'll also hear about security, learn how to work with customers, and look at these issues from the perspective from a small system. You'll get insight from a utility manager, an operator, a water regulations professional from the US and Canada, and a small systems utility manager on how to achieve excellence in water quality distribution.
Leaflet	Extension Extra: Water for Emergency Use	When a storm or other natural disaster strikes, your access to food, water, and electricity may end for a few days or even weeks. Having enough clean drinking water in storage can make life a lot easier in an emergency. However, you may find yourself in a situation where safe drinking water is not available. This publication will show you how to safely store water for emergency use and how to make impure water safer to drink in an emergency.

Item	Title	Description
Book	External Corrosion - Introduction to Chemistry and Control	Water managers and operators can refer to this professional manual of water supply practices to learn techniques and to get the answers to all of their questions about external corrosion, including how and why external corrosion occurs, how to evaluate the corrosion potential of a material and its environment, how to control and prevent corrosion of buried pipelines, how to control and prevent corrosion of pipe exposed to the air, and what can be done to protect the insides of steel water storage tanks from corrosion. By applying the principles introduced in this book, you can lay the foundation for an effective corrosion-control program that will benefit your utility and your customers.
Book	External Corrosion and Corrosion Control of Buried Water Mains	External corrosion of water pipe is a well-understood science. By understanding how soil and other environmental conditions act on different water pipe materials, one can predict which water mains will corrode, and even precisely where they will corrode and eventually fail. Also, one can predict with accuracy the consequences, such as property damage, of any given pipeline failure. This study identifies causes and solutions to the problem of external corrosion in buried water pipe. This report: explains the specific environmental conditions that cause external corrosion of metal water pipes; provides economical solutions appropriate for various corrosion problems; describes the benefits to utilities and customers of corrosion control; explains the application of risk-management techniques to an external corrosion control program for water mains.
CD	External Corrosion and Corrosion Control of Buried Water Mains	External corrosion of water pipe is a well-understood science. By understanding how soil and other environmental conditions act on different water pipe materials, one can predict which water mains will corrode, and even precisely where they will corrode and eventually fail. Also, one can predict with accuracy the consequences, such as property damage, of any given pipeline failure. This study identifies causes and solutions to the problem of external corrosion in buried water pipe. This report: explains the specific environmental conditions that cause external corrosion of metal water pipes; provides economical solutions appropriate for various corrosion problems; describes the benefits to utilities and customers of corrosion control; explains the application of risk-management techniques to an external corrosion control program for water mains. This CD-ROM contains a corrosion control master plan for water utilities, six case studies, laboratory test data, and the water utility survey used in the study.
Leaflet	Fact Sheet A National Drinking Water Clearinghouse Fact Sheet: Water Conservation Measures	This fact sheet considers the role of water conservation as an integral part of long-term resource planning. It might be more appropriate to use the term "water demand management." Traditional water supply management seeks to provide all the water the public wants, which, in some sections of the country, translates to a constant search for untapped sources.
Leaflet	Fact Sheet On Home Drinking Water Treatment	This fact sheet is intended to explain the most common types of home water treatment units, what they are or are not capable of doing, and why some of them are registered with the Environmental Protection Agency.
Leaflet	Fact Sheet: Water Conservation Measures	This fact sheet considers the role of water conservation as an integral part of long-term resource planning. Traditional water supply management seeks to provide all the water the public wants, which, in some sections of the country, translates to a constant search for untapped sources.

Item	Title	Description
Book	Factors Affecting the Formation of NDMA in Water and Occurrence	NDMA (N-nitrosodimethylamine) has been classified as a probable human carcinogen by the U.S. Environmental Protection Agency. It is suspected that chlorination and chloramination may be contributing factors in NDMA formation in drinking water. This study furthers our knowledge of NDMA. It surveys the levels of NDMA in selected drinking water, recycled water, and wastewater. The research describes how NDMA forms in drinking water and the role played by chlorination and chloramination. It also examines the impacts of various water and wastewater treatment processes on NDMA formation.
Book	Farm Forestry and Habitat Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Farmers who manage their woodlands have long realized the benefits: reliable returns, products for on-farm use, and resource and habitat protection. This 40-page book will help you choose suitable best management practices - both traditional and new - from the following: planting windbreaks, shelterbelts and natural fencerows; reforesting marginal and fragile land; planting buffer strips around water bodies and woodlots; managing wildlife habitat to benefit your property and wildlife; intercropping field crops and tree crops; planting trees and allowing livestock access; intercropping field crops and tree crops; managing woodlands for profit and the environment; producing quality timber, firewood, posts and poles.
Book	Fate of Pharmaceuticals in the Environment and in Water Treatment Systems	This book examines analytical protocols used in determining drugs and some of their metabolites in aqueous and solid environmental samples. This book provides new data on the relative efficiencies of physical and chemical treatment processes employed in drinking water treatment systems.
Book	Field Crop Production: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. If you're considering changes to the way you grow grains, oilseeds or forages, then Field Crop Production is for you. Effective change takes careful planning and know-how -- one change may require several adjustments to your cropping system. Doing it right requires an understanding of the basics, so this 133-page book starts off with a review of management principles for soils, water, nutrients, crop residues and pests. The next three sections focus on management options for tillage systems: conventional, mulch, and no-till/ridge. Non-tillage options are also explored, such as conservation practices and erosion control structures for cropland, streams and ditches. A case study concludes the comprehensive book.
Book	Field Measurement Methods for Arsenic in Drinking Water	This report provides a relatively inexpensive, portable technique that can be used in the field to quickly and accurately measure arsenic concentrations in drinking water samples. The method also has the capability of qualitative field speciation between the two major arsenic species found in US drinking water, As(III) and As(V). Using this method, it is possible to measure arsenic on site, instead of sending samples to a laboratory for analysis, thus saving time and expense. Water utilities can use this method to measure arsenic concentrations in the influent water and during treatment processes to optimize arsenic removal, aiding compliance with the U.S. Environmental Protection Agency's Maximum Contaminant Level requirement.

Item	Title	Description
	Field Pocket Guide: Good Practices for Preventing Microbial Contamination of Water Mains	Field pocket guide to accompany <i>Practices for Preventing Microbiological Contamination of Water Mains</i> .
Book	Field Testing of USEPA Methods 1601 and 1602 for Coliphage in Groundwater	The U.S. Environmental Protection Agency's (USEPA) proposed Groundwater Rule will require disinfection of some groundwater systems to assure public health protection. The proposed rule requires sensitive systems to monitor coliphage, <i>E. coli</i> or enterococci in the source water. As part of the rule USEPA is considering approving two newly developed coliphage methods, 1601 and 1602, for routine monitoring of groundwater for fecal contamination. Both methods have been tested in a multi-laboratory study. The overall objective of the study is to evaluate USEPA methods 1601 and 1602 and to develop a useful microbial indicator for assessing the vulnerability of groundwater for viral/fecal contamination. This research tests the two USEPA methods in the field, and provides a method for categorizing wells as vulnerable or not vulnerable to viral/fecal contamination. The vulnerability of groundwater is defined as a groundwater source for which there is a probability of being contaminated with a certain pathogen. The presence of fecal indicators indicates the possible fecal contamination and thus possible presence of enteric pathogens.
Book	Filter Evaluation Procedures for Granular Media	This manual provides step-by-step instructions for performing granular filter tests in water treatment plants. The procedures are thorough, easy to follow, and require a minimum of time and equipment to complete. This book provides a complete filter evaluation and maintenance program for your water treatment plant and includes step-by-step procedures, equipment needed, and forms for recording your findings for 15 filter bed tests. This book also shows correct safety procedures for working in filter beds.
Book	Filter Maintenance and Operations Guidance Manual	This practical manual provides best practices and procedures for the operation and maintenance of granular filters in water treatment. The guide provides filter plant operators with a number of practical tools to determine current conditions and performance, identify deficiencies, and optimize the operation and maintenance of the rapid-gravity filtration or pressure-filtration process. These techniques have been proven in actual practice.
Book	Filter Operations Field Guide	This pocket-sized field reference gives operators all the basic regulatory, theoretical, operational, inspection, and maintenance information they need for correctly treating water with granular media filters. This field guide will provide the operator with the ability to produce low turbidity water on a consistent basis and avoid operationally induced turbidity spikes that result in noncompliance with regulations. Filter operational, inspection, and maintenance techniques are provided. This book includes a glossary of filter terms.
DVD	Filter Surveillance Techniques	Filtration is a crucial barrier to microbial pathogens in drinking water. To produce safe, clean water, filters must perform flawlessly. This video takes you step by step through the procedures and tests needed to determine the condition of your filter beds. The video also suggests a variety of corrective measures for filter problems.

Item	Title	Description
Book	Filter Troubleshooting and Design Handbook	<p>Troubleshooting granular filters can take hours and frustrate even the most experienced water operators. Find and solve filter problems fast with this new handbook. Author Richard P. Beverly, a filter designer and consultant who holds several patents in filtration, has written this book to provide all the information needed for troubleshooting any type of granular media filter. Troubleshooting checklists are also provided for both pressure filters and gravity filters. Plant operators do not have to be conversant in all design aspects of a filter plant to do troubleshooting. However, it is important for them to have a practical working knowledge of filter design; they need to be able to recognize the issues and know what they can or cannot resolve with the equipment they have. That is why the handbook describes basic gravity filter design, including layering the support gravel, types of filter media, driving head, underdrain hydraulics, controls, and backwash optimization. The book offers operators of all experience levels the information they need to get the best performance from their filters.</p>
Book	Fish and Wildlife Habitat Management: Best Management Practices	<p>The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. If you have rural property, and you're interested in providing habitat for fish and wildlife, this book can get you started. This 92-page book explains how to restore or improve habitats in ways that are compatible with farming, good for soil and water, often profitable and always practical. It also provides tips on ways to help you prevent wildlife from becoming a problem, and practical advice on what to do when wildlife becomes a nuisance. With the help of many colour illustrations and photos, it describes potential habitat sites on: farmlands, woodlands, transitional areas (e.g., wetlands), aquatic areas. Practices for each habitat type are presented, ranging from simply maintaining existing habitats to planting buffers to improving in-water habitat. You choose which ones suit your property, your time, and your goals.</p>
VHS	Flavour Profile Analysis	<p>Flavour profile analysis (FPA) is a technique for identifying sample taste(s) and odour(s). FPA differs from threshold odour number because the sample is not diluted and each taste or odour attribute is individually characterized and assigned its own intensity rating. The single intensity rating obtained in measuring threshold odour is controlled by the most readily perceived odourant or mixture. FPA has been applied to drinking water sources, finished drinking water, and sampling points within the drinking water treatment train. A panel of at least four panelists is required to do the test. Apparatus must be used exclusively for the FPA. A table lists qualitative odour references, giving the compound, its stock concentration and preparation, test concentration, and descriptor. The method describes the apparatus required, room conditions, training of panelists, and the techniques used by panelists to test for flavour.</p>

Item	Title	Description
Book	Fluence Monitoring in UV Disinfection Systems: Development of a Fluence Meter	Ultraviolet (UV) light has become a widespread and accepted technology for disinfecting drinking water. UV fluence (dosing) must be continuously monitored to assure that adequate disinfection is occurring. Fluence monitoring is currently achieved with UV sensors, but such sensors can be problematic. They can be inaccurate, break down easily, and must be recalibrated frequently. This report describes a method that may be more accurate and reliable than UV sensors, the fluence meter. This monitoring system is based on the measurement of the chemical nitrite in water leaving the UV reactor. Nitrite is formed from nitrate in a linear, mathematically useful relationship with the applied UV dose. Nitrite is easily and inexpensively analyzed, which makes it ideal for continuous online UV monitoring. Nitrite formation is consistent within a given water quality, so measurement is accurate. Plus, nitrate occurs naturally in most waters, so there are no chemical and equipment costs that would occur using dosed compounds. The report describes data requirements for a UV fluence meter and explains how variables such as water quality affect nitrite formation.
Book	Formation & Control of Disinfection By-Products in Drinking Water	This handbook covers all the issues water utilities need to know about Disinfection By-Product (DBP) formation and control. This book covers chemistry of DBP formation, DBP precursors, human health issues, balancing microbial and chemical risks, regulations, treatment, and costs.
Book	Formation and Decay of Disinfection By-Products in the Distribution System	Most of the studies of disinfection by-products (DBPs) in drinking water over the past 30 years have been conducted in laboratories under controlled, uniform conditions. Little is known about changes in DBP concentrations and speciation that can take place in actual distribution systems, where DBP formation can be affected by pipe walls, biofilms, flow rates, residence time, changing storage tank levels, and free chlorine residuals. This research report provides new information on: critical factors that affect trihalomethane (THM) and haloacetic acid (HAA) behaviour in distribution systems; the fate and behaviour of nitrosodimethylamine (NDMA) in distribution systems; the effect of pipe material and diameter on the fate of DBPs in distribution systems; the effect of storage reservoirs, tanks, and booster chlorination stations on THM, HAA, and NDMA concentrations; changes in DBP concentrations and speciation when a system switches from chloramines to free chlorine; the identification of compounds that result from the breakdown of degradable DBPs; the identification of bacteria responsible for the degradation of HAA and other DBPs, and the degree and mechanisms of degradation.
Book	Formation of Hydrazine as a Chloramine By-Product	The objective of this project was to investigate and evaluate the formation of hydrazine during the chloramination of drinking water and wastewater. Hydrazine, N ₂ H ₄ , is a versatile and widely used industrial chemical. The product of the reaction between chloramine and free ammonia, hydrazine is classified by the US Environmental Protection Agency as a possible human carcinogen.
DVD	Forum: Walkerton Clean Water Centre	This DVD includes a Channel Six news story covering the Walkerton Clean Water Centre Forum, held June 11, 2007.
Book	Fundamentals and Control of Nitrification in Chloraminated Drinking Water Distribution Systems	This book provides information on the occurrence and microbiology of nitrification in various water environments and offers current and practical approaches to nitrification prevention and response to a nitrification episode. Coverage includes causes and control of nitrification, microbiology, monitoring, operational treatment practices, and capital improvements for prevention of nitrification.

Item	Title	Description
Book	Getting in Step: A Guide to Effective Outreach in Your Watershed	New and improved tips and tools for creating awareness, educating specific audiences, and motivating positive behaviour change to improve water quality. Provides tools to develop and implement an effective watershed outreach plan.
DVD	GIS for Water Utilities	This DVD shows operators and managers the many powerful uses and benefits of geographic information systems (GIS) in water utility operations. It's estimated that approximately 80 percent of all asset information is geographically referenced. Many utilities have converted their paper maps to electronic formats so they can be used by a GIS -- a powerful computer-based information management system designed to work with data referenced by geographic coordinates.
Book	Global Best Practices in OH&S Management	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
Book	Good Practices for Preventing Microbiological Contamination of Water Mains: Field Pocket Guide	Field pocket guide to accompany <i>Practices for Preventing Microbiological Contamination of Water Mains</i> .
CD	Grand Opening May 2005: Walkerton Clean Water Centre	This CD includes footage of the grand opening of the Walkerton Clean Water Centre, May 2005.
CD	Great Lakes Binational Toxics Strategy	This CD-ROM contains an archive of previous progress reports, beginning in 1998, the full text of the <u>Great Lakes Binational Toxics Strategy agreement</u> , and other related documents.
Booklet	Great Lakes Water Quality Agreement: Work Group Report on Beaches and Recreational Water Quality	Because the Great Lakes Water Quality Agreement (GLWQA) focuses on a wide variety of water-quality issues facing the Great Lakes Basin Ecosystem, the Commission created a GLWQA "Priority" setting process to focus on what it considers the most pressing issues. The Commission and its advisory bodies review and revise these Priorities as needed every two years. After receiving input from the public on its Priorities work, the Commission prepares Biennial Reports to governments on the status of Great Lakes water quality.
Booklet	Great Lakes Water Quality Agreement: Work Group Report on Benefits and Risks of Great Lakes Fish Consumption	Because the Great Lakes Water Quality Agreement (GLWQA) focuses on a wide variety of water-quality issues facing the Great Lakes Basin Ecosystem, the Commission created a GLWQA "Priority" setting process to focus on what it considers the most pressing issues. The Commission and its advisory bodies review and revise these Priorities as needed every two years. After receiving input from the public on its Priorities work, the Commission prepares Biennial Reports to governments on the status of Great Lakes water quality.
Booklet	Great Lakes Water Quality Agreement: Work Group Report on Binational Aquatic Invasive Species Rapid-Response Policy Framework	Because the Great Lakes Water Quality Agreement (GLWQA) focuses on a wide variety of water-quality issues facing the Great Lakes Basin Ecosystem, the Commission created a GLWQA "Priority" setting process to focus on what it considers the most pressing issues. The Commission and its advisory bodies review and revise these Priorities as needed every two years. After receiving input from the public on its Priorities work, the Commission prepares Biennial Reports to governments on the status of Great Lakes water quality.
Booklet	Great Lakes Water Quality Agreement: Work Group Report on Chemicals of Emerging Concern	Because the Great Lakes Water Quality Agreement (GLWQA) focuses on a wide variety of water-quality issues facing the Great Lakes Basin Ecosystem, the Commission created a GLWQA "Priority" setting process to focus on what it considers the most pressing issues. The Commission and its advisory bodies review and revise these Priorities as needed every two years. After receiving input from the public on its Priorities work, the Commission prepares Biennial Reports to governments on the status of Great Lakes water quality.

Item	Title	Description
Booklet	Great Lakes Water Quality Agreement: Work Group Report on Eutrophication	Because the Great Lakes Water Quality Agreement (GLWQA) focuses on a wide variety of water-quality issues facing the Great Lakes Basin Ecosystem, the Commission created a GLWQA "Priority" setting process to focus on what it considers the most pressing issues. The Commission and its advisory bodies review and revise these Priorities as needed every two years. After receiving input from the public on its Priorities work, the Commission prepares Biennial Reports to governments on the status of Great Lakes water quality.
Book	Ground Water and Surface Water: A Single Resource	This book presents an overview of the current understanding of the interaction of ground water and surface water, in terms of both quantity and quality, as applied to a variety of landscapes. This book is a product of the Ground-Water Resources Program of the U.S. Geological Survey. It serves as a general educational document rather than a report of new scientific findings. Its intent is to help other Federal, State, and local agencies build a firm scientific foundation for policies governing the management and protection of aquifers and watersheds.
Leaflet	Groundwater Contamination and your septic system	Many people living in rural areas have a well and septic system. This fact sheet provides information on the process, potential issues and what you can do to help.
Poster	Groundwater Protection: Begins at Home	This poster was created by the National Drinking Water Clearinghouse. It explains what groundwater is and ways to protect the water in our homes.
Book	Guidance for Water Utility Response, Recovery & Remediation Actions for Man-Made and/or Technological Emergencies	This document provides uniform response, recovery and remediation guidance for water utility actions in response to man-made and/or technological emergencies. The guidance was developed as an initiative of U.S. Environmental Protection Agency's (USEPA) Water Protection Task Force and has been reviewed with water utilities and associations, USEPA Regions, USEPA Office of Water and other federal agencies. The intent of this guidance is to provide the minimum actions that USEPA recommends be carried out by a water utility for the events described. Good business practices suggest that every water utility have an Emergency Operations/Response Plan that is coordinated with state and local emergency response organizations, regulatory authorities and local government officials. Water utilities ought to consider whether the actions contained within this guidance have been thoroughly coordinated with these entities. Throughout this guidance 'water system' includes the 'system' elements of source water (ground and surface), drinking water treatment, drinking water distribution and storage, wastewater collection and wastewater treatment.
Book	Guidance Manual for Coagulant Changeover	Should you change the coagulant in your water treatment process? What do you need to know to successfully change coagulants? How are results measured? This book provides specific guidance to help you assess the effectiveness of your current coagulant and confidently plan, conduct, and evaluate a coagulant changeover. How this new guidance manual will help: you will know the technical issues associated with coagulation and the potential direct and indirect impacts of changing coagulants, so you can make an informed decision; you will see how changing your coagulant can help you meet regulations and water quality goals, reduce costs, improve process control, better manage residuals, adjust to new source water supplies or seasonal changes in water quality, or achieve other benefits; you will discover through case studies how and why other utilities changed coagulants, the problems they encountered, and how they solved them; you will confidently conduct a coagulant changeover using the guidance manual's step-by-step methods.

Item	Title	Description
Book	Guidance Manual for Monitoring Distribution System Water Quality	<i>Guidance Manual for Monitoring Distribution System Water Quality</i> provides water utilities with guidance on how to design and implement a distribution system water quality data collection and analysis program. The report includes a comprehensive approach for collection and analysis of water quality information to make costly infrastructure improvements, document benefits of operational procedures, and address consumer complaints.
CD	Guidance Manual for Monitoring Distribution System Water Quality	<i>Guidance Manual for Monitoring Distribution System Water Quality</i> provides water utilities with guidance on how to design and implement a distribution system water quality data collection and analysis program. The report includes a comprehensive approach for collection and analysis of water quality information to make costly infrastructure improvements, document benefits of operational procedures, and address consumer complaints.
Book	Handbook for Capacity Development: Developing Water System Capacity Under the Safe Drinking Water Act as Amended in 1996	This book provides information on America's Safe Drinking Water Act amendments of 1996. The amendments establish stronger prevention programs, increase State flexibility, give better information to consumers and strengthen EPA's regulatory development process.
Book	Handbook of CCL Microbes in Drinking Water	This book is the first compilation and analysis of the published literature on the microbial pathogens that are named on the U.S. Environmental Protection Agency's (USEPA) Contaminant Candidate List (CCL). The CCL includes 10 waterborne microbial pathogens: Adenovirus; Aeromonas hydrophila (and other pathogenic species); Caliciviridae; Coxsackievirus; Cyanobacteria; Echovirus; Helicobacter pylori; Microsporidia; Mycobacterium avium complex. Each is discussed, including: why they were selected for possible regulation; where they are found in the environment; how they affect human health; how their diseases are transmitted; their minimum infective doses; the effectiveness of medical treatment; to what extent the general population is at risk; which subpopulations are especially susceptible; the role of waterborne exposure; their detection methods in raw water; the effectiveness of water treatment processes; their survival and amplification in the distribution system; gaps in our knowledge about them. The book provides information on microbial risk assessment, risk communication, and risk management.
Book	Handbook of Chlorination & Alternative Disinfectants	This is a thorough reference on the use of chlorine, chlorine dioxide, ozone, peroxone bromine, bromine chloride, iodine, and ultraviolet radiation in water and wastewater treatment. For each disinfectant, the book gives its chemistry, effectiveness, dosing, equipment, and system design requirements.
Book	Handbook of Drinking Water Quality	As a quick reference handbook and technical manual, this text is an essential volume for engineers, water supply and treatment personnel, environmental scientists, public health officials, or anyone responsible for assuring the safety of drinking water. Now you can easily access the data and guidelines needed to: understand the impact of drinking water parameters on public health; help build and operate water supply facilities; conduct reliable drinking water sampling, monitoring, and analytical evaluation; implement potability standards from the source to the treatment facility to storage to the tap; write new standards and expand/modify existing standards as needed. This work adds a wealth of new information with expanded and updated information on a variety of topics, including: current drinking water standards adopted by the European Community; lead, radon, and Cryptosporidium contamination; compulsory water treatment for lead and copper; Cloakroom Rule compliance (disinfection and filtration); trihalomethane reduction with ozonation.

Item	Title	Description
Book	Handbook of Public Water Systems	An all-in-one information resource, providing an excellent overview of all aspects of public water supply. From planning, design, engineering, and economics to source development, water quality, water treatment, and distribution. The authors have been involved in the development of several new and improved water treatment processes, including detailed observations of results in full-scale plant operations. They have drawn heavily on these experiences in this book. The work of many other investigators using other new methods is also cited, in order to present the most accurate possible picture of currently available treatment methods.
Book	Handbook of Water Analysis	This book provides the most current analytical techniques for detecting compounds in water samples. This book reveals new information regarding endocrine disrupting compounds and residues of plastics as well as information on acrylamide, trihalomethanes, phthalates, and volatile organic compounds in water.
Book	Handbook of Water and Wastewater Treatment Plant Operations	This book is a compilation of water science, treatment information, process control procedures, problem-solving techniques, safety and health information, and administrative and technological trends. The manual examines numerous real-world operating scenarios; each includes a comprehensive problem-solving practice set.
Leaflet	Healthy Drinking Waters for Rhode Islanders: Frequently Asked Questions About Bottled Water	Each year, consumers spend about \$4 billion on bottled water. This information package provides facts and information on bottled water, how it's regulated, and the different choices and types of water we have. It also compares the safety of tap and bottled water, provides information to find out where your bottled water comes from other facts that you should know about bottled water.
Leaflet	Healthy Drinking Waters for Rhode Islanders: Questions to Ask When Purchasing Home Water Treatment Equipment	The Water Treatment Industry has been put into the forefront of treating drinking water that is both a health hazard and a nuisance to the household. Home water service and supply companies and products promise to deliver drinking water that is safe and contaminant free. The individual is left to sift through advertising claims and technical data to select an appropriate treatment method. This publication provides questions and answers for anyone interested in purchasing home water treatment equipment.
Leaflet	Healthy Drinking Waters for Rhode Islanders: Residential Well Water Testing	Testing your well water can provide you with information on the quality of your drinking water. Testing is one way to ensure that your private drinking water supply is safe from harmful impurities. This information package offers information on how to do so, and helpful guidelines to follow throughout the process.
Leaflet	Home Water Treatment Using Activated Carbon	This leaflet provides information on activated carbon and many key subject areas related to it. It covers areas including: what it is; what it costs; and how to operate and maintain it. It also includes a brief summary on the options that you have when using home water purification.
Book	Hydraulic Design Handbook	This handbook is the water professional's reference text on hydraulic design. Authored by 34 experts from around the world, the book provides step-by-step procedures for all types of design projects and offers guidance for computerized hydraulic design tasks. For students and practicing engineers involved in design for water distribution and energy generation, water excess management, and water treatment and environmental considerations.
Book	Hypochlorate - An Assessment of Factors that Influence the Formation of Perchlorate and Other Contaminants	This research project investigated the factors impacting the formation of perchlorate, bromate and other contaminants in hypochlorite solutions and to developed a set of guidelines to assist utilities in minimizing the formation of such contaminants. Project objectives also included the development of a detailed chemical rate law from which predictions could be made regarding the formation of perchlorate in a given bulk hypochlorite solution.

Item	Title	Description
Book	Impact of Chlorine Dioxide on Transmission, Treatment, and Distribution System Performance	East Bay Municipal Utility District operates six water treatment plants that provide drinking water to about 1.3 million people in California's Alameda and Contra Costa counties. While the utility produces very high quality drinking water, they must contend with trihalomethane (THM) and haloacetic acid (HAA) formation from using free chlorine that is applied for disinfection and to minimize biological growth and fouling. Chlorine dioxide reportedly does not directly form THMs and HAAs, so the utility tested its use as a possible replacement for chlorine. This new research study reports on their results. Among their findings: chlorine dioxide is more effective than chlorine in controlling biofouling in the aqueduct; chlorine dioxide pretreatment does not lead to THM and HAA formation; chlorine dioxide pretreatment either in open-air basins or in the aqueduct will not affect chloramine stability in the distribution system.
Book	Impact of Distribution System Water Quality on Disinfection Efficacy	Experiences reported by water utilities have shown that microorganisms survive in distribution systems despite the continuing presence of disinfectants. Such occurrences place doubt on the ability of disinfectant residual to ensure microbial protection. The goal of this research project was to understand the reasons for the presence and survival of microorganisms in water distribution systems in the presence of a disinfectant residual.
Book	Impact of Hydrocarbons on PE/PVC Pipes and Pipe Gaskets	Will determine the physicochemical, environmental, and pipe-specification parameters that influence the permeation of hydrocarbons through polyethylene and polyvinyl chloride pipes and pipe gasket materials under typically encountered field conditions. Will develop laboratory tests to predict permeation of pipes and gaskets by hydrocarbons.
Book	Impact of UV and UV/H ₂ O ₂ AOP on EDC Activity in Water	Assesses, through the use of bioassays and chemical analyses, the degradation, by-product formation, and subsequent toxicity of endocrine-disrupting compounds following ultraviolet (UV) and UV-oxidation treatment of water.
Book	Impact of UV Disinfection on Biological Stability	This research report evaluates the impact of ultraviolet (UV) disinfection on biofilm accumulation in drinking water distribution systems. It compares the effectiveness of chlorine dioxide, free chlorine, and monochloramine as secondary disinfectants for reducing bacterial regrowth (bulk water and biofilm cells) in the presence and absence of UV disinfection.
Book	Impacts of Fire Flow on Distribution System Water Quality, Design, and Operation	In most water distribution systems, a significant amount of the piping and storage capacity is used to provide adequate quantities of water during fire conditions. This increased capacity results in higher capital costs and potential negative impacts on water quality due to longer travel times and increased residence times in storage facilities. An ongoing research project sponsored by the American Water Works Association Research Foundation, in collaboration with the U.S. Environmental Protection Agency, is studying the interaction between fire flow requirements, water quality, design and operational costs, and system reliability. This paper focuses on the use of distribution system hydraulics and water quality models to assess the interaction of the various factors.
Book	Improved Exposure Assessment on Existing Cancer Studies	Is the risk of cancer from Disinfection By-Products (DBPs) in chlorinated drinking water greater or less than currently thought? Can specific cancer-causing compounds be identified? Can DBP formation be accurately predicted? This study updates our knowledge of the health effects of DBPs in chlorinated drinking water.

Item	Title	Description
Book	Improved Protection for Water Resources from Long-Term and Cumulative Pollution	This publication is the report of the United States discussed at the May 1987 meeting of the Organization for Economic Co-operation and Development (OECD) on the subject of improved protection of water resources from long-term and cumulative pollution. Included in the document is an overview of water resources in the United States, a discussion of ground-water quality in the U.S., and an examination of governmental responsibilities for ground-water protection. Major sources of pollution are also discussed, as is their effect on ground-water quality and their trends. Groundwater protection management efforts are also discussed, including the legal, institutional, regulatory, and economic instruments used to promote protection.
Book	Improvement of the Ozonation Process Through the Use of Static Mixers	This research report demonstrates that the use of static mixers can significantly improve the ozonation process in terms of both increased ozone transfer efficiency and enhanced chemical reactions when compared to traditional bubble contactors.
Book	Improving Home Water Quality	This book contains information on improving water quality. Whether you have a problem with sulphates and sulfides or your water is simply too hard, this book will guide you with ways to solve your problem and improve the drinking water in your home.
Book	Improving the Viability of Existing Small Drinking Water Systems	The report investigates options for assisting failing drinking water systems by: contracting for operations and maintenance services; establishing cooperatives; encouraging satellite management; and acquisition and merger with successful systems.
Book	Inactivation of Pathogens With Innovative UV Technologies	Ultraviolet (UV) irradiation is capable of inactivating bacteria, viruses, and protozoa. But what is correct dose to achieve your treatment goals? What type of UV lamp should you use? Do different microorganisms react differently to UV? This new research sheds light on these questions. The report provides a table that shows the UV dosage requirements to achieve 1, 2, 3, and 4 log inactivation of a variety of microorganisms with low-pressure ultraviolet lamps. However, because some viruses are highly resistant to UV light, virus inactivation may determine the effective reactor design dose. Additionally, some microbial pathogens can actually repair and reactivate themselves after being inactivated by UV. You'll discover which ones have this ability, under what conditions they can reactivate, and how to prevent it. Low pressure lamps were used as the industry benchmark in this study. They were compared for inactivation effectiveness to low pressure-high output lamps, medium pressure lamps, and pulsed lamps. Water quality also can affect UV disinfection. The study will tell you how UV absorbance, temperature, pH, dissolved ions, and turbidity can alter UV dosing.
Book	Inactivation of Waterborne Emerging Pathogens by Selected Disinfectants	This report examines the inactivation efficiencies of conventional and newly developing chemical disinfection processes for emerging waterborne pathogens.
Journal	Influents: Official Publication of the Water Environment Association of Ontario	The Water Environment Association of Ontario's (WEAO) magazine 'Influents' is published by the WEAO Communications Committee and provides value to WEAO members and information to the public.
Book	In-Line Ozone and Hydrogen Peroxide Treatment for Removal of Organic Chemicals	Evaluates both the process performance and the engineering design of an in-line ozone and hydrogen peroxide system. Describes design and scale-up procedures for full-scale facilities. In addition, estimates capital and operating costs and compares them to other types of processes.

Item	Title	Description
VHS	Innovative Operator Tools: SCADA, AMR, and GIS: AWWA Satellite Teleconference Tape 1	Video of the March 2006 American Water Works Association satellite teleconference, "Innovative Operator Tools--SCADA, AMR and GIS." Just like pressure gauges, wrenches, and filters, newer technologies like SCADA (supervisory control and data acquisition), automatic meter reading (AMR), and Geographic Information Systems (GIS) are critical tools to help operators, supervisors, and managers provide safe and adequate supplies of water to their customers. The demand for more efficient operations, water and power conservation, regulatory monitoring requirements, customer expectations, emergency response, and the potential shortage of certified operators in utilities of all sizes make SCADA, AMR, and GIS systems even more valuable. The teleconference focused on these tools, providing foundational definitions of the technologies, illustrating how they are used by utilities, and discussing how they affect operators and field staff. Learn from a distinguished panel of experts on this subject.
VHS	Innovative Operator Tools: SCADA, AMR, and GIS: AWWA Satellite Teleconference Tape 2	Video of the March 2006 American Water Works Association satellite teleconference, "Innovative Operator Tools--SCADA, AMR and GIS." Just like pressure gauges, wrenches, and filters, newer technologies like SCADA (supervisory control and data acquisition), automatic meter reading (AMR), and Geographic Information Systems (GIS) are critical tools to help operators, supervisors, and managers provide safe and adequate supplies of water to their customers. The demand for more efficient operations, water and power conservation, regulatory monitoring requirements, customer expectations, emergency response, and the potential shortage of certified operators in utilities of all sizes make SCADA, AMR, and GIS systems even more valuable. The teleconference focused on these tools, providing foundational definitions of the technologies, illustrating how they are used by utilities, and discussing how they affect operators and field staff. Learn from a distinguished panel of experts on this subject.
Book	Innovative UV Technologies to Oxidize Organic and Organoleptic Chemicals	This research report determines the effectiveness of various innovative ultraviolet (UV) technologies to oxidize organic chemicals such as volatile organic chemicals (VOCs), pesticides, herbicides, disinfection by-product (DBP) precursors, and taste-and-odour compounds. The report focuses on UV technologies already shown to inactivate protozoan pathogens.
Book	Installation, Condition Assessment, and Reliability of Service Lines	Identifies parameters and conditions that influence the failure rate of service pipe materials, connections, and fittings. Develops a best-practice manual based on extensive analysis of existing installation techniques and material types. Also develops a methodology for assessing the life expectancy of service lines, connections, and fittings for different materials using a variety of installation techniques under varying environmental conditions.
Book	Installation, Field Testing, and Maintenance of Fire Hydrants	This utility operations manual provides drawings and approved procedures for fire hydrant design, installation, and maintenance practices. It traces the development of wet-barrel and dry-barrel styles and contains detailed instructions for installation and testing. Definitions, diagrams, and record-keeping tips are included. Using the easy-to-follow flow-testing procedures included, you can quickly obtain valuable distribution system information. Includes an illustrated guide to fire hydrants, organized by manufacturer name.

Item	Title	Description
Book	Integrated Membrane Systems	This report gives you the newest findings on the use of integrated membrane systems - pretreatment processes combined with conventional nanofiltration or reverse osmosis membranes. Membrane processes can remove a broad range of contaminants from raw water --pathogens, disinfection by-product precursors, synthetic organic chemicals, and inorganic contaminants. However, membranes (especially nanofiltration and reverse osmosis membranes) are susceptible to fouling which causes frequent downtime. Pretreatment reduces colloidal, organic, and biological fouling of the membranes, as well as scaling. Additionally, pretreatment also provides superior finished water quality due to the extra filtration. This study comprehensively evaluated the suitability of several integrated membrane systems for a number of raw water sources. Integrated membrane systems using the following surface water pretreatments were tested on pilot-plant scale in comparison to a conventional membrane system for anaerobic groundwater.
Book	Integrated Pest Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Integrated Pest Management (IPM) is an increasingly popular way to control disease and insects. Applying a mix of cultural, biological and chemical control methods, growers can save money on inputs and use fewer pesticide applications. This primer begins with the IPM basics: pest monitoring, pest identification and pest thresholds. Control options are then presented, including: site and cultivar selection; crop rotation; sanitation; biological control; nutrition and water needs; removal; planting and harvesting dates; trap crops; pesticide timing and application. Case studies for crops found across Canada conclude the 38-page book.
Book	Integrating Membrane Treatment in Large Water Utilities	This report addresses integration of membranes into existing and planned water treatment facilities, including issues such as membrane layout, piping, cost comparison, and operations and maintenance. It develops recommendations and guidelines for utilities considering membrane integration.
Book	Integrating UV Disinfection Into Existing Water Treatment Plants	The drinking water industry's recent interest in ultraviolet (UV) disinfection has been fueled by the finding that UV light can inactivate both <i>Cryptosporidium parvum</i> and <i>Giardia lamblia</i> at cost-effective doses. For this reason, many utilities believe that UV disinfection will help them meet upcoming regulatory requirements of increased levels of disinfection with no appreciable increase in disinfection byproducts. Should your drinking water treatment plant install UV disinfection? How effective is UV compared to other treatment options? Where should UV be located in the treatment process? What about size and space constraints, costs, and hazards? Get answers about UV disinfection in this report.

Item	Title	Description
Book	Integration of Membrane Filtration Into Water Treatment Systems	How can water utility management ensure that they have left nothing out of their planning for integrating a membrane system into their treatment process? Integration of membrane treatment systems presents many challenges that are not just related to technical considerations. Political, managerial, operational, and maintenance must also be considered to ensure successful integration. This report examines the process and design implications associated with integrating membrane treatment into existing water treatment plants. Based on actual utility experiences with membrane integration, this report points out pitfalls and provides field-proven recommendations for successful membrane integration. You get detailed recommendations for all major areas to be considered: pilot testing, planning, design, and operation and maintenance. In addition, the report includes a simple, computer-based, decision-making tool to assist you in selecting the most appropriate membrane technology- microfiltration, ultrafiltration, nanofiltration, reverse osmosis, electro dialysis, or electro dialysis reversal - to treat a given contaminant in your feed water.
Book	Internal Corrosion of Water Distribution Systems: Cooperative Research Report	Considered the classic reference on corrosion of water supply pipes, <i>Internal Corrosion of Water Distribution Systems</i> , offers the most complete and comprehensive information available on the evaluation and resolution of any type of corrosion problem within water supply systems. The book is divided into ten chapters that cover corrosion principles; corrosion of various materials, including copper alloys and solder; mitigation of corrosion impacts; assessment technologies; and implementation of corrosion control strategies. Corrosion's effects on water quality and the implications for public health are emphasized.
Book	Interpreting Drinking Water Quality Analysis: What Do The Numbers Mean?	This publication summarizes the information necessary for interpreting drinking water quality analyses performed by water testing laboratories. It focuses on testing results obtained from drinking water supplies from public water systems and non-public water systems. It is intended primarily for homeowners, but environmental organizations, health departments, and commercial water testing laboratories and others should find this material of interest and value.
Book	Investigation of Pipe Cleaning Methods	Many utilities neglect pipe cleaning, partly from uncertainties about how much to spend, where to spend it, what methods to use, how often to clean, and how to measure results. This report helps you answer these questions. It gives utility distribution system managers the guidance to make informed decisions. With this report, you will be able to compare the relative effectiveness, cost, labor and equipment needed, water usage, and effect on water service to customers, of conventional flushing, unidirectional flushing, air scouring, swabbing, pigging, chemical cleaning, jetting, and ball cleaning. You will know which technique or techniques will provide the best results for your particular pipe-cleaning problem. The report provides easy to use charts that quickly guide you to the proper method or combination of methods for your situation. Should you reline old, but serviceable, pipe? In addition to cleaning methods, this excellent report explains in-situ pipe-relining methods, including cement-mortar, plastics, and structural liners.

Item	Title	Description
Book	Ion Exchange Treatment for Water	The traditional role of ion exchange continues to range from the complete removal of all dissolved ionic species, to calcium and magnesium salts removal (softening), to selective removal of arsenic from groundwater. In industrial water treatment, ion exchange still plays a major role in the production of high quality feed waters. But those roles are changing, due to the growth of membrane technology, and changing brine discharge legislation. This handbook provides scientific theory, technical data, system design, operating parameters and processes, and costs for ion exchange in water treatment, as well as discussions of the changing roles of ion exchange water treatment in the coming years. An excellent reference for water treatment professionals, and a fine teaching text, as well.
Book	Iron and Manganese Removal Handbook	This handbook describes the effects of iron and manganese in drinking water, explains the chemical processes at work, and provides treatment methods for removing these metals from groundwater and surface water sources.
Book	Irrigation Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Crops such as fruits, vegetables, tobacco, sod and nursery stock must be of top quality to win acceptance in the marketplace. Water plays a key role in determining quality. Properly done, irrigation provides crops with the right amount of water, when crops need it, at the lowest cost and with the least impact on the environment. This book helps you assess whether irrigation is appropriate for your operations. It describes scheduling techniques, i.e., how to determine when and how much to irrigate. Systems - sprinkler, trickle and sub-irrigation - are also described and compared in detail. Tips for irrigating a range of horticultural crops, sod and tobacco are provided in handy charts. The book also explains environmental concerns to bear in mind when considering irrigation. Cost-benefit worksheets conclude the publication.
Leaflet	Is Your Community's Drinking Water at Risk: Misused Septic Systems Can Cost Millions	This leaflet was published by the United States Environmental Protection Agency. It begins with an introduction on wastewater and includes a chart of all of the areas that have had cases of contamination from shallow disposal wells.
Journal	IUVA News	<i>IUVA News</i> is a Quarterly journal published by the International Ultraviolet Association.
CD	Joint Annual Conference & Tradeshow 2006	The Ontario Water Works Association (OWWA) is a not-for-profit scientific and educational association representing more than 1400 water supply professionals in Ontario. The Ontario Water and Wastewater Equipment Association (OWWEA) is an organization that represents its members within the water works industry in Ontario. Members include manufacturers, suppliers, distributors, agents, and contractors dedicated to serving the municipal market. Through the direction and strong support of its members, the OWWEA works closely with the OWWA and the Ontario Municipal Water Association (OMWA), and the Regional Water Works Conferences to provide technical resources and representation, and a strong voice in our industry. The OMWA is an association representing more than 180 Public Drinking Water Authorities in Ontario serving more than 7 million customers. OMWA acts as the voice of Ontario's municipally owned water supply authorities and their customers.

Item	Title	Description
CD	Joint Annual Conference & Tradeshow 2008	The Ontario Water Works Association (OWWA) is a not-for-profit scientific and educational association representing more than 1400 water supply professionals in Ontario. The Ontario Water and Wastewater Equipment Association (OWWEA) is an organization that represents its members within the water works industry in Ontario. Members include manufacturers, suppliers, distributors, agents, and contractors dedicated to serving the municipal market. Through the direction and strong support of its members, the OWWEA works closely with the OWWA and the Ontario Municipal Water Association (OMWA), and the Regional Water Works Conferences to provide technical resources and representation, and a strong voice in our industry. The OMWA is an association representing more than 180 Public Drinking Water Authorities in Ontario serving more than 7 million customers. OMWA acts as the voice of Ontario's municipally owned water supply authorities and their customers.
Book	Laboratory Biosafety Guidelines	The Laboratory Biosafety Guidelines are published by the Minister of Health, Public Health Agency of Canada. The mission of this agency is to promote and protect the health of Canadians through leadership, partnership, innovation and action in public health.
Journal	IUVA News	<i>IUVA News</i> is a Quarterly journal published by the International Ultraviolet Association.
Book	Large Water System Emergency Response Plan Outline	The purpose of this Emergency Response Plan (ERP) outline is to make the job of developing an emergency response plan easier and help create a plan that works for your water system. This outline is intended for use by large water utility systems due to their complexity and detail. It is important to note that the Water System ERP is a "living" document requiring periodic updates (i.e., at least annually or if there is a major change to the water utility system configuration). The ERP document should be flexible and easily implemented during an emergency with the ability to use removable checklists.
Book	Lead Control Strategies	This manual describes methods for identifying lead sources within water distribution and premise piping systems and includes procedures for monitoring lead levels of customers' taps. It addresses water treatments for lead reduction and includes approaches for developing and implementing a treatment plan.
Book	Leak Audit Software for water utilities to quantify distribution system water losses: users manual	A water audit identifies how much water is being lost and what that loss costs a utility. This book can help utilities conduct audits and reduce water loss from their distribution systems.
Floppy Disk	Leak Audit Software for water utilities to quantify distribution system water losses: users manual	A water audit identifies how much water is being lost and what that loss costs a utility. This software can help utilities conduct audits and reduce water loss from their distribution systems.
Book	Leakage Management Technologies	This book assesses the practicality of applying U.K. proactive leakage management techniques to North American utilities. Provides guidance to water utilities on how to practically apply promising leakage management technologies.
Standard	Liquid Oxygen for Ozone Generation	This standard describes liquid oxygen (LOX) for use in the generation of ozone for water treatment purposes. The purpose of this standard is to provide the minimum requirements for LOX intended for this service. This standard includes physical, chemical, packaging, shipping, sampling, and testing requirements.

Item	Title	Description
Standard	Liquid Sodium Silicate	This standard covers liquid sodium silicate used in the preparation of activated silica, which is used as a coagulant aid for the treatment of municipal and industrial water supplies for the control of corrosion, and for the stabilization of iron and manganese in water systems.
Book	Localized Treatment for Disinfection By-products	This research report investigates implementation issues associated with disinfection by-product (DBP) treatment within a distribution system. It assesses treatment characteristics and identify control, operation, and maintenance issues. It also develops a dynamic operations and treatment model and provides information on the cost-effectiveness of this approach versus costs to treat the entire water supply.
Book	Long-Term Effects of Disinfection Changes on Water Quality	This book documents the long-term effects of disinfectant changes on distribution system water quality. It examines information collected from water utilities that have implemented changes in their disinfection strategy in order to document benefits and adverse consequences in water quality parameters. This book provides guidance on how water utilities could evaluate potential changes in distribution system water quality due to changes in disinfection practices and recommendations to optimize water quality after a change in disinfection practices.
Book	Long-Term Performance Prediction for PE Pipes	The objectives of this study were to: review the current field performance for polyethylene (PE) water pipelines; review U.S. and international standards for PE water pipes; review previous and state-of-the-art test methods and modeling techniques for service lifetime prediction of PE pipelines; identify and measure relevant pipe properties that govern long-term field performance; and develop and benchmark models to predict long-term field performance of PE pipes. This project develops models to predict the long term performance prediction for PE pipes in the United States. The findings from this project demonstrate that the fracture performance of currently available PE materials is significantly improved from previous material grades. The simple equations provided from the physical probabilistic failure model in this study provide water utilities with a basis for estimating future failure rates. This information can be combined with knowledge of cost consequences of pipe failure and used to inform future asset management decisions, such as replacement planning and budget setting.
Book	Long-Term Variability of BDOM and NOM as Precursors in Watershed Sources	This book determines loadings and the variability in loadings to watersheds from various point and non-point sources for natural organic matter that serves as precursor for disinfection by-products and also as biodegradable organic matter for biological regrowth.
Book	Main Break Prediction, Prevention, and Control	This report includes a literature review about main break prediction, results of a utility survey, a summary of work accomplished on the project's modeling objectives, and updated information about predicting main breaks. The original project objective focused on cause and consequence factors for risk from main breaks and leaks, a methodology to assign risk factors to individual pipes, and specific information about risk variables.
CD	Managing Distribution Retention Time to Improve Water Quality – Phase II: Guidance Manual	This guidance manual on CD-ROM provides a structured and logical approach investigating and resolving water quality problems that are related to distribution retention time. The user is led through a logical sequence of process stages for analyzing, solving, and implementing the solution to a retention time related water quality problem. The manual provides sufficient details about water quality problems, analysis methods, and potential solutions to complete an analysis. The processes have been field tested and validated.

Item	Title	Description
Book	Manual of Small Public Water Supply Systems	This manual presents current concepts and practices affecting water treatment, financing, management, community involvement in water supply, institutional support, and development of human resources for improved operations and management of water supplies. Information on ground water, surface water, and Safe Drinking Water Act requirements is also provided. Material is presented in a thorough, easy-to-read format and a complete bibliography is included.
Book	Manual of Water Well Construction Practices	The report contains standards for water well construction developed by a committee comprised of technical and well contractor personnel. The standards will serve to educate the public and upgrade existing well construction techniques in order to protect ground water reserves.
Book	Manure Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. The proper application of livestock manure can benefit soil by returning nutrients removed by crops, and supplying organic matter to feed the soil life, which in turn will help to improve soil structure. However, livestock manure must be handled properly to prevent pollution and loss and to ensure the greatest economic benefit.
Book	Mathematics for Water and Wastewater Operations	This book includes mathematics study materials for water and wastewater operators.
Article	Membrane Desalting Technologies	Many decision-makers in the water supply field are not familiar with advances in membrane technologies for desalting, softening, trihalomethane precursor removal, and wastewater reuse. Membrane technologies should be considered as a water treatment alternative, particularly when adequate low-cost freshwater supplies are not available. Two such technologies, reverse osmosis and electro dialysis, are described in this report, as well as system design considerations and costs. Where freshwater supplies are limited or must be imported over large distances, the desalting of nearby brackish water can be cost-effective. Membrane processes are typically more expensive than conventional treatment for turbidity removal, organics reduction, and softening.
Book	Membrane Practices for Water Treatment	For many water utilities, membrane systems have emerged as the best available technologies to help treatment operators meet stringent water quality regulations. Designed correctly, pressure-driven membrane systems combined with conventional treatment can remove any known contaminant from any type of source water. This book provides case studies of municipal water treatment facilities that use microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane systems, in which such issues as choice of membrane system, installation, operations and maintenance, costs, and more are discussed in detail.

Item	Title	Description
Article	Membrane selection and design considerations for meeting European potable water requirements based on different feedwater conditions	This paper presents the latest developments and specifications of FILMTEC membranes and elements for drinking water production and water for the soft drink industry. Performance data are given from 16 field installations. The developments focus on brackish water reverse osmosis (BWRO) and nanofiltration (NF) and particularly nitrates, hardness, sulfate and bicarbonate reduction and/or removal of organic matter plus disinfection of drinking water, mainly to meet European potable water requirements. Additionally, some energy consumption related and other technical-economical considerations are presented in the form of relative cost figures. The performance data of two BWRO-based programs for nitrate and organic matter reduction are presented. The case histories presented clearly show that the membrane plants, when properly designed and operated, are one of the most economical ways of treating for European potable water and soft drink industry requirements. The new generation of FILMTEC membranes, with their larger area and higher flux efficiency are becoming an excellent choice for numerous new applications and plant retrofits.
Book	Membrane Treatment for Drinking water & Reuse Applications: a Compendium of Peer-Reviewed Papers	The use of membrane technologies for water treatment and reuse, including microfiltration, ultrafiltration, nanofiltration, and reverse osmosis, is growing at a phenomenal rate. This book presents recent research and case study papers published in the field of membrane technology for water treatment and reuse. The papers were published at the 2004 American Water Works Association (AWWA) Annual Conference and Exposition, the 2004 Water Quality Technology Conference and Exposition, and the 2005 AWWA Membrane Technology Conference and Exposition. Expert reviewers selected these papers as the 'best of the best' in membrane technology. All areas of membrane technology and its use are covered in this book, from pretreatment to operations, fouling, residuals disposal, reuse, regulations, and many other topics.
Article	Membranes for the Control of Natural Organic Matter from Surface Waters	In this study, a range of nanofiltration (NF) modules were evaluated to determine rejection of disinfection by-product (DBP) precursors from low turbidity surface waters. Dissolved organic carbon (DOC), trihalomethane formation potential (THMFP), haloacetic acid formation potential (HAAFP), and chloral hydrate formation potential (CHFP) rejections averaged 90, 97, 94, and 86%, respectively. Rejections of bromide ion, an inorganic precursor, ranged from 40-80%. Microfiltration (MF) was only moderately effective in particle removals, with virtually no DBP precursor removal provided by MF. Ultrafiltration (UF) alone did not exhibit significant changes in operational conditions over a 30-day time frame; however, only modest precursor (<30% DOC) removal was observed.
Book	Methods for Assessing Small Water System Capability: A Review of Current Techniques and Approaches	This manual has been developed to assist in understanding and applying presently available methods for assessment of water system capacity, or viability. The U.S. Environmental Protection Agency hopes that the information presented will stimulate state creativity and lead to development of additional assessment methods appropriate to the circumstances of specific states. Small systems and technical assistance providers should also find this document useful as a tool for water system self assessment.
Book	Methods for Real-Time Measurement of THMs and HAAs in Distribution Systems - Part 2	Develops and adapts analytical instrumentation and methods that quantify concentrations of individual trihalomethane (THM) and haloacetic acid (HAA) species as well as total THMs and the sum of nine HAAs in near-real time directly from drinking water distribution systems.

Item	Title	Description
Book	Micro- and Ultrafiltration Performance Specifications Based on Microbial Removal	The ability of microfiltration (MF) and ultrafiltration (UF) to remove microbial pathogens that are larger than the pores of the membranes is well documented. However, other physical and chemical factors can lead to the removal of pathogens that are smaller than the pores of the membranes, including viruses and submicron bacteria. The overall goal of this research project is to develop a systematic performance testing protocol and specification of microfiltration and ultrafiltration membranes with respect to removal of viral and submicron bacterial pathogens. Bench, pilot, and full-scale studies were performed to reach the overall goal. Key discoveries are the impact of membrane characteristics, membrane operation, and water quality variables on microbial removal.
Book	Microbial Removal and Integrity Monitoring of High -Pressure Membranes	This research report examines potentially reliable methods of determining microbial removal effectiveness and integrity of nanofiltration and reverse osmosis systems.
Book	Microfiltration and Ultrafiltration Membranes for Drinking Water: Manual of Water Supply Practices (M53)	This manual describes microfiltration (MF) and ultrafiltration (UF) technologies for water treatment. Science and theory, applications, pilot testing, system design, operations, costs, and residual management are covered, along with manufacturer product information.
DVD	Mobile Training Unit: Filtration and Disinfection	This training video was created for use onboard the Walkerton Clean Water Centre's Mobile Training Unit. It covers filtration and disinfection.
Book	Modeling DBP Formation Kinetics: Mechanistic and Spectroscopic Approaches	This research report defines the formation kinetics of chlorinated and brominated disinfection by-products (DBPs) under various water quality and treatment conditions using well-controlled, well-defined experimental laboratory procedures.
Book	Modeling Water Quality in Drinking Water Distribution Systems	This comprehensive text discusses the use of water quality models and their potential for enhancing and understanding the factors that affect water quality in distributed water. It covers the development of the US Environmental Protection Agency's EPANET and discusses its application to case studies. The book outlines the major elements involved in water quality modeling. It discusses the development and application of water quality models, and presents the results of applying these models. Storage tank modeling is also covered.
Book	Monitoring Ammonia-Oxidizing Bacteria in Chloraminated Distribution Systems	This study adapts existing molecular-based analysis techniques to provide a protocol that rapidly determines ammonia-oxidizing bacteria concentrations in drinking water samples. This book also studies whether an increase in ammonia oxidizer numbers in chloraminated systems indicates the pending onset of a nitrification episode, prior to changes in other water quality parameters that typically occur with nitrification.
Book	Nanofiltration Retention Models for Organic Contaminants	This research report determines the efficacy of rejection of trace organic compounds by a variety of nanofiltration membranes under a range of experimental conditions. It develops a tool to predict the nanofiltration retention behaviour for trace organic contaminants for full-scale installations.
Book	Natural Organic Matter Fouling of Low-Pressure Membrane Systems	This research report examines and quantifies the impacts of natural organic matter (NOM) fouling on low-pressure membrane systems (microfiltration (MF) and ultrafiltration (UF)) and recommends strategies for minimizing the irreversible fouling caused by NOM.

Item	Title	Description
CD	Natural Spaces: A greenspace program for southern Ontario	The Natural Spaces Program is a voluntary partnership program that will help reduce loss of greenspace in southern Ontario by encouraging landowners to restore and protect natural areas on their properties. The Natural Spaces Program gives landowners who want to help create a healthier natural environment the knowledge and tools they need to restore and protect natural areas on their properties. The Natural Spaces Program also provides a way to share partnership support and expertise among environmental and stewardship organizations, participating landowners, local and provincial governments and agencies and a way for participants to tap into networks of other landowners and stewardship organizations with similar interests to share experiences and knowledge. The Natural Spaces Program supports, but does not duplicate, other measures the government is taking to provide and maintain a healthier natural environment in southern Ontario.
CD	Nature Count\$: Health, Wealth & Southern Ontario's Greenspace	This 'brag book' for modest conservationists includes information such as: how to create a climate for change; when we lose greenspace, what are we losing?; what are the broader 'products' of stewardship; links to health and economic agendas; conversation starter to bring to new audiences.
Book	Niagara River Toxics Management Plan (NRTMP) Progress Report and Work Plan	This report summarizes progress made by Environment Canada, the United States Environmental Protection Agency, the Ministry of the Environment, and the New York State Department of Environmental Conservation, in dealing with the 18 priority toxics through reductions in point and non-point sources to the Niagara River.
Book	Nitrate Removal for Small Public Water Systems	This handbook for nitrate removal has been prepared to aid water utility owners, engineers, operators, and municipal managers in understanding and dealing with excessive nitrate levels in their water supply. It is intended to be used for defining the problem, developing or evaluating proposed solutions, and explaining to water consumers why nitrates are controlled and what the approximate costs of control will be. This handbook is designed as a technical guide to nitrate removal for those smaller size systems that have decided that nitrate control is desirable. This document contains no regulatory policy and does not obligate systems to use any treatment or nontreatment technique to reduce nitrate concentrations.
Book	Nitrates in Groundwater	This book provides an overview of a wide spectrum of current studies of nitrates in groundwater. It covers the main chemical and physical processes that affect nitrate in groundwater and describes nitrate distribution in various aquifers.
Book	No-Dig and Low-Dig Service Connections Following Water Main Rehabilitation	This book identifies and comparatively evaluates methods and emerging technologies for remaking service connections after a pipeline has been rehabilitated. It also identifies technologies and tools that make service connections more timely, less disruptive, and more cost-effective with a focus on a wide range of pipe diameters.
CD	No-Dig and Low-Dig Service Connections Following Water Main Rehabilitation	This book identifies and comparatively evaluates methods and emerging technologies for remaking service connections after a pipeline has been rehabilitated. It also identifies technologies and tools that make service connections more timely, less disruptive, and more cost-effective with a focus on a wide range of pipe diameters.

Item	Title	Description
Book	No-Till: Making It Work Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. This manual is for farmers interested in implementing no-till in their operation those who've already adopted no-till practices, and those who are curious but undecided. Beginning with a review of no-till basics, the book will provide a step-by-step account of managing no-till system components, such as soil, manure and other nutrients, residues, pests and hardware. Plenty of troubleshooting tips are included throughout. The 91-page book uses case studies to help you understand potential problems and how to overcome them to make no-till work for you.
DVD	Nuisance Organisms	This video teaches basic information about nuisance organisms in raw water and their removal. Designed for management, supervisory, and nontechnical staff, this video describes each organism, and how to treat and control them.
Book	Nutrient Management Planning: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Nutrient management planning involves the careful attention to meeting crop nutrient needs, using cost-effective and environmentally responsible management practices. This 36-page book will help you produce a plan by showing you what you need to: understand the principles of nutrient management; know your soil and landscape features; know your soil fertility reserves; know what you should be applying; calibrate application equipment to know how much you're applying; implement best management practices for application of nutrients; adopt best management practices for soil management and soil water conservation; implement best management practices for monitoring and emergencies. This handbook will help you put together the pieces to develop an effective plan.
Book	Nutrient Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. A well-planned and executed nutrient management program can reap many benefits, higher yields, lower input costs, more efficient use of available resources and improved environmental quality. Nutrient Management will help you focus on key components and put them all together in a program, whether nutrients originate from commercial, organic, manure, crop residue, or off-farm wastes (including sewage sludge). This book explains: what nutrients do for crops and how they behave in soil to help you better predict crop needs; nutrient cycles; the content, advantages and disadvantages of organic and inorganic sources; to help you choose the right combination for your operation; application - how to apply, calibrate, avoid fertilizer burn, reduce nutrient loss, and protect environmental quality.

Item	Title	Description
Book	Occurrence Survey of Pharmaceutically Active Compounds	People have expressed concerns about the presence of pharmaceutically active compounds (PhACs) in water supplies. PhACs include prescription drugs, over-the-counter medications, drugs used in hospitals, and veterinary drugs. In the 1990s a variety of PhACs were reported in wastewater effluent, surface water, and groundwater in Europe. In a few isolated cases, PhACs also were detected in drinking water. This report presents the results of research to assess the occurrence of PhACs in drinking water supplies in the United States. Objectives of the research included: evaluation of available information on the use, occurrence, and analysis of PhACs; selection of PhACs that are likely to be present at detectable concentrations in municipal wastewater effluent and agricultural runoff; development of analytical methods for quantifying PhACs in the aquatic environment; analysis of samples from sites that are likely to contain elevated concentrations of PhACs; preliminary assessment of the ability of advanced wastewater treatment plants, engineered wetlands, and soil aquifer treatment systems to remove PhACs.
DVD	On the Job: Sampling	In this video, operators learn about the critical role of water quality monitoring practices in protecting the public health. This video looks at everything involved in sampling, including: why sampling is so important and what kind of samples utilities must collect; what it takes to be prepared, including containers, coolers, packing, and additional field supplies; the importance of the sample location and why selecting the right one is so important to the quality of the sample collected; how to avoid collecting a contaminated sample; step-by-step instructions on the basic procedures for collecting samples, including specific procedures for collecting lead and copper and organic contaminant samples.
Book	Online Monitoring for Drinking Water Utilities: Cooperative Research Report	This report provides complete information about available online monitoring technologies for the drinking water industry. Contents include: practical information on the installation, maintenance, and operation of online monitoring instruments; information on data handling, quality assurance, and the interconnection of instrumentation to control systems; guidance on the preparation of purchasing specifications, comparisons of operating principles, and information on instrument reliability as well as technical skills required to operate these instruments.
Book	Ontario Environment Industry Association: Membership Directory 2007-2008	The Ontario Environment Industry Association (ONEIA) is the business association representing the interests of the environment industry in Ontario. It was established in 1991 by the private sector to promote environment business to industry and government in the province. ONEIA has a membership of over 200 product and service companies, institutes, universities and governments. Through their innovation and experience in Ontario and around the world, ONEIA members provide market-driven solutions for society's most pressing environmental problems.
Brochure	Ontario Farm Environmental Coalition	Various brochures and letters compiled by the Ontario Farm Environmental Coalition.
Brochure	Ontario Low Water Response	This pamphlet is designed to inform people of water use and its importance. It stresses how low water levels affect us and how important our participation is in working together to preserve water.
Book	Ontario Municipal Directory: 2005	In co-operation with the Association of Municipal Managers, Clerks and Treasurers (AMCTO) and the Association of Municipalities of Ontario (AMO), the 2005 Ontario Municipal Directory is the most up-to-date comprehensive source of Municipal contacts, including elected officials, available for Ontario.

Item	Title	Description
Book	Ontario Municipal Directory: 2006	In co-operation with the Association of Municipal Managers, Clerks and Treasurers (AMCTO) and the Association of Municipalities of Ontario (AMO), the 2006 Ontario Municipal Directory is the most up-to-date comprehensive source of Municipal contacts, including elected officials, available for Ontario.
Book	Ontario Municipal Directory: 2007	In co-operation with the Association of Municipal Managers, Clerks and Treasurers (AMCTO) and the Association of Municipalities of Ontario (AMO), the 2007 Ontario Municipal Directory is the most up-to-date comprehensive source of Municipal contacts, including elected officials, available for Ontario.
Journal	Ontario Pipeline	The Ontario Water Works Association (OWWA) is the Ontario section for the American Water Works Association (AWWA). Ontario Pipeline is the leading publication for Ontario water issues.
Book	Ontario Pollution Control Equipment Association: 2007 Membership Guide	Ontario Pollution Control Equipment Association (OPCEA) is a non-profit organization dedicated to assisting member companies in the promotion of their equipment and services to the pollution control market sector of Ontario. OPCEA has grown to over 150 member companies whose fields encompass a broad spectrum of equipment and services for the air and water pollution control marketplace. In its endeavour to promote member companies and their products, the OPCEA provides the OPCEA Directory and Buyers Guide - 10,000 directories are published annually and distributed in the Ontario marketplace.
Book	Ontario Staff Directory: 2008 Edition	This directory has over 1,000 pages of contact information across all levels of provincial, city and municipal government, as well as state organizations. Directories include profiles and photographs of all elected officials -- from provincial legislature to local officials.
Booklet	Ontario Water Works Association Small Systems Workshop	The operation and management of small drinking water systems presents a number of unique challenges, particularly in light of new regulations introduced over the last decade. The Ontario Water Works Association Small Systems Committee developed the Spring 2010 workshop to address many of the issues of concern that have been identified by industry experts.
Book	Operational Control of Coagulation & Filtration Processes (M37)	Drinking water regulations have focused attention on traditional treatment processes, particularly coagulation and filtration. This manual shows the latest techniques, procedures, and equipment for jar testing, particle counting, and other common methods for monitoring, optimizing, and controlling water treatment processes. Make sure your coagulation and filtration systems are operating at peak efficiency and effectiveness with this operations manual. Contents include: jar testing; streaming current detectors; particle counting and sizing; electrophoretic mobility measurements; pilot filters for process evaluation and control.
Book	Operator Certification Study Guide	Water treatment and water distribution operators get everything they need to study for operator exams in this booklet. The questions in the study guide are similar in format and content to actual questions in certification exams. The areas covered for treatment operator exams include: evaluate characteristics of source water; monitor, evaluate, and adjust treatment processes; laboratory analysis; operate equipment; evaluate and maintain equipment; safety and emergency preparedness; perform administrative duties. The areas covered for distribution operator exams include: system design; monitor water quality; install units; operate and maintain equipment; safety; perform administrative duties. The Operator Certification Study Guide provides 560 sample questions (and answers, including reference book, chapter, and page from which the answer was taken) organized by certification levels I, II, III, and IV. Suggested topics of study for each examination area are also listed.
Booklet	Operator Training Opportunities	This booklet is designed to inform operators, students and personnel of courses and training available.

Item	Title	Description
Book	Operator-In-Training Examination Study Guide	This study guide provides background information to help you prepare to pass the Operator-In-Training (OIT) examination. This guide is intended to familiarize new employees to common terms and concepts in the water/wastewater industry.
Journal	Opflow	Opflow is a member benefit of the American Water Works Association. Members receive the publication monthly and have access to archives and the full text of current articles in Opflow Online. The articles in Opflow are written by and for hands-on professionals in the water industry. Articles cover treatment and distribution operations, maintenance, safety, management, emerging technology, and solutions to common utility problems. AWWA Opflow's editorial purpose is to present new and established technologies and ideas that readers can apply to drinking water treatment and distribution, alert readers to possible related problems and solutions, interpret regulatory and technical information in a clear format, and foster and promote innovative ideas that help readers provide safe water to all. This is accomplished through technically detailed case studies and how-to articles, departments and columns that target specific needs, and dynamic illustrative graphics. The members of the Opflow Editorial Advisory Board or other experts in the field review manuscripts before publication for accuracy and appropriateness.
Book	Optimization of Membrane Treatment for Direct and Clarified Water Filtration	Water utilities have cited many reasons for wanting to integrate microfiltration and ultrafiltration membrane treatment into their existing conventional treatment plants, such as increasing plant capacity, meeting more stringent regulatory requirements, producing consistent effluent quality, and upgrading plant infrastructure. Integrating membranes into an existing plant presents many challenges, including identifying the best location for integration with the treatment train, and determining the compatibility of the membrane material and system configuration with the chemicals and infrastructure used in the existing plant. This report is a guide for drinking water utilities on how to optimize the integration of microfiltration and ultrafiltration technologies into existing or new conventional treatment trains. It provides the latest findings on the interaction of water quality, pretreatment chemicals, pretreatment processes, membrane configurations, and membrane materials on membrane performance.
Book	Optimization of Ozone Disinfection Systems with Fluorescent-Dyed Microspheres	This report develops and demonstrates a novel method for optimizing the performance of full-scale ozone disinfection systems with respect to both disinfection efficiency and disinfection by-product formation control. It reports on use of fluorescent-dyed polystyrene microspheres as non-biological surrogate indicators for <i>Cryptosporidium parvum</i> oocysts.
Book	Optimization of UV Disinfection	This book improves available validation tools for ultraviolet (UV) disinfection. It identified a better microbial surrogate for <i>Cryptosporidium</i> and <i>Giardia</i> and an absorbing chemical that mimics low UV transmittance (80% - 90%) waters better than surrogates currently use or proposed. This book also analyzes the impact of lamp and sleeve aging on dose delivery and monitoring and verifies new tools for UV reactor validation in order to optimize the sizing of UV systems while maintaining public health protection.
CD	Optimization of UV Disinfection	This book improves available validation tools for ultraviolet (UV) disinfection. It identified a better microbial surrogate for <i>Cryptosporidium</i> and <i>Giardia</i> and an absorbing chemical that mimics low UV transmittance (80% - 90%) waters better than surrogates currently use or proposed. This book also analyzes the impact of lamp and sleeve aging on dose delivery and monitoring and verifies new tools for UV reactor validation in order to optimize the sizing of UV systems while maintaining public health protection.

Item	Title	Description
Book	Optimizing Chloramine Treatment	This report will answer all of your questions concerning chloramination in water treatment. Chloramination use increased during the 1990s and its current popularity can be directly attributed to more stringent drinking water regulations that address disinfection by-products (DBPs) and microbiological quality in water distribution systems. Their ability to penetrate biofilms in the distribution system, provide long-lasting disinfectant residuals, create lower DBPs, and reduce tastes and odours make chloramines an effective final disinfectant. Designed to be a practical operations manual for water utilities on implementing and optimizing chloramination systems, the report offers information about chemicals, feed equipment, process control, monitoring, public notification, operator training, facility startup, and treatment adjustments. In addition, the manual comes with an interactive CD-ROM that will guide you through the optimization process. For water utilities that are looking into chloramination, this manual will give you guidance and data to make an informed decision about chloramination.
Book	Optimizing Corrosion Control in Water Distribution Systems	This research report describes the use of on-line, real-time electrochemical monitoring of corrosion in potable water systems. The use of real-time corrosion monitoring could provide an additional tool to help water utilities comply with the Lead and Copper Rule, which mandates corrosion control for potable water treatment. Information from the distribution system on a real-time basis would allow for treatment process optimization and possible savings on treatment chemicals. Such a system would also provide an early warning of possible corrosion noncompliance, so treatment adjustments could be made before a compliance violation occurred.
DVD	Optimizing Filtration Operations	Water treatment filter systems need to be optimized to keep them operating efficiently at all times. Filter optimization is the practice of operating filters to achieve a consistent and high level of particle removal, regardless of changes in raw water turbidity. This DVD illustrates techniques for filter optimization. It describes what filter optimization is, shows how to optimize filters for best performance, and explains why optimization is important in producing consistent water quality. The DVD also illustrates how to minimize turbidity spikes at filter startup, which is important to shorten the time needed after startup to produce low turbidity water. Finally, the DVD explains the roles played by backwashing, particle counters, turbidimeters, head loss, flow rates, and maintenance in filter optimization.
Book	Optimizing Filtration Processes Through Online Floc Particle Characterization	Develops general methods for best practices in optimization of the coagulation process using the newly available mean floc size measurements and provides guidance designed to assist utilities in optimization of their specific operation of coagulation. Tailored Collaboration partner: Central Utah Water Conservancy District.
Book	Origins, Behavior, and Modeling of THM Precursors in Lakes and Reservoirs	This report quantifies the relative contributions of external and internal sources to the trihalomethane-precursor pools of five water supply reservoirs. It identifies, characterizes, and quantifies the sources and sinks of precursors in reservoirs. It also develops and tests a mechanistic model capable of simulating the magnitude and dynamics of the precursor pool in a single productive water supply reservoir.
Book	Overcoming One of the Greatest Environmental Challenges of Our Times: Rethinking Policies to Cope with Desertification	This policy brief is based on the proceedings of a Joint International Conference, <i>Desertification and the International Policy Imperative</i> organized by the United Nations University and international agencies. This conference focused on the international policy imperatives raised by droughts and desertification and how best to meet the challenges.

Item	Title	Description
Book	Oxford dictionary of phrasal verbs	A comprehensive dictionary reflecting current idiomatic English. Features: comprehensive and systematic survey of phrasal verbs, with over 11,000 references; examples of use taken from a wide range of contemporary sources, many drawn from the Oxford Corpus of the English Language; synonyms, opposites and related verbs shown at the end of entries; grammatical codes at each entry showing possible sentence patterns; lists of typical collocates, showing how the verb is most frequently used in everyday English; explanations of unusual features of grammar and usage.
CD	Ozone & Related Oxidants: Innovative & Current Technologies	Conference proceedings from the congresses organized every two years to provide an international forum for specialists concerned with all fundamental, engineering and applied aspects of oxidation techniques involving ozone and related oxidants. The congress hosted experts from all over the world to present and discuss the latest advances in knowledge and technology for development and application of processes based on ozone or any derived or comparable oxidants for, environmental and human health protection (water, gas, soil and waste purification), and industrial manufacture and conditioning (pulp and paper, food, electronics, chemicals; medical therapy. The International Ozone Association organizes this congress with the aim of offering a unique opportunity to share the latest information on research topics, current issues, technologies under development, new applications, full-scale experiences and available equipments and products, to consider and discuss directions able to deliver innovative, competitive and sustainable solutions which address challenges in the fields of environment, health and industry.
Book	Ozone in Drinking Water Treatment: Process Design, Operation, and Optimization	Gain insight into application, design, operation, control, and optimization of ozone facilities in drinking water treatment plants. This book is intended for use in several ways by various disciplines, including: large and small water utilities that currently use ozone -- the book is a resource for optimizing ozone performance in existing installations; large and small water utilities that are considering ozone as a treatment process option -- the book explains why and how ozone is currently being used and includes precautions; design engineers who are involved with ozone system planning and design -- the book presents important design, operation, and maintenance considerations; laboratories and researchers that are involved with bench- or pilot-testing -- the book describes how ozone is used in full-scale installations and describes scale-up issues; regulatory agencies responsible for enforcement, design review, and inspections of plants that use ozone -- the book explains the theory and practice of ozone operation and how ozone disinfection performance is measured, calculated, reported, and optimized.
Book	Ozone In Water Treatment	This book on ozone for the treatment of drinking water is intended for practicing engineers, water treatment plant managers and personnel and others interested in ozonation. The purpose of this book is to provide guidance on the various applications of ozone and appropriate system design and operation. Ozone chemistry and physics are also covered to increase the reader's understanding of ozone fundamentals, which should aid in design and operation.

Item	Title	Description
Journal	Ozone Science & Engineering: The Journal of the International Ozone Association	The only journal in the world that focuses on the technologies of ozone and related oxidation technologies, <i>Ozone: Science and Engineering</i> brings you quality review papers, research notes, and case histories in each issue. Get the most up-to date results of basic, applied, and engineered research including: ozone generation and contacting; analysis of ozone; treatment of wastewater and hazardous waste; advanced oxidation processes; treatment of emerging contaminants; gas phase odour control; identification of primary and secondary oxidation of water contaminants by ozone; treatment of drinking water and swimming pool water; advanced oxidation processes/ ultraviolet technology.
Book	Ozone-Enhanced Biofiltration for Geosmin and MIB Removal	Ozone-enhanced biofiltration is widely used to achieve multiple water quality benefits (disinfection, trace organic removal, natural organic removal) and the removal of odorants such as MIB and geosmin. However, there is little guidance available for the selection of appropriate ozone dosages or the role of biofiltration for direct oxidation or biodegradation of the odorants. This lack of information prevents utilities that use ozone-enhanced biofiltration from optimizing for highest taste and odour control. This report provides the information you need to optimize your ozone-enhanced biofiltration system for greatest MIB and geosmin removal. The report includes the results of bench-scale and pilot-scale experiments, a survey of full-scale utilities employing ozone-biofiltration systems that confirm the ability of such systems to effectively remove odorants, and summary data of key design, dosing, operating, and cost factors.
Book	Participative Ergonomics: Making It Work	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
Book	Particles in Water: Properties and Processes	This book explores methods for characterization of particles in water systems and provides the tools required to make an informed selection of the best analytical techniques.
Book	Pathogen Intrusion into the Distribution System	This report discusses the entry of pathogens into drinking water distribution systems, particularly when treatment appears to be providing adequate multiple-barrier protection. The report estimates the extent of pathogen contamination by different sources of intrusion. The effectiveness of maintenance practices in protecting the distribution system from pathogen intrusion is evaluated, and recommendations are provided for monitoring programs that detect distribution system contamination by pathogens.
Book	Perry's Chemical Engineers' Handbook	This book has equipped generations of engineers and chemists with an expert source of chemical engineering information and data. Updated to reflect the latest technology and processes, this edition provides unsurpassed coverage of every aspect of chemical engineering, from fundamental principles to chemical processes and equipment to new computer applications. Filled with over 700 detailed illustrations, this book features comprehensive tables and charts for unit conversion, physical and chemical data, and the latest advances in distillation, liquid-liquid extraction, reactor modeling, biological processes, biochemical and membrane separation processes and chemical plant safety practices with accident case histories.
Book	Pesticide Properties That Affect Water Quality	In order to keep our water supplies safe from pesticide contamination, we must understand which pesticide properties affect water quality, and how. The subject is complex, as properties such as pesticide class, formulation, toxicity, dose, effective dose, persistence, volatility, water solubility, and soil adsorption all must be considered. This publication interprets those characteristics and explains the interaction of chemicals with surface and ground waters.

Item	Title	Description
Book	Pesticide Storage, Handling, and Application: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Crop protection chemicals are an important part of many cropping systems in Ontario. If mishandled or misused, they can be toxic to the pesticide handler, and put water supplies (and the people and animals who use them), at risk. This 100-page manual will help growers establish or refine a safe and effective system for: storage - options (constructed, prefabricated or modified), and alternatives to storage, such as custom work; handling - transportation, spills, mixing-loading practices and structures; application - effective spraying techniques, maintenance and calibration.
Book	Pharmaceuticals and Personal Care Products in the Canadian Environment: Research and Policy Directions	The subject of the this report was based on a third National Workshop, <i>Pharmaceuticals and Personal Care Products in the Canadian Environment: Research and Policy Directions</i> . This Workshop assessed the current state of Canada's research on Pharmaceuticals and Personal Care Products (PPCPs) in the environment in government, academia and industry sectors. Speakers provided overviews on environmental exposure and monitoring, effects of PPCPs on aquatic ecosystems, alternatives for reduction of human and environmental exposure to PPCPs, risk assessment process and needs, international, industry activities, provincial and municipal activities. This report also provides an overview of policy and management issues and provides a common understanding of the state of the science, thereby helping researchers prioritize needs and better identify collaborative opportunities to address knowledge gaps. This report will also make funding organizations aware of the research priorities in this field, and give managers a better appreciation of existing research challenges and broader potential policy issues.
Book	Physical Modeling of Mixing in Water Storage Tanks	The design of some finished water storage facilities can cause deterioration of water quality, including loss of disinfectant residual, poor mixing, poor turnover time, and excessive detention time. In this research study, a new technique was developed for better observing tank mixing. Experiments were conducted on three primary reservoir types with the objective being to gain new information on the hydrodynamics of jet-induced mixing in closed tanks and to provide recommendations for the design of storage tanks that will prevent water quality degradation, by maximizing mixing. This publication includes a CD-ROM, <i>Animations of Mixing in Storage Tanks</i> .
Book	Physical Security Technologies for Water and Wastewater Utilities	This research report provides information on commercially available physical security technologies and products to help small and medium-sized utilities make sound buying and deployment decisions.
Book	Pilot Testing of the Two Step Selective Alum Recovery Process	This book demonstrates a two-step alum recovery process in order to develop information about design, recovered alum coagulation performance, and costs for potential full-scale implementation.
Book	Pilot-Scale Evaluation of Ozone and Peroxone	This report investigates, by means of laboratory, pilot-plant, and field-scale testing, applications of the peroxone advanced oxidation process (ozone combined with hydrogen peroxide) for controlling disinfection by-products. It also analyzes capital and operational costs of the process.

Item	Title	Description
Book	Pipe Dreams: The Drinking Water Adventures of Danny Droplet	This children's comic book provides information on the drinking water treatment process.
CD	Places to Grow: Growth Plan for the Greater Golden Horseshoe 2006	This CD covers the Growth Plan for the Greater Golden Horseshoe, prepared under the Places to Grow Act, 2005. It is a framework for implementing the Government of Ontario's vision for building stronger, prosperous communities by better managing growth in this region to 2031. This is a plan that recognizes the realities facing our cities and smaller communities, and that acknowledges what governments can and cannot influence. It demonstrates leadership for improving the ways in which our cities, suburbs, towns, and villages will grow over the long-term. This Plan will guide decisions on a wide range of issues -- transportation, infrastructure planning, land-use planning, urban form, housing, natural heritage and resource protection -- in the interest of promoting economic prosperity.
Book	Planning and Managing Reliable Urban Water Systems	Maintaining a reliable water supply is no simple task in today's urban areas. This handbook explains exactly what you need to ensure that your water system will continue to deliver the quality and quantity of water your consumers demand. This book will show you how to express reliability goals quantitatively, address quality-of-life water demands, include public involvement in your decision-making process, quantify consumer demand and willingness to pay, and prevent a water shortage during drought conditions.
Book	Pocket Ref	<i>Pocket Ref</i> provides thousands of facts and formulas useful to water operators and civil engineers: friction loss in pipe, water data and formulas, plumbing, tubing, metals, weights of materials, surveying, conversion tables, capacities, elements, chemical and physics tables, and much more.
Book	Policy Perspectives for Ecosystem and Water Management in the Arabian Peninsula	The book has articles written by a number of experts from the field and is edited by Kamel Mostafa Amer, Benno Boer, Michael C Brook, Zafar Adeel, Miguel Clusener-Godt, and Walid Saleh.
Book	Post-Optimization Lead and Copper Control Monitoring Strategies	This book was designed to explore the concerns that have been expressed by utilities that were previously optimized for corrosion control. The goal of this project was to develop alternative methods of demonstrating that corrosion control is being maintained when treatment techniques and/or source waters are altered.
Book	Potential Contamination Due to Cross-Connections and Backflow and the Associated Health Risks	The U.S. Environmental Protection Agency (USEPA) is revising the Total Coliform Rule (TCR) and is considering new possible distribution system requirements as part of these revisions. As part of this process, the USEPA is publishing a series of issue papers to present available information on topics relevant to possible TCR revisions. This paper was developed as part of that effort. The objectives of the issue papers are to review the available data, information and research regarding the potential public health risks associated with the distribution system issues, and where relevant identify areas in which additional research may be warranted. The issue papers will serve as background material for EPA, expert and stakeholder discussions. The papers only present available information and do not represent Agency policy.

Item	Title	Description
Book	Practical Aspects of UV Disinfection	Recent research indicates that ultraviolet (UV) disinfection offers a potentially effective and unique alternative for utilities struggling to comply with microbial disinfection and disinfection by-product standards. Many key barriers to UV implementation have been eliminated in recent years. However, practical implementation barriers still exist. This report addresses many of those barriers by evaluating long-term performance and feasibility of UV disinfection systems. The report also developed a decision-making tool to assist utilities in selecting the appropriate, site-specific technology for inactivation of <i>Cryptosporidium</i> .
Book	Practical Taste-and-Odor Methods for Routine Operations: Decision Tree	This research report adapts taste-and-odour methods used in other industries for use in routine water utility operations at the water treatment plant, in the field, or in the quality control lab. It also develops a scenario-based decision tree for selecting which method to use.
	Practices to Prevent Microbiological Contamination of Water Mains	Water utilities go to great effort and expense to prevent and remove contaminants from drinking water by employing a multiple-barrier approach to water treatment. However, water main construction and repairs are activities that have historically not been well controlled with respect to water quality and good sanitary practices. This report identifies practices that can be realistically implemented by water utilities for preventing microbiological contamination associated with main installations and repairs. It encompasses all aspects of the multiple-barrier approach, including planning, design, storage and handling of materials, construction, and post-construction practices.
Book	Precoat Filtration	This manual explains applications and operation of precoat filtration systems in water treatment. Coverage includes applications, filter types, filter design, hydraulics, costs, installation, operation, maintenance, and residuals disposal.
DVD	Premier Dalton McGuinty (September 24, 2007)	News clip of Premier McGuinty's visit to the Walkerton Clean Water Centre on September 24, 2007.
Book	Pretreatment Field Guide	Designed for field use by water operators, this pocket-sized book provides operational information on mixing, coagulation, and sedimentation processes in water treatment. The guide provides regulatory, theoretical, operations, inspection, and maintenance data, formulas, and procedures for these processes, as well as mixing and chemical addition data for lime-softening applications. Information on solids produced during the processes is also provided. This field guide is suitable for operators who use mechanical and in-line mixing components with metal salt coagulants to form floc particles.
Book	Principles and Practices of Water Supply Operations: Water Quality	This water operator training text teaches fundamentals of water quality analysis, and federal regulations that govern drinking water standards in the United States. The book presents the basics of proper sample collection, analysis, and interpretation. Includes a list of necessary laboratory equipment and instruments.
Book	Principles and Practices of Water Supply Operations: Water Sources	This water operator training text teaches the basics of source waters for potable water supply. The book teaches the basics of the development of water sources for drinking water, including groundwater, surface water, raw water characteristics, and the hydrologic cycle. Practice problems and questions are included in each chapter.

Item	Title	Description
Book	Principles and Practices of Water Supply Operations: Water Transmission and Distribution	The basics behind the design, construction, operation, and maintenance of water transmission and distribution systems are presented in this introductory text. This book is designed to teach students the basic equipment, structures, operation, and maintenance of city water transmission and distribution systems. Piping system design and installation, valves, water tanks, and other major components are covered. Additional topics include pipe tapping, cross-connection and backflow prevention, and fundamentals of information management. A special section discusses utility public relations and the role of the distribution system operator.
Book	Principles and Practices of Water Supply Operations: Water Treatment	This water operator training text teaches the fundamentals of drinking water treatment processes, including raw water quality, choosing the correct treatment processes, treatment chemicals, and drinking water regulations. Chapters discuss specific treatment processes in detail. The text also examines common operating problems and suggests solutions to ensure water quality. Complete with detailed illustrations, photographs, supplemental reading lists, a glossary, and an index.
Book	Problem Organisms in Water: Identification and Treatment Manual of Water Supply Practices (M7)	Nearly 90% of all water systems deal with nuisance organisms. Now you can take control with this manual. You'll find basic information and valuable resources to help troubleshoot and resolve problems caused by these pesky organisms, such as taste, odour and colour at the tap, or corrosion and tuberculation in distribution systems. Each section opens with a brief description of an organism, the problems it can cause, control strategies, and relevant references. Includes Troubleshooting Guide for Problem Organisms, colour plates, and more.
Book	Project Manager's Portable Handbook	Perfect for managers on the go, this compact, quick reference guide provides ready-to-use advice on conceptualizing, designing, developing, and producing projects. It provides a single source of key summary information on the current theory and practices of project management. Topics include the discipline of project management, project organizational design, alternative project application, strategic context of projects, project leadership, project initiation and execution, project planning and control, the project culture, project communications, and improving project management.
Book	Pronunciation Plus - Practice Through Interaction	This book helps students improve their pronunciation through a variety of stimulating listening and speaking exercises.
CD	Pronunciation Plus - Practice Through Interaction	This CD helps students improve their pronunciation through a variety of stimulating exercises.
Book	Prospects for Managed Underground Storage of Recoverable Water	This book provides an overview of some of the research needs and priorities concerning sustainable underground storage technology and implementation. It also assesses geological, geochemical, biological, engineering, and institutional factors that may contribute to good or poor performance of such projects.
DVD	Protecting Against Waterborne Disease	This video explains why the water utility is their community's most important defence against waterborne disease. The video covers: what waterborne pathogens are and where they come from; viruses, bacteria, and protozoa, the illnesses they cause, and the tests used to learn of the possible or actual existence of pathogens in the water supply; how water treatment and disinfection methods destroy pathogens; the multiple-barrier approach to water treatment; source water protection and monitoring systems; the vital role of the operator in public health protection.

Item	Title	Description
Book	Protecting Local Ground-Water Supplies Through Wellhead Protection	This guide outlines an easy to follow, five-step process that your community can take to protect your public water supply wells. The document also presents an approach to protecting your ground-water supply that can be coordinated with existing state and federal groundwater supply protection programs.
Book	Protecting Sources of Drinking Water: Selected Case Studies in Watershed Management	This document, produced by the U.S. Environmental Protection Agency (USEPA) and the Association of Metropolitan Water Agencies (AMWA), presents case studies of seventeen Public Water Systems which have incorporated source water management and protection programs into their planning. These studies emphasize four aspects of source water protection: partnerships, watershed assessment, watershed land use management, and land acquisition. All these efforts highlight the importance of cross-program coordination in local watershed management initiatives. Appendix B lists source water information sources available on the Internet.
Book	Public Sector Ontario	A Periodical of official personnel in Federal, Provincial, and Municipal Governments in the Province of Ontario.
Book	Pumping Station Design	This essential design reference will provide all the information needed to design, equip, and build efficient, reliable pumping stations that are easy to operate and maintain. This book is written for a wide variety of readers: the expert and the beginner in a design office, the project leader of a design team, the city engineer or chief engineer of a water or sewerage authority (or their subordinates) who may review plans and specifications, and manufacturers' representatives who should know how their equipment is best applied to a pumping station. Chapters cover all aspects of pumping stations for water supply and wastewater: flow in conduits, fundamentals of hydraulic transients, electrical fundamentals and power system principles, pump particulars, system design for water and sludge pumping, and more.
Book	Purolator's Healthy Workplace - Learning and Development as the Foundation	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
Book	Qualitative Procedures for Identifying Particles in Drinking Water	Particulate matter at the consumer's tap may range from small, turbidity-causing particles to large particles visible to the naked eye. Particulates coming from taps are the frequent cause of consumer dissatisfaction and complaints. This report is the result of the first comprehensive study to develop and document reliable, simple methods for utilities to identify particulate matter in drinking water. It is the first standardized approach for the identification of particulate matter in water. This manual provides logical, step-by-step instructions that will lead the investigator to correct identification. The methods have been tested and specially adapted to be useful to utilities with limited laboratory resources, especially small systems. The methods may be readily learned and applied with little or no prior experience. Dozens of colour photos and illustrations aid the investigator in particle identification. A comprehensive list of particles is also included.
Book	Quantifying Public Health Risk Reduction Benefits	This research report provides an objective protocol on how a benefits analysis should be conducted and portrayed. It presents an approach for performing cost-benefit determinations that can be used by USEPA decision-makers and other organizations.

Item	Title	Description
Book	Radionuclide Removal for Small Public Water Systems	This document has been prepared to aid water utility owners, engineers, operators and municipal managers in understanding and dealing with excessive radionuclide levels in their water supply. It is intended to be used for defining the problem, developing or evaluating proposed solutions, and explaining to water consumers why radionuclides are controlled and what the approximate cost of control will be. This handbook is designed as a technical guide to radionuclide removal for those smaller size systems that have decided that radionuclide control is desirable. This document contains no regulatory policy and does not obligate systems to use any treatment or nontreatment technique to reduce radionuclide concentrations.
Book	Rapid Detection of Bioterrorism Agents in Water Supplies	Develops and evaluates new and innovative systems to rapidly detect chemicals (individual or classes), radioactivity, pathogens, or biotoxins in water in order to help make these systems more viable for use by the drinking water community.
Book	Reactions of Polyelectrolytes with other Water Treatment Chemicals	This report identifies possible chemical reactions between polyelectrolytes and other treatment chemicals and evaluates the impacts of these interactions on treatment performance. It provides utilities with recommendations regarding the use of polyelectrolytes with other treatment chemicals to effectively meet water quality and production goals.
Book	Recommended Practice for Backflow Prevention and Cross-Connection Control	Cross-connections and backflow are a very real threat in any potable water distribution system. This manual defines backflow and cross-connections, explains their causes and problems, and provides practices for developing a cross-connection control and backflow prevention program for a water distribution system.
Book	Regional Solutions to Water Supply Provision	Regional solutions are any of the many options through which one water system will work with (or join) one or more water systems to address a problem or common need. These can range from combining and interconnecting physical systems to simple cooperative planning and management activities, such as joint purchasing agreements to realize quantity discounts. This report examines regional solution options, discusses the benefits and issues of the various options, and shares key lessons learned from actual utility regionalization efforts. Includes CD-ROM: Regional Solutions Tool.
Book	Rehabilitation of Water Mains	This operations manual provides guidance on selecting the best water-main rehabilitation techniques for your water distribution system. Step-by-step guidance, including costing, is included for cleaning (flushing, cable-attached devices, pigs and other fluid-propelled cleaning devices, and power boring devices), lining (cement-mortar lining, epoxy lining, conventional slip-lining, close-fit slip-lining, and cured-in-place lining techniques), and replacement.
Book	Relative Dominance of HAAs and THMs in Treated Drinking Water	This report investigates the occurrence of haloacetic acids (HAAs) and trihalomethanes (THMs) in treated drinking water and determines conditions that contribute to the dominance of one group of disinfection by-products over the other in distribution systems. It provides the results of bench and field studies in several distribution system water sources to investigate factors that contribute to the formation of THM and HAA.

Item	Title	Description
Article	Removal of 2,4-D and Other Persistent Organic Molecules From Water Supplies by Reverse Osmosis	Reverse osmosis is still one of the most promising techniques for removal of many refractory organics of intermediate to high molecular weight from water. The selectivity of cellulose acetate reverse osmosis membranes was determined for aqueous solutions of several derivatives of 2,4 dichlorophenoxyacetic acid (2,4-D). Reverse osmosis is a technique for separating solute from solvent by use of a membrane more permeable to the solvent than solute in conjunction with pressure applied to the solution. Reverse osmosis is being used increasingly to produce potable water from brackish or saline water, to recover water and other byproducts from industrial water, and to disinfect raw and treated sewage.
Book	Removal of Algal Toxins from Drinking Water using Ozone and GAC	This report assesses the conditions of ozone residual and contact time under which three algal toxins (microcystin, antoxin-a, and the paralytic shellfish poison (PSP) class of toxins) are destroyed. It develops, assesses, and applies a new technique to detect the formation of toxic by-products.
Article	Removal of assimilable organic carbon and biodegradable dissolved organic carbon by reverse osmosis and nanofiltration membranes	The main objective of this study was to evaluate the effectiveness of reverse osmosis (RO) and nanofiltration (NF), under various solution chemistries, on bacterial regrowth potential as quantified by assimilable organic carbon (AOC) and biodegradable dissolved organic carbon (BDOC). The bench-scale observations were compared to a full-scale drinking water treatment plant that used nanofiltration as a primary treatment process.
Book	Removal of EDCs and Pharmaceuticals in Drinking and Reuse Treatment Processes	This book determines removal efficiencies of conventional and advanced treatment processes for an environmentally and chemically relevant suite of compounds classified as endocrine-disrupting chemicals, pharmaceutically active compounds, and personal care products.
Book	Removal of MTBE with Advanced Oxidation Processes	This research report evaluates several advanced oxidation processes including ultraviolet light (UV)/peroxide, ozone/UV, ozone/peroxide, titanium oxide, ultrasonic cavitation, and photocatalytic processes. It determines the MTBE removal effectiveness, design and operating factors, and capital and operating costs for each technology.
Article	Removal of natural organic matter and THM formation potential by ultra- and nanofiltration of surface water	Natural organic matter (NOM) and trihalomethane formation potential (THMFP) removal were evaluated by ultrafiltration (UF) and nanofiltration (NF). Ten different raw water sources in Alicante province (SE Spain) were analysed. Five types of membranes of different materials were tested with a dead-end-type stirred UF cell. Additional measurements, such as dissolved organic carbon, ultraviolet absorbance, THMFP, ion concentration, pH, conductivity, etc. were made on raw water, permeates and concentrates. The specific ultraviolet absorbance (SUVA) value was used to determine the hydrophobicity of the water analysed. The elimination of NOM and THMFP is correlated with the molecular weight (MW) of NOM determined by size exclusion chromatography (SEC). THM removal is related to hydrophobicity and permeability of membrane.
Book	Removal of Soluble Manganese From Water by Oxide-Coated Filter Media	Manganese contamination is a problem for many water suppliers, particularly those serving 3,000 people or less. It is estimated that over 40 percent of the water supplies in the United States contain manganese above the US Environmental Protection Agency's recommended maximum concentration level. This report examines the use of an alternative treatment method--oxide coated mixed media filtration--to solve this contamination problem.

Item	Title	Description
Article	Removal of trihalomethane precursors	This is a study of the effect of the precipitate or post-chlorination/disinfection on reducing trihalomethane precursors by reverse osmosis.
Article	Removal of trihalomethane precursors by reverse osmosis	The effect of pre- and postchlorination on reducing trihalomethane (THM) precursors by reverse osmosis (RO) was investigated. Prechlorination of the feedwater, in contrast to postchlorination of the permeate, resulted in improved reduction of maximum total THM potential (MTP) due to adsorption. No significant difference in permeate MTP concentration occurred between the prechlorinated feed and the postchlorinated permeate.
Article	Removing Color From a Groundwater Source	This study determined the organics and inorganics rejection characteristics of eight types of reverse osmosis membranes operating on a source of highly coloured groundwater in Orange County, Southern California. All eight membranes were capable of removing colour from groundwater. Additional long-term testing of four membranes--two brackish water (BW) and two softening-nanofiltration (NF) membranes--was carried out at relatively high flux rates and increased recovery. These membranes produced a colour level of 3 pcu or less, far below the current drinking water standard of 15 colour units. Trihalomethane formation potential was effectively removed by both types of membrane. The NF membranes were more energy efficient than the BW membranes.
Book	Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water – Part Two	This report contains recommendations to ensure the safety of drinking water across Ontario. This report results from a very thorough public process that involved the active participation of a wide array of individuals and groups with interest and expertise in the many issues relating to the safety of drinking water. In the process, the Inquiry reviewed the most current literature in the area, the best practices in water management and regulation employed in jurisdictions around the world, and the latest in science and technology.
CD	Report of the Walkerton Inquiry: Parts I & II	This report contains recommendations to ensure the safety of drinking water across Ontario. This report results from a very thorough public process that involved the active participation of a wide array of individuals and groups with interest and expertise in the many issues relating to the safety of drinking water. In the process, the Inquiry reviewed the most current literature in the area, the best practices in water management and regulation employed in jurisdictions around the world, and the latest in science and technology.
Leaflet	Research & Development Fact Sheet: Technology Testing and Evaluation Program	The Environmental Protection Agency's National Homeland Security Research Center (NHSRC) has developed the Technology Testing and Evaluation Program in an effort to provide reliable information regarding the performance of homeland security related technologies. This fact sheet was created in order to inform people of the process and benefits of using the tested technologies.
Book	Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents	This document is intended to be an action oriented document to assist drinking water utilities, laboratories, emergency responders, state drinking water programs, technical assistance providers, and public health and law enforcement officials during the management of an ongoing contamination threat or incident.

Item	Title	Description
Book	Reverse Osmosis and Nanofiltration: Manual of Water Supply Practices (M46)	Reverse osmosis (RO) and nanofiltration (NF) are membrane technologies that can be applied to the treatment of various water sources for the production of drinking water. This book covers topics such as theory and applications, design, equipment, installation, operations, and maintenance. It includes tables, figures, appendixes, references, and glossary. This book contains RO and NF membrane applications, membrane materials and configurations, source water supply, pretreatment, membrane process theory, rating RO and NF elements, post treatment, raw water intake, discharge, suspended solids and silt removal, RO and NF systems, hydraulic turbochargers, post treatment systems, ancillary equipment and facilities, instrumentation and control, waste stream management, pretreatment filter backwash disposal, treatment plant design, plant location and layout, construction and equipment installation, treatment costs, process monitoring, biological monitoring, chemical cleaning, mechanical integrity, instrumentation calibration, and safety.
Leaflet	Reverse Osmosis for Home Treatment of Drinking Water	Reverse osmosis is becoming a common home treatment method for contaminated drinking water. This booklet explains the process, useful features, operation, maintenance and costs, as well as a brief summary on water treatment processes.
Book	Risk Analysis Strategies for Credible and Defensible Utility Decisions	This book reviews risk analysis strategies that utility managers could readily use to better understand, evaluate, and support their decision making. It summarizes the status of risk management in the water utility sector.
Book	Risk Management of Large-Diameter Water Transmission Mains	Low rates of failure, combined with high costs of inspection and condition assessment, are the main reasons why there is little historical data on the condition of large diameter buried pipes. However, failure rates of large diameter water pipes are expected to increase as the pipes continue to age. As the failure of such pipes can be disastrous, the risk needs to be evaluated and managed. In this research an approach was developed to combine scarce available data with engineering judgment to manage failure risk of large diameter water transmission mains and make decisions in a formal, consistent, and tractable manner. The report will guide you in rating the condition of your transmission pipes, modeling the deterioration process and associated risk of failure, and selecting effective renewal strategies.
Book	Risks and Benefits of Energy Management for Drinking Water Utilities	This report identifies risks associated with energy management or energy conservation practices used by drinking water utilities that may impact storage of source waters, the efficacy of drinking water treatment, or the quality of treated water. The report also identifies risk mitigation approaches.
Article	Role of membrane technology in drinking water treatment in the United States	With the increase in water quality regulations and decrease in available fresh water supplies in the US, pressure-driven membrane processes are playing an increasingly important role in drinking water treatment. They are being employed to remove a wide range of contaminants, and depending on their use, can be operated with minimal or no chemical pretreatment that forms deleterious by-products. The major uses of membrane processes in the US include desalting, disinfection by-product control, disinfection, clarification, and removal of synthetic and inorganic chemicals. Membranes are also furthering capabilities to purify wastewater for indirect potable reuse.

Item	Title	Description
DVD	Routine Coliform Sampling for Water Utilities	Improper sampling is one of the most common errors in water quality analysis. This video gives operators approved, step-by-step procedures for taking water samples for coliform testing. Particular attention is paid to the all-important step of selecting sampling sites. The procedures shown comply with the Total Coliform Rule and the Safe Drinking Water Act. This video will help your utility avoid false test results and violations, while it helps you maintain public confidence in the quality of the water supply.
DVD	Rural Water Management	For small town managers and public officials (as well as water system operators), this video provides an excellent overview of water system management. It discusses the roles and responsibilities of water operators and town managers in the operation and maintenance of the water system in three major areas, technical capacity, managerial capacity, and financial capacity. Town managers will learn about the layout and operation of a typical water system, as well as the importance of hiring and training certified operators to run it. The video covers the five-step planning process for good water system management: assessment of strengths and weaknesses of the system; short and long-term goals; emergencies and natural disaster planning; cross-contamination prevention planning; enforcement of existing ordinances; support of operators.
Brochure	Rural water stewardship checklist	This brochure provides a checklist for rural well owners regarding water stewardship.
Presentation Handouts	Safe Drinking Water Act and Associated Regulations	These <i>PowerPoint</i> presentation handouts provide information on the <i>Safe Drinking Water Act</i> and associated regulations.
Book	Safe Drinking Water: Lessons from Recent Outbreaks in Affluent Nations	This book aims to raise understanding and awareness of those factors that have most commonly contributed to or caused drinking-water-transmitted disease outbreaks - essentially a case-history analysis within the multi-barrier framework.
DVD	Safety First: Laboratory Safety for Water Professionals	Perfect for both new employee orientation and continuing safety training, this video covers the handling and storage of chemicals, personal protective equipment, lab safety features, lab equipment, and safe lab procedures.
Book	Safety Is More Like It Is Now Than It Ever Was	This paper was presented at the <i>Health & Safety Canada 2008 Industrial Accident Prevention Association Conference & Trade Show</i> .
Leaflet	Safety Tips: Hazard Communications	One important way employers can maintain a safe and healthy work place is to place a strong emphasis on communication. By talking about safety hazards, properly labelling chemicals, and ensuring that workers have access to safety information, the workplace can become a safer place.
Leaflet	Sampling for Bacteria in Wells	This leaflet provides step-by-step instructions on the process you should follow if you are sampling for bacteria in your well.
Booklet	Save Water with the Conservation Kids	This is a colour and learn booklet for children. It includes fun facts and activities to help children learn about water and all the purposes that it serves.
Book	Select ANSI/AWWA Standards for Small Water Systems 2006	Can a small water system with a limited budget and few employees meet, and even exceed, the highest standards of water utility practice? The answer is yes, if you follow the specific recommendations of these five specially chosen American National Standards Institute (ANSI)/American Water Works Association (AWWA) standards, bound together into a softcover book: A100 Water Wells; B300 Hypochlorites; C651 Disinfecting Water Mains; C652 Disinfection of Water Storage Facilities; G200 Distribution Systems Operation and Management. These standards will give you the information you need to operate your water system with industry-recognized best practices.

Item	Title	Description
Article	Selected processes for removing NOM: an overview	As a result of the Disinfectants/Disinfection By-product Rule, there has been increasing emphasis by the water industry on the removal of natural organic matter (NOM) from raw-water supplies. Three important NOM removal options are coagulation, granular activated carbon (GAC) adsorption, and membrane filtration. Of these three processes, coagulation is the most widely used in the water industry. But when coagulation cannot remove adequate concentrations of NOM so that disinfection by-products can be controlled, other treatment technologies such as GAC and nanofiltration may need to be used. Various aspects of each of these technologies are discussed.
	Self Assessment for Small Privately Owned Water Systems	This work provides guidance on complying with federal and state drinking water regulations, gauging your system's financial condition, funding upgrades and improving operations and management. It includes worksheets and step-by-step instructions for private systems.
Book	Self-Assessment for Treatment Plant Optimisation	This book provides procedures for optimizing particulate removal and disinfection through improvements in administration, maintenance, design, and operations.
Book	Self-Assessment Guide for Surface Water Treatment Plant Optimization	This report is designed to guide water utilities in assessing and optimizing their conventional water treatment processes.
Book	Seminar Publication Wellhead Protection: A Guide for Small Communities	Guidance for setting up wellhead protection programs is available at the state and federal levels, but local initiative is the key to developing an effective program. Each community can best determine how to develop its own wellhead protection program by taking into account local hydrogeological characteristics, land uses, and political and economic conditions. The publication is designed to help small community decision makers, utility personnel, and other interested community members take initiative at the local level. It provides the basic information needed to begin a wellhead protection program.
Book	Seminar Publication: Control of Biofilm Growth in Drinking Water Distribution Systems	This document describes the types of organisms often present in drinking water distribution system biofilms, how biofilms are established and grow, the public health problems associated with having biofilms in the distribution system, and tools that water treatment personnel can use to help control biofilm growth.
Brochure	SepticSmart: New Ideas for Household Septic Systems on Difficult Sites	This brochure provides information on household septic systems on difficult sites.
Book	Seventh Symposium on Off-Flavours in the Aquatic Environment – Extended Abstracts	Drinking water taste and odour continues to be a major concern to public, industry and science. As a primary gauge of drinking water quality, taste and odour has a major effect on human behaviour, and can seriously undermine consumer confidence in public supplies. Taste and odour causes major problems for water suppliers, who face rising treatment costs in order to deliver safe, acceptable drinking water. However, despite considerable research, many taste and odour issues remain unresolved.
Book	Seventh Symposium on Off-Flavours in the Aquatic Environment – Extended Abstracts/Posters	Drinking water taste and odour continues to be a major concern to public, industry and science. As a primary gauge of drinking water quality, taste and odour has a major effect on human behaviour, and can seriously undermine consumer confidence in public supplies. Taste and odour causes major problems for water suppliers, who face rising treatment costs in order to deliver safe, acceptable drinking water. However, despite considerable research, many taste and odour issues remain unresolved.

Item	Title	Description
Book	Seventh Symposium on Off-Flavours in the Aquatic Environment – Scientific Programme	Drinking water taste and odour continues to be a major concern to public, industry and science. As a primary gauge of drinking water quality, taste and odour has a major effect on human behaviour, and can seriously undermine consumer confidence in public supplies. Taste and odour causes major problems for water suppliers with public image and accountability for, who face rising treatment costs in order to deliver safe, acceptable drinking water. However, despite considerable research, many taste and odour issues remain unresolved.
Book	Siting, Drilling & Construction of Water Supply Wells	Designed for municipal water supply engineers, hydrogeologists, water utility managers, and water resource professionals, this book is an excellent desk reference for any question regarding water wells, including siting, water quality, drilling methods, field testing, design, construction, development, and operation. You get professional and expert guidance in all aspects of water-well siting and drilling. A wealth of engineering data for design and construction, plus dozens of photographs and drawings, are included. The book describes and illustrates all common drilling methods, geophysical logging, and field testing. Well development, which may be the most important part of the well-drilling process for assuring well productivity and long life, is covered in detail. The book is designed to be a practical reference. Well operation and maintenance, including pump and motor maintenance, record keeping, water quality monitoring, and common operational problems, are explained thoroughly.
Book	Sizing Water Service Lines and Meters (M22)	This operations manual will guide engineers, architects, designers, and technicians in accurately sizing customer water service lines and water meters. Coverage includes estimating consumer water flows, peak water demands, demand profiling, metering equipment, and procedures for calculating service lines and meters for optimum water revenue and lowest service cost. Numerous tables and sample calculations included.
Book	Small Community Water and Wastewater Treatment	The summary report presents information on the unique needs of small communities facing new water and wastewater treatment requirements. It contains three main sections: technology overviews (each presents a process description, operations and maintenance requirements, technology limitations, and financial considerations), small community case studies, and a resource directory presenting listings of organizations that can provide a wide variety of technical and financial services to small communities.
CD	Small Public Water Systems Technology Guide: Volume 1	This engineer training CD covers the topics of slow sand filtration, iron and manganese control, and arsenic removal. This CD was compiled by researchers at the New England Water Treatment Technology Assistance Center (NE-WTTAC) and the University of Tennessee.
Book	Small Public Water Systems Technology Guide: Volume 1: Arsenic Removal	This document covers arsenic removal and was compiled by researchers at the New England Water Treatment Technology Assistance Center (NE-WTTAC) and the University of Tennessee.
Book	Small Public Water Systems Technology Guide: Volume 1: Glossary	This glossary was compiled by researchers at the New England Water Treatment Technology Assistance Center (NE-WTTAC) and the University of Tennessee.
Book	Small Public Water Systems Technology Guide: Volume 1: Iron and Manganese Control	This document covers iron and manganese control and was compiled by researchers at the New England Water Treatment Technology Assistance Center (NE-WTTAC) and the University of Tennessee.
Book	Small Public Water Systems Technology Guide: Volume 1: Slow Sand Filtration	This document covers slow sand filtration and was compiled by researchers at the New England Water Treatment Technology Assistance Center (NE-WTTAC) and the University of Tennessee.

Item	Title	Description
Book	Small System Guide to Risk Management and Safety	This publication gives an overview of the Safe Drinking Water Act (SDWA), the small system board's responsibilities under SDWA, U.S. Environmental Protection Agency's Standard Monitoring Framework, the Total Coliform Rule, The Surface Water Treatment Rule, filtration, turbidity, and disinfection rules, primary drinking water contaminants (including Phase 11 and Phase V), the Lead and Copper Rule, public notification, and what to do if your water becomes contaminated.
Book	Small Water System Operation and Maintenance: A Field Study Training Program	This course is designed to train operators in the practical aspects of operating and maintaining small drinking water supply systems and treatment plants, with emphasis on safe practices and procedures. Topics covered include roles and duties of small system operators, water sources, and treatment processes. Detailed descriptions of the components of a drinking water well are presented. Operators will learn how to set up a wellhead protection program, operate, maintain and rehabilitate wells, disinfect wells and pumps, and troubleshoot operating problems. Other major topics in this program include operation and maintenance procedures for small water treatment plants, disinfection, safety, laboratory procedures, setting water rates, and how to solve water treatment plant arithmetic problems.
Book	Soil Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. If you're experiencing problems with soil erosion, surface water runoff, compaction or loss of organic matter, it's time to try some different approaches to managing your soils. By reducing tillage, adding organic matter either through crops or other sources, and maintaining good soil structure (tilth), you can maintain proper conditions for high yields, good returns, and minimal environmental impact. This comprehensive 68-page book begins with the basics of soil management. It then provides many practical tips and troubleshooting tactics to help you assess and improve soil quality in the short and long term.
CD	Source Water Protection Reference Manual	A comprehensive water utility guide to source water management practices and regulations. This CD-ROM provides guidance in how to form a watershed management plan. It includes best management practices, source water protection-related government programs and regulations with agency contact information, and a water supplier experience section.
Book	Standard Methods for the Examination of Water & Wastewater	The worldwide standard text for water analysis, this edition provides hundreds of laboratory tests of water quality and properties. These methods represent the best current practice of water and wastewater analysis. The book includes step-by-step instructions with equipment lists for more than 400 tests to describe: physical and aggregate properties, metals, inorganic nonmetallic constituents, aggregate organic constituents, individual organic compounds, radioactivity, toxicity, microbiological examination, and biological examination. Includes dozens of colour plates of aquatic organisms to help in identification.
Book	State of Knowledge of Endocrine Disruptors and Pharmaceuticals in Drinking Water	This research report synthesizes existing knowledge on endocrine disrupting compounds (EDCs), pharmaceutically active compounds (PhACs), and personal care products (PCPs) in drinking water supplies. The report also includes what is known about health effects, analysis, occurrence, and behaviour in drinking water treatment processes for this broad range of compounds.

Item	Title	Description
Book	Stories From the Road: On-the-Job Experiences of Water Treatment Operators	<i>Stories From the Road: On the Job Experiences of Water Treatment Operators</i> provides insight to the services water operators provide. The book includes actual stories from real people dealing with real problems and celebrates their accomplishments, while offering inspiration and valuable information to others. Often, operators must come up with alternative methods when tried-and-true procedures don't work. These stories of real people in the diverse cities of Cleveland, Long Beach, Calif., Golden, Colo., and Santa Fe, N.M., provide stellar examples of operators making tough decisions under pressure. Appendices on pumping and horsepower calculations, chloramination guidelines, disinfection practices for trihalomethane control, and several other topics related to the experiences told in the book are also included.
Book	Strategic Planning: A Handbook for Small Water Systems	This guide is designed to help owners and operators of Community Water Systems (CWSs) and Non-Transient Non-Community Water Systems (NTNCWSs) serving 3,300 people or fewer learn more about the strategic planning process and begin to develop a strategic plan. CWSs include all systems (both publicly and privately owned) with at least 25 year-round residential customers or 15 year-round service connections. NTNCWSs include all systems (both publicly and privately owned) that are not CWSs and that serve at least 25 of the same people for more than six months a year. Typical systems that may find this guide useful include small towns, manufactured housing communities, rural water districts, homeowner's associations, tribal systems, factories, religious institutions, and schools with their own water supplies. This guide presents basic concepts on strategic planning for small water systems and explains how this process can help improve your technical, managerial, and financial capabilities. It provides background information on strategic planning and a series of worksheets from which you can begin to develop a written strategic plan.
Book	Strategies for Controlling and Mitigating Algal Growth within Water Treatment Plants	This research report reviews and summarizes the current strategies for controlling and mitigating algal growth within water treatment plants. It develops recommendations and provides guidance for utilities on sampling, analysis, control, and best practices to manage algal issues in water treatment plants.
Book	Strategies To Help Drinking Water Utilities Ensure Effective Retention of Knowledge	This research report identifies strategies, tools, and techniques that utilities can use to retain knowledge of the retiring and shifting workforce. It includes key drivers, critical success factors, barriers, and costs and benefits related to implementing knowledge retention programs.
Booklet	System Partnership Solutions to Improve Public Health Protection: Managerial, Technical, Financial Capacity	This booklet contains one-page case studies designed to help small systems enhance their ability to provide safe and affordable drinking water.

Item	Title	Description
Book	Taking Stock of Your Water System: A Simple Asset Inventory for Very Small Drinking Water Systems	This guide is designed to help very small water systems assess their condition by preparing a simple asset inventory. Knowing what components your system has and what condition they are in will help you maintain the safety, security, and reliability of the drinking water that your system provides. An asset inventory can help you: keep an inventory of your water system; comply with drinking water regulations; prepare accurate budgets; prepare for future needs (whether financial, growth-related, or regulatory); know your system's strengths and weaknesses to help you head off sudden or unexpected problems with the system's operation or the quality of water it provides; gain a better overall picture of your system to enable you to spot gaps in your system's security and take steps to address them; know the details of your system to enable you to explain its current condition and how it operates. Information and worksheets (both completed examples and blank) to help you prepare an asset inventory and begin to develop a written asset management plan are included.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Corrosion Control	Corrosion occurs because metals tend to oxidize when they come in contact with water, resulting in the formation of stable solids. Corrosion in distribution systems can impact consumers' health, water treatment costs, and the aesthetics of finished water. This <i>Tech Brief</i> discusses various methods for controlling corrosion, including design considerations, water quality modifications, corrosion inhibitors, cathodic protection, and coatings and linings.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Diatomaceous Earth Filtration for Drinking Water	Diatomaceous Earth (DE) filtration produces high-quality, low-cost drinking water using the skeletal remains of small, single-celled organisms as the filter media. The process is a U.S. Environmental Protection Agency approved technology for meeting Surface Water Treatment Rule requirements. This <i>Tech Brief</i> discusses DE filtration, giving an explanation of the process, its history, monitoring and operating requirements, and sources of more information.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Disinfection	Water systems add disinfectants to destroy microorganisms that can cause disease in humans. Primary methods of disinfection include chlorination, chloramines, ozone, and ultraviolet light. These and other methods for ensuring safe water are discussed in this <i>Tech Brief</i> along with an explanation of disinfection as a drinking water treatment, the regulations governing it, the advantages and disadvantages of using it, and disinfection methods.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Filtration	Filtration is the process of removing suspended solids from water by passing the water through a permeable fabric or porous bed of materials. Surface water and groundwater under the influence of surface water are subject to contamination from many sources, so federal and state laws require many water systems to filter their water. Several methods of filtration are discussed.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Ion Exchange and Demineralization	Natural organic materials and synthetic organic chemicals might be present in water supplies, especially from surface water sources, causing taste, odour, or colour problems in a community's drinking water. This <i>Tech Brief</i> discusses technologies most suited for removing organic contaminants in drinking water systems.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Iron and Manganese Removal	Iron and manganese are common in groundwater supplies used by many small water systems. Exceeding the suggested maximum contaminant levels usually results in discoloured water, laundry, and plumbing fixtures. This, in turn, results in consumer complaints and a general dissatisfaction with the water utility. This <i>Tech Brief</i> examines iron and manganese and provides an overview of removal techniques.

Item	Title	Description
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Leak Detection and Water Loss Control	Utilities can no longer tolerate inefficiencies in water distribution systems and the resulting loss of revenue associated with underground water system leakage. Increases in pumping, treatment and operational costs make these losses prohibitive. To combat water loss, many utilities are developing methods to detect, locate, and correct leaks.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Lime Softening	Hard water causes scaling problems in water heaters, and soap does not lather well in hard water. Therefore, some water utilities soften water to improve its quality for domestic use. This <i>Tech Brief</i> examines lime softening and provides an overview of its use.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Membrane Filtration	A semipermeable membrane is a thin layer of material capable of separating substances when a driving force is applied across the membrane. Once considered a viable technology only for desalination, membrane processes are increasingly employed for removal of bacteria and other microorganisms, particulates, and natural organic material, which can impart colour, taste, and odours to water and can react with disinfectants to form disinfection byproducts.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Organic Removal	Natural organic materials and synthetic organic chemicals might be present in water supplies, especially from surface water sources, causing taste, odour, or colour problems in a community's drinking water. Technologies most suited for organic contaminant removal in drinking water systems are discussed in this <i>Tech Brief</i> .
Leaflet	Tech Brief A National Drinking water Clearinghouse Fact sheet: Ozone	New water treatment goals for disinfection byproducts and for microbial inactivation increase the need to consider new disinfection technologies. Ozone is an attractive alternative. This technology has evolved and improved in recent years, thereby increasing its potential for successful application.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Package Plants	Small communities that face financial problems purchasing and maintaining conventional drinking water treatment systems often opt to install a package plant, an alternative to conventional in-ground treatment technology. This <i>Tech Brief</i> discusses selection and types of package plants.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Point-of-Use/Point-of-Entry Systems (POU/POE)	Numerous households use point-of-use/point-of-entry (POU/POE) systems primarily to deal with aesthetic concerns, such as taste and odour. These treatment devices are installed just as their name implies—at the point where water enters a household or where it is used, such as a faucet. In certain situations, however, using POU/POE systems to provide safe drinking water to a system's customers is not an individual's choice, but that of the water system cooperating with regulatory authorities. Therefore, this <i>Tech Brief</i> only discusses POU/POE treatment options that meet Safe Drinking Water Act (SDWA) water quality requirements.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Radionuclides	Radionuclide contamination of drinking water is a significant health issue. Until now, manmade radioactivity in drinking water has not been a major problem; natural sources have been the primary cause of contamination. However, the potential for contamination exists throughout the country as releases from medical facilities or nuclear power plants may wind up in drinking water. Because of their potential health effects and widespread occurrence, natural radionuclides—including radon, radium, and uranium—cause much concern.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Reservoirs, Towers, and Tanks - Drinking Water Storage Facilities	After water leaves the treatment plant but before it reaches the customer, it must be adequately and safely stored. This <i>Tech Brief</i> explores the various aspects of water storage.

Item	Title	Description
Leaflet	Tech Brief A National Drinking water Clearinghouse Fact Sheet: Slow Sand Filtration	First used in the United States in 1872, slow sand filters are the oldest type of municipal water filtration. Today, they remain a promising treatment method for small systems with low turbidity or algae-containing source waters. Slow sand filtration does not require pretreatment or extensive operator control, which can be important for a small system operator with several responsibilities.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: System Control and Data Acquisition (SCADA)	Supervisory Control And Data Acquisition (SCADA) systems are recognized as reliable and efficient methods of information management in water treatment facilities. Functions they perform include remote monitoring of well levels and pump control, flows, tank levels, pressures in storage tanks, and water quality characteristics, such as pH, turbidity, and chlorine residual. Learn more about SCADA systems in this <i>Tech Brief</i> .
Poster	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Treatment Technologies for Small Drinking Water Systems	The National Drinking Water Clearinghouse's drinking water Tech Briefs are four-page fact sheets. Each fact sheet provides concise, technical information about a drinking water treatment technology or issue relevant to small systems. Tech Briefs are written for drinking water professionals, particularly small system operators. Tables and descriptive illustrations are provided, as well as sources for more information.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Ultraviolet Disinfection	Using ultraviolet (UV) light for drinking water disinfection dates back to 1916 in the United States UV disinfection involves exposing contaminated water to radiation from UV light. The treatment works because UV light penetrates an organism's cell walls and disrupts the cell's genetic material, making reproduction impossible.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Valves	Valves direct, start, stop, mix, or regulate the flow, pressure, or temperature of a fluid. Many types of valves exist. This <i>Tech Brief</i> examines the most common types of valves, problems that may be encountered (such as cavitation, flashing, choked flow, and water hammer effects), operation and maintenance requirements, and safety issues with respect to security.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Water Hammer	This leaflet discusses water hammer, the momentary increase in pressure that occurs in a water system when there is a sudden change of direction or velocity of the water. These pressure fluctuations can be severe enough to rupture a water main.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Water Quality in Distribution Systems	This leaflet discusses water quality in distribution systems. Water producers need to understand the sources of water quality degradation during the distribution process because, in addition to taste and odour problems that can occur, research also suggests that degraded water quality increases the risk of gastrointestinal illnesses.
Leaflet	Tech Brief A National Drinking Water Clearinghouse Fact Sheet: Water Treatment Plant Residuals Management	Water treatment plants produce a wide variety of waste products as well as safe drinking water. This <i>Tech Brief</i> examines residuals categories, major treatment processes, and the regulations that govern management of residuals.
Leaflet	Tech Brief: Chlorination	This leaflet discusses chlorination. Beginning with its use for the Jersey City drinking water supply in 1908, chlorination has been the most commonly used disinfection technique for public drinking water. Chlorine provides good disinfection and is effective against a wide range of pathogens in drinking water. Recently, however, many water treatment plants have altered their disinfection strategies because of regulation changes concerning disinfection byproducts. Nevertheless, chlorination remains the most cost-effective and reliable disinfection method available.
Leaflet	Tech Brief: Cross Connection and Backflow Prevention	This <i>Tech Brief</i> examines the problems associated with cross connections and backflow and provides practical solutions for eliminating them.

Item	Title	Description
Leaflet	Tech Brief: Filter Backwashing	This leaflet discusses filter backwashing. Backwashing a water system's filters is not only vital to the life of the filter, it's fundamental to the quality of the water coming out of the filter. Sooner or later, all filters need to be backwashed or replaced.
Leaflet	Tech Brief: Jar Testing	This leaflet discusses jar testing, a pilot-scale test of the treatment chemicals used in a particular water plant. It simulates the coagulation/flocculation process in a water treatment plant and helps operators determine if they are using the right amount of treatment chemicals, and, thus, improves the plant's performance.
Leaflet	Tech Brief: Locating Distribution Lines	Finding water distribution lines can be a daunting task. Fortunately, there are several techniques for finding your pipes. This <i>Tech Brief</i> examines as-built drawings, locating devices, geophones, and tapping the expertise of previous employees as useful methods for locating distribution lines.
Leaflet	Tech Brief: Point-of-Use/Point-of-Entry Systems (POU/POE)	Numerous households use point-of-use/point-of-entry (POU/POE) systems primarily to deal with aesthetic concerns, such as taste and odour. In certain situations, however, using POU/POE systems to provide safe drinking water is not an individual's choice, but that of the water system cooperating with regulatory authorities. Therefore, this leaflet discusses only POU/POE treatment options that meet Safe Drinking Water Act requirements.
Leaflet	Tech Brief: Preventing Well Contamination	Wells need to be sited and built to prevent groundwater contamination. This <i>Tech Brief</i> presents tips about how to site a well and includes information about design issues, material selection and location such as screens and filter pack, appropriate well sealing methods, and using pitless adaptors.
Leaflet	Tech Brief: Pumps	This leaflet discusses pumps. Whether moving source water to the treatment plant, getting treated water to storage facilities, or injecting chemicals during the treatment process, pumps fulfill a vital role in any water system.
Leaflet	Tech Brief: Quality Control in Construction Projects	This leaflet discusses quality control in construction projects. Utility systems need infrastructure to last as long as possible. One way to ensure longevity is through quality control. To have good quality control in construction projects is to perform good inspections.
Leaflet	Tech Brief: Repairing Distribution Line Breaks	Occasionally, water systems encounter situations where they must repair distribution system pipes. Corrosion and tuberculation (i.e., buildup of sediment, dirt, or rust) may have caused small leaks in the lines, or worse, a major line break may occur, creating an emergency situation. This <i>Tech Brief</i> discusses ways to manage these situations and outlines steps a utility may take to repair the distribution system.
Leaflet	Tech Brief: Sanitary Surveys	This leaflet discusses sanitary surveys in detail. A sanitary survey is an inspection of a water system, including the water source, facilities, equipment, operation, and maintenance. Usually conducted by a member of the state primacy agency, the purpose of these mandatory surveys is to help prevent and correct water system deficiencies.
Leaflet	Tech Brief: Water Meters	Any viable business must be able to determine how much product it is making and selling and if that product is profitable. Water is a business, and the best way for a water utility to measure or account for the water produced and then sold is by using water meters. This <i>Tech Brief</i> , discusses different types of meters, their applications, and their importance for a water utility business.

Item	Title	Description
Book	Techniques for Monitoring Structural Behaviour of Pipeline Systems	This report looks at techniques that can be used to regularly monitor the structural condition of potable water distribution systems. You'll learn the various pipe-monitoring parameters, why they should be monitored, and how frequently they should be monitored. Parameters such as internal pressure, external pipe load, leakage rates, crack growth, soil resistivity, and temperature are covered. You'll learn about the various kinds of on-pipe, in-pipe, and remote-sensing monitors. The report rates for effectiveness strain gauges, ultrasonic corrosion monitors, Global Positioning System (GPS) monitors, remote field eddy current pigs, acoustic emission monitors, satellite-based high-resolution systems, laser altimetry, infrared systems, and other sensors and techniques. You'll also get a methodology to assist you with selecting the most appropriate monitoring techniques to meet your system and operator requirements. The report describes how the collected data then can be integrated into standard decision support tools within Supervisory Control And Data Acquisition (SCADA) and Geographic Information System (GIS) environments.
Book	Technologies for Upgrading Existing or Designing New Drinking Water Treatment Facilities	This book describes technologies for upgrading existing or designing new drinking water treatment facilities. Prefiltration, filtration, disinfection, and organic and inorganic contaminants are covered. Particular solutions for small community water treatment plants (2500-100,000 gpd) are described, along with 13 case studies.
CD	Technology Demonstration and Research Facility Video: Walkerton Clean Water Centre	This DVD provides information on the Walkerton Clean Water Centre's Technology Demonstration Facility.
Presentation Handouts	Technology for Water Treatment: Focus on Small Systems	These <i>PowerPoint</i> presentation handouts provide information on technology for water treatment, particularly for small systems.
VHS	The Basics of Waterborne Pathogens: AWWA Satellite Teleconference Tape 1	Waterborne pathogens. What are they? Where do they come from? What health problems do they cause? How are they detected in water? What are the best water treatment technologies? Get the answers to these and other questions in this professional training video for water treatment operators, civil and environmental engineers, water utility managers and supervisors, and water quality control personnel. You'll learn from leading experts on waterborne pathogens. The video also covers outbreaks such as the Walkerton, Ontario E. coli outbreak that killed seven people and sickened 2,300.
VHS	The Basics of Waterborne Pathogens: AWWA Satellite Teleconference Tape 2	Waterborne pathogens. What are they? Where do they come from? What health problems do they cause? How are they detected in water? What are the best water treatment technologies? Get the answers to these and other questions in this professional training video for water treatment operators, civil and environmental engineers, water utility managers and supervisors, and water quality control personnel. You'll learn from leading experts on waterborne pathogens. The video also covers outbreaks such as the Walkerton, Ontario E. coli outbreak that killed seven people and sickened 2,300.
Book	The Chlorination/Chloramination Handbook	The chlorination and chloramination of drinking water is the subject of this handbook. Chapters cover safety, dosing, equipment design, installation and operations, instrumentation, control, and regulations. Tables, figures, a glossary, and an index round out the scope of this handbook for operators and engineers.

Item	Title	Description
Book	The Chlorine Dioxide Handbook	This handbook provides theory and practical application of chlorine dioxide disinfection in water treatment. The book includes information on: the chemical properties of chlorine dioxide; generator designs; application in treatment; operation and maintenance guidelines; safety; regulations and health issues.
Book	The Clean Water Act: Promoting Municipal Awareness and Understanding	This guide is written for a municipal audience, including elected officials, senior managers, and staff, to help explain their responsibilities related to drinking water and the protection of water sources under the <i>Clean Water Act, 2006</i> .
Book	The Drinking Water Dictionary	This specialized dictionary includes definitions for 15,000 drinking water-related terms, abbreviations, acronyms, formulas, models, units of measure, and conversion factors.
Booklet	The Further Adventures of Captain Hydro Brings You Hero of Water Conservation: A Teacher's Guide	The Teacher Activity Guide has been prepared as part of Project WATER (Water Awareness Through Education and Research.) The intent of this booklet is to stimulate interest among students on the subject of water, particularly water conservation and related issues.
Booklet	The Further Adventures of Captain Hydro Brings You Water Magic: A Teacher Activity Guide	The Teacher Activity Guide has been prepared as part of Project WATER (Water Awareness Through Education and Research.) The intent of Water Magic is to introduce students in grades six through nine to water and some of its properties through scientific concepts. Some of the lessons also deal with reactions and interactions involving water that take place within the human body.
Booklet	The Happy Earth Day	This colouring and activity book is designed to educate children in a fun and creative manner. It features helpful facts on how to preserve all of the valuable resources we have on Earth.
Book	The Impact of Pipe Coatings on Drinking Water Quality	The City of Calgary routinely monitors drinking water for traces of organic chemical contamination. Compounds such as hydrocarbons, plasticizers and solvents are targeted in the screening program. This book reviews some representative case histories of trace chemical contamination in the City of Calgary's distribution system. Topics covered include the type of complaint, what compounds were identified and how these incidents were resolved. In several cases, contamination was traced to internal pipe coating materials. The role of Calgary's Water Quality Monitoring Lab in selecting pipe coating materials and the analytical strategies used in the investigation are also discussed.
CD	The Ripple Effect: The Role of Conservation authorities in Protecting Ontario's Drinking Water	Using cinematography and animated graphics, this DVD covers many source water protection topics in general terms, including: where our drinking water comes from, what happens to water before it gets to our taps, the origins of source water protection in Ontario, the multi-barrier approach to protecting source water, and how conservation authorities are involved in source water protection planning in communities across Ontario. This DVD is aimed at mature audiences, but is also appropriate for high school and late-elementary school students. It is an excellent introductory piece for education forums, open houses and information sessions with interested stakeholders and members of your community.
Book	The Role of Filtration in DOC, UV-254, and SUVA-254 Determinations	This report elucidates the important factors affecting the determination of specific ultraviolet absorbance (SUVA). It develops a standard protocol for SUVA measurement to assure that results from different utilities, laboratories, and research investigations are comparable.
Book	The Rothberg, Tamburini & Winsor Model for Water Process and Corrosion Chemistry	This user's guide to the Rothberg, Tamburini & Winsor Model for Water Process and Corrosion Chemistry helps operators respond to varying initial water quality conditions, assists engineers in designing new or retrofitted water treatment plants, and aids plant managers in conducting economic evaluations of alternative chemical treatment options.

Item	Title	Description
Book	The Self-Evaluation Guide for Decision-Makers of Small Community Water Systems	This workbook is designed to lead decision-makers through all the important phases of small system management and operation so they may assess their own strengths and weaknesses.
Leaflet	The Truth About Pharmaceuticals & Personal Care Products in Your water	This leaflet, written in consumer-friendly language, presents the facts about pharmaceuticals and personal care products in water. It is an excellent resource for customer service representatives and other utility employees to address customer concerns.
Book	The Ultraviolet Disinfection Handbook	This book is an ideal engineering and operations reference for ultraviolet (UV) light water treatment. The book describes the powerful capabilities of UV light as a water disinfectant. It describes the process by which UV inactivates and makes harmless microbes by altering their DNA, and how UV is measured and dosed to inactivate any type of microbe in your source water. This book provides the information you need to plan, purchase, install, and operate a UV installation. This book also provides complete guidance and information on key design issues, including UV transmittance, equipment fouling and aging, equipment location, layout and site constraints, flow and hydraulics, and electric power.
Book	The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization	This book sets out a theory of the growth, crisis, and renewal of societies. Today's converging energy, environmental, and political-economic stresses could cause a breakdown of national and global order. Yet there are things we can do now to keep such a breakdown from being catastrophic. Some kinds of breakdown could even open up extraordinary opportunities for creative, bold reform of our societies, if we're prepared to exploit these opportunities when they arise.
Article	The Use of Ozone and Associated Oxidation Processes in Drinking Water Treatment	This paper summarizes the main applications of ozonation and associated oxidation processes in the treatment of natural waters (surface and ground waters) for drinking water production. In fact, oxidants may be added at several points throughout the treatment such as pre-oxidation, intermediate oxidation, or final disinfection. The numerous effects of chemical oxidation are discussed, removal of inorganic species, aid to the coagulation-flocculation process, degradation of organic matter, and disinfection. Of prime importance in potable water production is the removal of organic matter (natural humic substances, as well as micropollutants, especially pesticides) to avoid degradation of the distributed water (mainly bad odours and tastes, formation of disinfection by-products such as trihalomethanes, and microbial regrowth in the distribution system). Consequently, this point has been particularly detailed in this paper.
DVD	The Walkerton Tragedy	This video provides a review of the 2001 Walkerton Ontario outbreak.
Booklet	The Water Story	This booklet is fun and educational for children. It is full of games and activities to teach children about water, its many uses, and the water cycle.
DVD	The Water Works: From Source to Tap	This fun-filled youth-education video takes kids on a tour of a municipal water plant. Basic scientific principles involved in water treatment are explained.
Book	Thinking Outside the Bill: A Utility Manager's Guide to Assisting Low-income Water Customers	Water costs generally are rising faster than both inflation and income for low-income households. This guide will assist water utilities needing to raise their rates in keeping water affordable for low-income customers. This guide provides information about the ability of low-income customers to afford water service, tools to determine if there is a serious affordability problem in the community a utility serves, types of programs water utilities are using to help their low-income customers better afford water service, simple tools utilities can implement in the short term, and steps to take immediately to enhance low-income customers' ability to afford water service.

Item	Title	Description
Booklet	Thirstin's Wacky Water Adventure	This is a fun fact and activity booklet for children that teaches about the importance of protecting and conserving drinking water.
Book	Total Water Management: Practices for a Sustainable Future	This book explains what total water management (TWM) means in unambiguous language. It expands, explains, and illustrates TWM concepts and how to apply them. It is a useful, practical book on water planning for water resource managers, designed to help managers fairly allocate limited water resources among competing users, based on social values, cost-effectiveness, and the needs of natural water systems.
DVD	Train the Trainer: Walkerton Clean Water Centre	This DVD includes a Channel Six news story covering the Train the Trainer session, held June 18, 2007, at the Walkerton Clean Water Centre.
Book	Training Guide: An Introduction to Water Loss and Leak Detection	This book discusses water loss and leak detection. Utilities can no longer tolerate inefficiencies in water distribution systems and the resulting loss of revenue associated with underground water system leakage. Increases in pumping, treatment and operational costs make these losses prohibitive. To combat water loss, many utilities are developing methods to detect, locate, and correct leaks.
Book	Transport of <i>Escherichia Coli</i> in Saturated Porous Media	This book studies the transport of E. coli in aquifers under saturated conditions. The book includes information on colloid filtration theory, physical sieving, geochemical heterogeneity, variable deposition rate coefficients, and preferential flow mechanisms.
Book	Treatment of Waters With Elevated Organic Content	Temporary increases in the organic content of raw waters from heavy rains or snowmelt can lead to a number of operational problems as the waters are difficult to treat. Under conditions of high organic loading the performance of treatment plants can rapidly deteriorate. This research report provides practical solutions for dealing with treatment problems associated with high organic content in raw waters. Researchers tested the efficacy of various treatment strategies for dealing with high organic content waters. In addition, the research identifies the effect of organic content on floc size and breakup and assesses the impact of floc strength on downstream clarification processes.
Book	Triclosan Reactivity in Chlorinated and Monochloraminated Waters	This report studies the reaction of triclosan, a commonly used anti-microbial agent in personal care products, with free chlorine and monochloramine. It characterizes the kinetics, mechanism, and products of interactions, evaluates the influence of water quality on the reaction rates, and develops mechanistic models that describe the reactions occurring.
Booklet	U.S. EPA Fact Sheets on: POU/POE Units & Home Water Testing	The National Drinking Water Clearinghouse assists small communities by collecting, developing and providing timely information relevant to drinking water issues. This particular edition includes a fact sheet on home water testing, and a question and answers segment based on Point-Of-Use and Point-Of-Entry Units.
Book	Ultraviolet Light Disinfection Technology in Drinking Water Application – An Overview	This report supports the Office of Ground Water and Drinking Water (OGWDW) effort to develop the Ground Water Disinfection Rule (GWDR). Transient non-community (TNC) and non-transient non-community (NTNC) ground water supply systems with little or no distribution systems may be amenable to alternative disinfection technology applications. This report presents a preliminary investigation of ultraviolet light (also called ultraviolet radiation) use as a ground water disinfection technology. Topics covered include: assessment of ultraviolet light efficacy, viability, and operational factors; costs and comparison of ultraviolet light to other disinfection technologies; case studies; destruction of VOCs and other priority organics; regulations and standards for drinking water disinfection using ultraviolet light.

Item	Title	Description
Book	Ultraviolet Light Treatment in Water and Wastewater Sanitation	This book integrates the fundamental physics applicable to water and wastewater sanitation, the engineering aspects, and the practical experience in the field. The text analyzes the concerns associated with this application of UV light and brings together comprehensive information on the presently available UV technologies applicable to water and wastewater treatment including: lamp technologies; criteria of evaluation and choice of technology; fundamental principles; performance criteria for disinfection; design criteria and methods; synergistic use of UV and oxidants (advanced oxidation); and functional requirements and potential advantages and drawbacks of the technique.
CD	Ultraviolet Light Treatment of Drinking Water and Wastewater: An Introduction to UV Water Treatment Technologies and Processes	These <i>PowerPoint</i> presentation handouts provide information on the <i>Ultraviolet Light Treatment of Drinking Water and Wastewater: An Introduction to UV Water Treatment Technologies and Processes</i> presentation delivered at the Walkerton Clean Water Centre, May 24th to 25th, 2006.
DVD	Unidirectional Flushing	Unidirectional flushing uses targeted, high-velocity water flow moving from source to hydrant in an outbound direction to scour the distribution system. This DVD explains concepts and techniques of unidirectional flushing, how to develop a flushing plan using paper maps, how computer aided mapping simplifies the project, benefits verses traditional flushing techniques, and the benefits to consumers and the community. Viewers also watch a case study that explains Virginia Beach, Virginia's unidirectional flushing program.
Book	Urban Water Supply Handbook	This book brings together all of the pertinent topics on planning and managing the urban water supply infrastructure. In one book, you get information you need on the issues that continue to gain importance to water utilities, including water demand, balancing multiple water uses, pricing, drought management, security, vulnerability assessment, regional water supply models, capacity expansion, competition, privatization, outsourcing, risk management, performance indicators, optimizing operation and maintenance, optimizing rehabilitation and replacement, water withdrawal permits and water transfers, geographic information systems, and integrated management systems. For those wishing to expand their knowledge of planning, managing, and operating water distribution systems, this book will help you meet the challenges of today's changing water supply landscape.
Book	Use of Chlorine Dioxide and Ozone for Control of Disinfection By-Products	Control of disinfection by-products (DBPs) in drinking water is becoming increasingly critical as regulatory requirements are calling for higher levels of disinfection while at the same time mandating lower maximum contaminant levels of DBPs. Many utilities have switched to alternative disinfectants such as ozone and chlorine dioxide (ClO ₂) to minimize chlorinated DBPs. Contra Costa Water District undertook a full-scale demonstration study using ClO ₂ and ozone to evaluate the potential benefits of combining these two oxidants. The full-scale demonstration was conducted at the 40 mgd Randall-Bold Water Treatment Plant, which is a direct filtration plant that uses preozonation to enhance the filtration process and postozonation for primary disinfection. During the study, ClO ₂ was added to the raw water ahead of the preozonation contactor. The testing component of the study was divided into three phases that led to long-term full-scale operation using ClO ₂ in combination with ozone. Special full-scale testing was conducted to evaluate bromate mitigation techniques such as preoxidation with ClO ₂ , pH adjustment, and ammonia addition.

Item	Title	Description
Book	Using Oxidants to Enhance Filter Performance	This research report describes the use of oxidants before filtration. Adding an oxidant before filtration can reduce filtered-water particle count by as much as an order of magnitude. A small to moderate dosage of chlorine, chlorine dioxide, potassium permanganate, or ozone added as water enters the filter, with little or no added detention time, can achieve such reduction in particle count even if your filtered-water turbidities are currently less than 0.1 Nephelometric Turbidity Unit (NTU). This method can improve the filtered water quality for any size water system.
Book	Using Reclaimed Water to Augment Potable Water Resources	This is the ideal guide for utilities considering indirect potable water reuse to help ease water shortages or delay the development of new water supplies. This book will help utilities understand all of the issues so that they can make an informed decision.
Article	Using Reverse Osmosis to Remove Agricultural Chemicals From Groundwater	Suffolk County, N.Y., has examined its groundwater for agricultural and organic contaminants since 1978. Recent discoveries of specific chemicals in private wells increased the concern over contamination and spurred a study to determine a cost-effective system for removing agricultural chemicals from groundwater. This study involved tests of cellulose acetate, spiral-wound thin-film composite, and hollow-fibre membranes, which showed that reverse osmosis should be considered for pesticide and organics removal.
Book	Using Technology to Conduct a Contaminant Source Inventory: A Primer for Small Communities	This booklet was written to provide small communities with information and recommendations regarding the use of technology to conduct contaminant source inventories. Currently, available technologies that have the potential to be useful to small communities interested in minimizing drinking water threats and risks are identified. This book, combined with currently existing guides on assessing threats to drinking water supplies, will help small communities reduce the potential for legal liability from contaminated water, reduce penalties and fines for noncompliance with drinking water standards, and reduce threats to public health.
Book	UV Disinfection and Disinfection By-Product Characteristics of Unfiltered Water	This report investigates the impact of variable water quality on the effectiveness of UV disinfection and Disinfection By-Products (DBPs.) It addresses the impacts of turbidity, algae, and total organic carbon and identifies opportunities for DBP control, both concentration and type, through the use of UV disinfection as the primary disinfectant with various residual disinfectants.
Book	UV Disinfection at the East Bay Municipal Utility District	The East Bay Municipal Utility District operates six water treatment facilities that provide drinking water to approximately 1.3 million people in Alameda and Contra Costa counties of California. The main water source is mountain snowmelt that comes to the treatment plants through three 90-mile closed-pipe aqueducts. The aqueduct is treated with chlorine to provide primary disinfection and to suppress biological growth in the aqueduct. The utility researched the use of ultraviolet light, which has the benefit of not forming disinfection by-products, for primary disinfection to partially or completely replace chlorine.
CD	UV Disinfection for Large Water Treatment Plants	Identifies issues that are critical to the implementation of large-scale UV disinfection systems. Develops strategies to address those issues and validates those strategies where possible.
Presentation Handouts	UV Disinfection in Water Recycling and Drinking Water: California and the United States	These <i>PowerPoint</i> presentation handouts summarize a presentation on UV Disinfection in Water Recycling and Drinking Water.
Presentation Handouts	UV Disinfection: Municipal Wastewater and Drinking Water	These <i>PowerPoint</i> presentation handouts summarize a presentation on UV Disinfection in Municipal Wastewater and Drinking Water.

Item	Title	Description
Article	UV Dose Required to achieve Incremental Log Inactivation of Bacteria, Protozoa and Viruses	This journal article from <i>IUVA News</i> , Volume 8 Number 1, discusses the ultraviolet (UV) dose required to achieve incremental log inactivation of bacteria, protozoa, and viruses.
Book	Votre puits, votre sante	This book was compiled by Green Communities Canada, in cooperation with the Ontario Ground Water Association, Ontario Federation of Agriculture, Conservation Ontario, and the Association of Supervisors of Public Health Inspectors of Ontario. (Available in French only.)
DVD	Walkerton Clean Water Centre Overview - April 2008	This DVD provides an overview of the Walkerton Clean Water Centre.
DVD	Walkerton: the Forgotten Stories	This DVD includes personal stories from the people of Walkerton, Ontario collected five years after the Walkerton water tragedy.
Book	Wastewater Collection System Operator Certification Studybook	This latest studybook will help wastewater collection system operators expand their knowledge of their chosen field and assist them in preparing for certification examinations. Questions presented cover background knowledge, support systems, operation and maintenance, supervision and management, safety procedures, design and construction, electrical pumps and motors, and mathematics. Because of the importance of good mathematical skills to passing certification examinations, detailed solution sets are provided for the mathematical problems. All numerical problems are presented in both Imperial and metric units. The book includes a comprehensive glossary and reference list.
Book	Wastewater Microbiology: A Handbook for Operators	Wastewater treatment is a microbiological process. Microorganisms, such as bacteria and protozoa breakdown and remove nutrients and organic material in wastewater. A wastewater treatment plant operator's job is to control this biological process. That is why wastewater operators need to understand basic microbiology, as well as the types of microorganisms that are used in the treatment of sewage, and how the microbes do their job in the wastewater treatment process. This book covers wastewater treatment system overview, general microscopy, bacteria, protozoa, metazoans, filamentous bacteria, microbiology, and process control.
CD	Wastewater Microbiology: A Handbook for Operators	Wastewater treatment is a microbiological process. Microorganisms, such as bacteria and protozoa breakdown and remove nutrients and organic material in wastewater. A wastewater treatment plant operator's job is to control this biological process. That is why wastewater operators need to understand basic microbiology, as well as the types of microorganisms that are used in the treatment of sewage, and how the microbes do their job in the wastewater treatment process. This CD includes a glossary with 85 color photographs of microorganisms.
Book	Wastewater Operator's Guide to Preparing for the Certification Examination	Formerly Water Environment Federation (WEF)/ Association of Boards of Certification (ABC) Certification Study Guide for Wastewater Treatment Personnel, this newly revised and expanded version of the WEF/ABC publication is designed to help operators prepare more effectively for certification exams. Includes 240 questions based on validated need-to-know criteria for four skill levels (Operator Level I - IV). For each of the seven need-to-know criteria, the Guide provides a need-to-know matrix, suggested topics for study, sample questions referenced to specific technical sources, practice with math problems in both metric and Imperial units and feedback including detailed solutions for math problems.

Item	Title	Description
Book	Water Adventures Around the World	<i>Water Adventures Around the World</i> tells the story of Ryan and Kendra. They have a magical postcard that instantly transports them wherever they want to go around the world. In each place they visit, they discover fascinating facts about our planet's water, geography, animals, and more.
Book	Water and Ecosystems: Managing Water in Diverse Ecosystems To Ensure Human Well-being	The international workshop from which this book developed, <i>Water and Ecosystems: Water Resources Management in Diverse Ecosystems and Providing for Human Needs</i> , was jointly organized by the United Nations University's International Network on Water, Environment and Health (UNU-INWEH) and United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and the Biosphere Programme (MAB) and International Hydrological Programme (IHP). This meeting brought together many key partners in the protection and management of water resources in selected ecosystems.
Booklet	Water and Me	This activity book for children from kindergarten through second grade is published by the National Association of Conservation Districts and was developed by a group of employees from the Southwest Minnesota Area Association of Soil and Water Conservation Districts. Starting with basic thoughts at an early age will create in children an appreciation for natural resources and an ethical background which may be applied when exploring environmental concerns.
Book	Water and Wastewater Calculations Manual	This book includes chapters on streams and rivers, lakes and reservoirs, groundwater, fundamental and treatment plant hydraulics, public water supply, and wastewater engineering. All calculations have been reviewed and updated with step-by-step solution examples, explanations, and water and wastewater rules and regulations. An indispensable reference for civil and environmental engineers, water and wastewater operators, and students.
Book	Water and Wastewater Operations: Level I Manual – Vol. A	The manual is listed as a study reference (by Ontario and Alberta) and covers water treatment, water distribution, wastewater treatment and wastewater collection at various levels.
Book	Water and Wastewater Operations: Level I Manual – Vol. B	The manual is listed as a study reference (by Ontario and Alberta) and covers water treatment, water distribution, wastewater treatment and wastewater collection at various levels.
Book	Water and Wastewater Operations: Level II Manual	The manual is listed as a study reference (by Ontario and Alberta) and covers water treatment, water distribution, wastewater treatment and wastewater collection at various levels.
Book	Water Audits and Leak Detection	This book includes instructions for conducting a system-wide water audit, developing a leak detection and repair program, and evaluating your program's effectiveness. Also included in the book are sample worksheets and forms.
Book	Water Audits and Loss Control Programs	This book provides complete guidance on water audits, leak detection, and water loss control programs for drinking water systems. This edition is significantly expanded with important new information on a major advancement in water-auditing methodology. This method provides true accountability of real losses (leaks) and apparent losses (billing errors, meter inaccuracy), so water utilities may quickly recover lost revenue.

Item	Title	Description
Book	Water Basics for Decision Makers	This book is designed to be a handy, one-stop information resource for local decision makers all stakeholders in water and wastewater systems. This book answers questions about utility management, rate setting, water and wastewater treatment plant operations, the science of water and wastewater treatment, water quality and public health, water storage and distribution, source water development, infrastructure maintenance, finances, and much more. Technical subjects are explained in a nontechnical style, so readers do not need a technical background in water or wastewater treatment.
Book	Water Chlorination/Chloramination Practices and Principles (M20)	This manual provides a complete information resource on the uses of chlorine and chloramines in municipal water treatment. The manual focuses on chemical properties, disinfection mechanisms, feed rates, handling, storage, and safety. Recent developments in equipment, disinfection strategies, and techniques to minimize the formation of disinfection by-products are also covered in detail. Appendices include dechlorination practices, CT values for inactivation of Giardia and viruses by free chlorine and other disinfectants, chlorine residual test methods, and disinfection of facilities.
Booklet	Water Conservation In Your Home	Most people only think seriously about water conservation in times of drought. However, good habits of not wasting precious water can be applied every day. This booklet offers facts and information on how to conserve water in your home.
Book	Water Conservation Plan Guidelines	Strategic use of water conservation can help extend the value and life of infrastructure assets used in both water supply and wastewater treatment, while also extending the beneficial investment of public funds through the State Revolving Fund (SRF) and other programs. The first part of the document introduces the Guidelines and provides information about their nature and possible use. The second part of the document, written for water systems, is an overview to the organization, content, and use of the Guidelines. The next three parts contain the water conservation plan Guidelines: Basic, Intermediate, and Advanced. The Basic Guidelines are designed for use by water systems serving populations of 10,000 or fewer. The Intermediate Guidelines are designed for water systems serving between 10,000 and 100,000 people. The Advanced Guidelines are designed for water systems serving more than 100,000 people.
Book	Water Distribution Operator Training Handbook	This handbook provides a complete introduction to water distribution system operation and equipment. Coverage includes water pipe types, installation practices, excavation, pipe flushing and rehabilitation, storage tanks, water wells, pumps, motors, hydrants, meters, valves, corrosion prevention, leak detection, instrumentation and control, maps, records, and maintenance. In addition, the text covers mathematics required by operators, basic hydraulic concepts, state and federal drinking water regulations, health issues, and maintaining water quality in the distribution system. Its many cutaway illustrations, equipment photos, metric conversions, formulas, and equations make it an ideal day-to-day reference.

Item	Title	Description
DVD	Water Distribution Operator Training: Hydrants	Fire hydrants that operate properly and provide adequate flow can make the difference between losing, or saving, property and lives during a fire. This DVD explains the importance of maintaining fire hydrant reliability for firefighting. Other uses are also described, including distribution pipe flushing, flow testing, and filling water tank trucks. Operators learn why hydrant use must be monitored and controlled by the water utility to maintain security and safety, the different types of wet-barrel and dry-barrel fire hydrants and their operation, typical hydrant design, hydrant part names, breakaway designs, use of hydrant wrenches, correct procedures for opening and closing hydrants, location and use of auxiliary valves, hydrant inspection, pressure- and leak-testing, placement, installation, maintenance and repairs, hydrant color-coding, safety and security devices, and recordkeeping.
DVD	Water Distribution Operator Training: Pumps and Motors	Pumps and motors 'power' the distribution system, filling the water lines and delivering water to the customer's tap. This DVD illustrates many types of pumps commonly used in water distribution systems, with emphasis placed on centrifugal pumps. The DVD illustrates volute, diffuser, single and double suction, axial flow, mixed-flow, vertical turbine, submersible, deep-well, in-line booster, jet, and other pumps. Operators are shown various types and operation of electric motors used for water pumps. They learn about three-phase motors, control of heat, motor starters used for large pumps, remote and automatic controls, and motor installation. Operators learn advantages and disadvantages of centrifugal pumps, operating principles of the different pumps, where in the distribution system each type of pump is used, pump operating curves, pump sizing, priming, inspection and maintenance procedures, and recordkeeping.
DVD	Water Distribution Operator Training: Services and Meters	A water service line brings the drinking water from the water main to the customer's home or business. A water meter connected to the service line measures the amount of water the customer uses, so the customer is billed properly. This DVD shows the distribution operator how services are connected, or tapped, to water mains using either dry taps or wet taps, service line sizing, commonly used pipe materials, meter types and operating principles, meter sizing and installation, types of meter boxes and pits, and shutoff valves (or curb stops). The DVD also covers service line maintenance, repairs, how to thaw frozen service lines, locating leaks, manual and automatic or remote meter reading, meter inspection for damage or tampering, meter testing, and recordkeeping.
DVD	Water Distribution Operator Training: Valves	Critical components in water distribution systems, valves control the flow, pressure, and direction of water, isolate water main breaks to minimize customer inconvenience, and protect water from contamination. This DVD describes the different types of distribution valves, and illustrates with animation how each type of valve works. The viewer learns where in a distribution system each valve type is chosen for use and why. Importantly, the viewer learns correct procedures for safely opening and closing valves to prevent damage to pipes and valves or injury to the operator. The DVD covers valve connections, pressure-reducing and pressure-relief valves, water hammer prevention, altitude valves, backflow prevention valves, toilet valves, power-actuated valves, valve vaults and valve installation, valve inspection, maintenance, repairs, and recordkeeping.

Item	Title	Description
DVD	Water Distribution Operator Training: Water Mains	Water mains represent the largest single investment in a distribution system. Water mains have long service lives; some mains are more than 100 years old and still have service life left. Water system piping can generally be divided into two classes -- transmission mains and distribution mains. In this DVD, distribution employees learn about the many types of pipe currently in use, cast iron, ductile iron, steel, concrete, asbestos-cement, PVC, PE, and fiberglass. They learn the advantages and disadvantages of each pipe type, its internal pressure and external load ratings, installation practices, bedding and support, joining, fittings, tapping, pipe handling safety, causes of internal and external corrosion, corrosion protection, pipe rehabilitation, repair, linings, pipe inspection techniques, maintenance, and recordkeeping.
Book	Water Distribution System Monitoring: A Practical Approach for Evaluating Drinking Water Quality	This book explores new procedures and a monitoring device for obtaining representative water quality samples that provide higher quality water chemistry and microbiology data than other available methods. It outlines the new procedures and provides equipment lists and assembly instructions for the monitoring device as an open-source technology.
Book	Water Distribution System Operation and Maintenance: A Field Study Training Program	This course is designed to train operators in the practical aspects of operating and maintaining water distribution systems, emphasizing safe practices and procedures. Topics include the role and duties of water distribution system operators, procedures for operating and maintaining clear wells and storage tanks, components and characteristics of distribution system facilities, operating and maintaining distribution systems, maintaining water quality in the system, disinfecting new and repaired facilities as well as water delivered to consumers, and techniques for recognizing hazards and developing safe procedures and programs. Operators learn to analyze and solve problems when they occur and perform mathematical calculations commonly associated with operating a distribution system.
Book	Water Distribution Systems Handbook	This handbook provides everything needed to design, analyze, operate, maintain, and rehabilitate water distribution systems. More than 20 world-renowned experts collaborated to explain valuable topics, from hydraulic design for pipelines and tanks to water quality issues, computer models, and rehabilitation/replacement information.
Book	Water Efficiency Best Management Practices	This booklet sets out 12 best management practices (BMP) for making your system water efficient. Each BMP contains a description, an outline of its strategic significance in a plan to make water use more efficient, the benefits, costs and a listing of information sources that can be accessed for further information. This publication was prepared by the Ontario Water Works Association Water Efficiency Committee.
Book	Water Efficiency Programs for Integrated Water Management	This book identifies direct and indirect costs and benefits of water efficiency incentives and measures in a format that is useful for capital and strategic planning efforts. It provides a framework to evaluate demand-side management options with supply-side options and establishes the role of water efficiency programs as a component of an integrated water resources management strategy.
CD	Water Efficiency Programs for Integrated Water Management	This CD identifies direct and indirect costs and benefits of water efficiency incentives and measures in a format that is useful for capital and strategic planning efforts. It provides a framework to evaluate demand-side management options with supply-side options and establishes the role of water efficiency programs as a component of an integrated water resources management strategy.

Item	Title	Description
Book	Water Efficiency: A Guidebook for Small & Medium-sized Municipalities in Canada	This guidebook is written for small and medium-sized municipalities and water utilities thinking about starting a water efficiency program. It is intended to provide a general overview of water efficiency planning, and to describe the specific steps you can follow to design the best plan for your municipality or utility. The guidebook offers a menu of possible conservation techniques and approaches from which you can choose.
Book	Water Filtration Practices	This book provides experienced water operators with practical guidance on the operation and maintenance of pretreatment, rapid rate granular media filtration, slow sand filtration, and diatomaceous earth filtration systems. The book emphasizes the 'how to' aspects of water filtration and includes recommended procedures for operating, monitoring, and maintaining all types of filters.
Booklet	Water Health Series: Bottled Water Basics	This booklet provides information on bottled water. It includes information on the basics of bottled water, taste considerations, contaminants, certification, treatment, advice for people with compromised immune systems, the source of water and contact information for people with additional questions or concerns.
CD	Water Images on Tap Volume 3	This collection of water-related photos and illustrations includes 142 unique images.
Book	Water Infrastructure at a Turning Point: The Road to Sustainable Asset Management	This report provides a foundational knowledge of the issues surrounding our aging water infrastructure and offers a common sense, affordable approach to managing water infrastructure assets. There has been much discussion about the deteriorating physical condition of the water infrastructure. The expense and effort required to replace is so daunting it seems impossible to accomplish. Our water and wastewater infrastructure was built over generations and can be rebuilt at an affordable pace if we make smart decisions now. The task for our generation is to initiate and manage a modern, methodical, and sustainable asset renewal process. Included is a Microsoft PowerPoint presentation on CD titled <i>Water Infrastructure at a Turning Point</i> . The presentation illustrates major points about water infrastructure replacement and asset management in a quick and simple manner -- perfect for presenting to utility employees, city councils, and other groups who have an interest in city water infrastructure needs.
Book	Water Management: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. Protecting your water supplies will safeguard your family's health, the well-being of your farm operation and downstream users. Water Management explains the water cycle. It follows the pathways of water as it moves into and around major features of your property, the house, farm buildings, fields, and natural areas. Potential sources of contamination for ground and surface water are uncovered. Filled with practical management options, this 68-page book will help you reduce impacts of farm operations on water quality and quantity.
Booklet	Water Play	This activity booklet is designed to teach children about water.
Leaflet	Water Protection At Home	This leaflet was published by the Watershed Committee of the Ozarks. It includes information about pollution and areas where it may be coming from. It also gives advice on how to be water-wise at home.

Item	Title	Description
Book	Water Protection Toolkit for Local Officials Connecting Land Use With Water Quality	Addressing Water And Natural Resource Education (AWARE) Colorado developed this toolkit of research-based, non-advocacy information to give decision makers a resource to better understand approaches to protecting water quality in their communities and watersheds. The toolkit is not intended to provide technical or legal recommendations. Rather, its purpose is to give communities ideas about ways to protect water quality, and suggested resources for learning more. The toolkit includes proven management strategies and practices appropriate for Colorado. The toolkit provides background information about: the water quality impacts of land use; polluted runoff and impervious surfaces; the importance of internal and external collaboration for communities; water-protective planning and zoning tools; strategies to prevent, or reduce, polluted runoff from transportation infrastructure such as streets and parking lots; ways to improve landscaping practices and enhance community tree cover; state and federal regulatory programs that impact local governments; resources for additional guidance.
Book	Water Quality & Treatment: A Handbook of Community Water Supplies	This text provides a complete technical reference on municipal water quality and treatment. It begins by explaining drinking water regulations, health issues and goals, water chemistry, pathogens, and other organic and inorganic contaminants. Following this, it goes into detailed explanations of water treatment unit processes (including membrane technologies), disinfection, fluoridation, and maintaining water quality in the distribution system. This book provides sample problems and solutions in each of the chapters. Contents include: drinking water quality standards, regulations, and goals; health and aesthetic aspects of water quality; guide to selection of water treatment processes; source water quality management; air stripping and aeration; coagulation and flocculation; sedimentation and flotation; granular bed and precoat filtration; ion exchange and inorganic adsorption; chemical precipitation; membranes; chemical oxidation; adsorption of organic compounds; disinfection; water fluoridation; water treatment plant residuals management; internal corrosion and deposition control; microbiological quality control in distribution systems.
Book	Water Quality Complaint Investigator's Field Guide	This guide provides procedures to help a customer complaint investigator determine the source of a water quality problem. Eight major categories describe the majority of customer complaints about water quality. In each category, the guide describes the possible causes and solutions. Categories of complaints covered in this field guide include: air in water/milky water; dirty water/coloured water/foreign particles in water/staining; hard water/scale/spots on glassware; sickness/skin irritation; tastes/odours; worms/insects in water; aquarium fish problems; garden damage.
Booklet	Water Quality Improvements for Farmstead and Rural Home Water Systems	This booklet is designed for farmstead and rural home water system owners. It provides information on how to improve the quality of water, through disinfection, testing and treatment.
Book	Water Quality in Small Community Distribution Systems: A Reference Guide for Operators	This book provides a comprehensive picture of the impact of the water distribution system network on water quality. The book was designed mainly to assist the operators and managers of small and medium-sized public water systems.

Item	Title	Description
Book	Water Quality in the Distribution System	This is a compilation of some of the best papers presented at American Water Works Association (AWWA) conferences and published in AWWA periodicals between 2002 and 2004 on water quality in potable water distribution systems. Drinking water quality can degrade as the water travels through the distribution system. Water can pick up tastes, odours, or colours from pipeline corrosion. Water can also become unsafe to drink if distribution pipes and storage tanks contain pathogenic microbes or high concentrations of disinfection by-products. Even the most aggressive distribution system operation and maintenance program, at best, can only maintain water quality conditions provided at point of entry to the distribution system. Information is organized into nine sections: introduction, microbiological issues, chemical and physical issues, chloramine conversion issues, corrosion control, rapid or real-time monitoring, operational practices, flushing to maintain water quality, and water quality computer modeling.
Journal	Water Quality Research Journal of Canada	The Water Quality Research Journal of Canada is a quarterly publication. It is a forum for original research dealing with the aquatic environment publishing peer-reviewed , scholarly articles on many different subjects including the impact of contaminants on aquatic ecosystems, contributions of pollutants from the gas and solid phases to aquatic systems, drinking water, wastewater and stormwater treatment technologies and strategies, exotic species, biodiversity and aquatic species at risk. It also covers subjects such as groundwater remediation, assessing surface and subsurface quality, conservation and protection of aquatic environments, regulations, strategies and policies related to water pollution, social science issues related to water quality and all aspects of water quality and pollution control.
Article	Water repurification via reverse osmosis	This article discusses how San Diego, California is developing new water sources to serve its arid region. Water repurification, in which reclaimed water receives additional advanced water treatment (AWT) prior to its discharge to a potable water supply reservoir, is one of the encouraging alternatives being implemented by the City to reduce the region's reliance on less dependable imported water. The City adopted the reverse osmosis (RO) process as the foundation for the AWT because RO has been shown to accomplish the best overall removal of organics, trace metals and total dissolved solids. In addition, RO has the potential for removal of all classes of pathogens. Pursuant to the work performed at the Aqua2000 Research Center the Department of Health Services issued a letter on March 4, 1998, approving the Water Repurification System. The system consistently produces a product water that exceeds all drinking water standards.
Book	Water Residuals to Reduce Soil Phosphorus	Phosphorus is the compound most often implicated in the degradation of surface water quality. Originating primarily in agricultural runoff of animal manures used as fertilizers, phosphorus is an essential plant nutrient and is the controlling factor in aquatic algae growth. Algae blooms cause a number of undesirable consequences including taste-and-odour events, interference with water treatment plant filters, exacerbating disinfection by products, and production of potentially toxic metabolic compounds. Recent research has identified unique chemical and physical characteristics of water treatment residuals that can lead to the use of liquid or solid residuals in direct land application to reduce phosphorus runoff. This reuse of treatment residuals is a win-win situation for the treatment plant; it allows the plant to safely dispose of its residuals, and at the same time it helps protect the community's source water from phosphorus pollution. This study provides the latest information on the use of water treatment residuals in soil phosphorus reduction.

Item	Title	Description
Book	Water Resources Planning (M50)	This manual provides utility guidance on how to develop an integrated resource plan for ensuring adequate water supplies to accommodate projected future water demands. Contents include: introduction to water resources planning; public involvement in water resources planning; water demand forecasting; water rights and policy; evaluation of surface water and groundwater sources; evaluation of other sources; water quality; hydrologic modeling; regulatory issues; environmental impact analysis; watershed management and groundwater protection; economic feasibility; integrated resource planning; case studies.
Journal	Water Science & Technology	Water Science & Technology publishes peer-reviewed papers on all aspects of water quality management and pollution control. Papers are selected by a rigorous peer review procedure with the aim of rapid and wide dissemination of research results, development and application of new techniques, and related managerial and policy issues. Scientists, engineers, consultants, managers and policy-makers will find this journal essential as a permanent record of progress of research activities and their practical applications.
DVD	Water Supply Operations: Coagulation, Flocculation, & Sedimentation	The most common method of removing turbidity from source water during drinking water treatment is a combination of coagulation, flocculation, and sedimentation, followed by filtration. This DVD explains and demonstrates coagulation, flocculation, and sedimentation processes. It defines the three treatment processes, gives a step-by-step guide for what to expect at each stage of treatment, and explains how to optimize each process for maximum effectiveness and minimum cost.
DVD	Water Supply Operations: Disinfection Strategies	New and changing technologies, as well as ongoing findings into possible health effects of various disinfectants, make selecting the proper disinfection treatment one of the most challenging issues facing water providers today and tomorrow. This 20-minute video instructs in the following areas of the water disinfection process: why disinfection is necessary in drinking water treatment; types of waterborne disease; review of 2001 Walkerton Ontario and 1993 Milwaukee Wisconsin outbreaks; Surface Water Treatment Rule; disinfection processes - heat, ultraviolet radiation, chlorine, chloramines, with operational issues, advantages, and disadvantages of each; disinfectant residuals and disinfection by-product formation; source water issues.
DVD	Water Supply Operations: Distribution Systems	Water operators receive fundamental training in the facilities, equipment, operation, and maintenance of municipal water distribution systems. Topics include: water sampling; water quality; distribution systems design; pipe types; valves and appurtances; storage tanks; corrosion mitigation; pipeline rehabilitation; pressure and flow; cross-connections and backflow; disinfectant residuals; pipe flushing and cleaning; and leak detection.
DVD	Water Supply Operations: Filtration	Filtration is a major step in the multiple-barrier approach to water treatment. By straining water through layers of sand, anthracite, or other media, the filtration process removes organic and inorganic matter, bacteria, and other contaminants, helping to make the water safe to drink. Combined with proper chemical disinfection, water filtration is an indispensable tool for preserving consumer confidence and safeguarding public health. This 20-minute video trains in why filtration is used in water treatment, how gravity filtration works, common filtration processes, and filter operations.
DVD	Water Supply Operations: Flushing and Cleaning	This DVD trains water operators in equipment and procedures for flushing and cleaning watermains. It explains the reasons for pipe flushing, flushing methods, scheduling and record keeping, public notification, swabs, pigs, scrapers, chlorination, dechlorination, and safety procedures.

Item	Title	Description
DVD	Water Supply Operations: Membrane Technology	In the past, the expense of constructing and operating a membrane water treatment facility was prohibitive for all but specialized uses, but membrane treatment is now a viable option for many cities. This DVD provides an overview of all common pressure membrane processes, microfiltration, ultrafiltration, nanofiltration, and reverse osmosis. It teaches operators basic membrane theory, selection based on type of contaminant to be removed (including desalination), process operation, equipment installation, and maintenance. The program also explains pretreatment for membrane treatment, membrane fouling, residuals disposal, and energy requirements.
DVD	Water Supply Operations: Ozone and UV	This DVD provides to operators practical instruction in the use of ozone and ultraviolet for drinking water treatment. The DVD explains basic theories of ozone and ultraviolet technologies, common applications and installations within the treatment train, maintenance, costs, and levels of disinfection that can be expected from these technologies.
DVD	Water Supply Operations: Source Water Protection	Source water protection programs are well worth the cost and act as effective insurance against contamination and its health and financial implications. It is far less expensive for a utility to protect its source waters from contamination than it is for them to remove contaminants from water. This video discusses general source water protection with a focus on point and nonpoint pollution. It looks at different types of contaminants and discusses protecting the source help make water treatment easier and less expensive.
VHS	Water Supply Operations: Turbidity Measurement/ Particle Counting	This video explains the role turbidimeters and particle counters play in measuring the clarity of water and assesses the pros and cons of each. It also discusses nephelometric turbidimeters and various particle counters, and how both can be used effectively. This video shows why particle counting is becoming an important analytical tool.
Book	Water Supply Systems Security	This book provides security methodologies for water supply infrastructure. The wide set of topics covered in the book range from types of threats to various levels of vulnerability assessments, risk assessments, reliability assessments, surveillance hardware, contamination detection devices, and many other pertinent topics of water system security.
DVD	Water System Security: Biological Threat & Mitigation	Terrorists who possess dangerous biological agents are likely to consider water supplies to be potential targets, security experts warn. This video answers the questions water utility managers are asking, including what types of biological agents might terrorists use, what risks do these agents present to water supplies and human health, will ordinary water treatment remove or destroy the agents, and what preventive measures and response strategies can water utilities use against bioterrorism. Water providers need an understanding of bioterrorism issues so they can communicate effectively with local officials and emergency providers in a collaborative effort to protect water supplies and the community.
DVD	Water System Security: Chemical Protection & Security	Public utility security experts agree that a water utility's chemical supplies, such as chlorine gas, are an attractive target for vandals and terrorists because of the vulnerability and potential for harm inherent in toxic chemicals. This video reviews emergency response procedures to spills, security equipment and barriers, protecting chemicals in transport and storage, and protecting automated chemical feed systems.
Booklet	Water System Self-Assessment for Homeowners' Associations	The Environmental Protection Agency has put together this booklet to help you understand your financial and managerial problems and get the help you need. The booklet is divided into two parts, questions and worksheets that will let you check whether you need help with planning, financing or operations, and a separate booklet, the "Resource Guide for Small Drinking Water Systems" that describes organizations and programs that help systems.

Item	Title	Description
Book	Water System Self-Assessment for Mobile Home Parks	The manual contains a series of worksheets with instructions to help owner/operators of mobile home parks perform a financial assessment of their drinking water system and offers suggestions for improvement.
Book	Water Treatment Membrane Processes	This book provides an introduction to the types and uses of membrane filtration in drinking water treatment. Chapters offer detailed discussions of reverse osmosis, nanofiltration, electrodialysis, ultrafiltration, and microfiltration. The text explains membrane fouling, field evaluation, piloting, multiphase processes, ion-exchange membrane reactors, and membrane bioreactors.
Book	Water Treatment Operator Handbook	This guidebook covers everything water treatment operators need to know to perform their jobs and keep in compliance with changing regulations. Every phase of a water treatment operator's job is addressed, including: pretreatment, coagulation, flocculation, sedimentation, filtration, disinfection, softening; aeration, adsorption, iron and manganese removal, fluoridation, corrosion, scaling; reverse osmosis, nanofiltration, ultrafiltration, microfiltration, posttreatment; testing and laboratory procedures; instrumentation and control equipment; safety practices, record keeping, reporting.
Book	Water Treatment Plant Design	This book is your total reference on water treatment plant upgrades or new construction. From initial plans and permits, through design, construction, and startup, this reference is a must for every designer and plant manager. Topics include: design and construction; intake facilities; hydraulics; process residuals; architectural design; structural design; design reliability features; site selection and plant arrangements; environmental impact and project planning; construction goals; operator training and plant startup; pilot plant design and construction. This book is an excellent for students as well as working professionals.
CD	Water Treatment Plant Infrastructure Assessment Manager Version 1.2.0	This CD-ROM program provides water utility managers a precise method to evaluate the condition of water treatment plant infrastructure and assign priority ratings for capital improvements. This program provides an organized way to gather and record information about the physical condition of the total infrastructure of a drinking water treatment facility. The software produces numerical scores rating the condition of each treatment plant infrastructure system and component and the vulnerability of the treatment plant relative to the condition of each component. This enables the manager to both evaluate the condition of systems and equipment and prioritize capital improvements. This software puts the manager in control of treatment plant infrastructure, by providing information on the condition of every system, subsystem, and piece of equipment in the treatment plant. It gives managers the information to prioritize infrastructure improvements and make the best use of funds.

Item	Title	Description
Book	Water Treatment Plant Operation Volume I: A Field Study Training Program	This course is designed to train operators in the practical aspects of operating and maintaining water treatment plants, emphasizing safe practices and procedures. Information is presented on the importance and responsibilities of a water treatment plant operator, sources of water, reservoir management, and intake structures. Operators will learn how to safely operate and maintain coagulation, flocculation, sedimentation, filtration, and disinfection processes. They will also learn to control tastes and odours in drinking water, control corrosion to meet the requirements of the Lead and Copper Rule, perform basic water laboratory procedures, and solve arithmetic problems commonly associated with water treatment plant operations. An important segment of the course provides operators information on overall plant operation and covers topics such as daily operating procedures, regulation of flows, chemical use and handling, records and reports, plant maintenance, safety and security, emergency conditions and procedures, handling complaints, and energy conservation.
Book	Water Treatment Plant Operation Volume II: A Field Study Training Program	This course is designed to train operators in the practical aspects of operating and maintaining water treatment plants, emphasizing safe practices and procedures. Information is presented on drinking water regulations, iron and manganese control, fluoridation, softening, trihalomethanes, demineralization, handling and disposal of process wastes, maintenance, instrumentation, and advanced laboratory procedures. Administrative procedures for dealing with budgeting, setting rates, recordkeeping, personnel administration, public relations, and emergency planning are also covered in this course.
Book	Water Treatment Principles & Design	This one-stop resource has everything you need to know about theory, design, and practical applications for all water treatment processes. You'll find all the information you need about filter design, coagulation, mixing, flocculation, air stripping, and water softening. You'll find treatment strategies for pathogenic microbes, all types of organic and inorganic matter, nuisance organisms, tastes, colours, and odours. You'll also find how to treat for arsenic, radionuclides, calcium, and other less common constituents. In addition, you'll find everything you need on water quality, water chemistry, disinfection, federal water quality regulations, corrosion control, disinfection by-products, and residuals management. Problems, discussion topics, and references are included at the end of each chapter, making this text ideal for classroom use.
Book	Water Treatment Residuals Engineering	All water treatment processes that remove contaminants produce a waste by-product, or residual. That residual may be liquid, solid, a mixture of the two, or a gaseous vapour. This research report is written for engineers who design for the treatment and disposal of water treatment residuals. The book provides engineering, treatment, and disposal data and discussions for all types of water treatment residuals, including those created by coagulant and lime softening, filter backwash water, low-pressure and high-pressure membranes, ion exchange and inorganic adsorption processes, arsenic treatment, radioactive substances, and spent granular activated carbon (GAC). A chapter also discusses the marketing of water treatment plant residuals for beneficial uses.
DVD	Water Treatment: Burlington Water Purification Plant	This DVD was produced at the Burlington Water Purification Plant, located in the Regional Municipality of Halton.

Item	Title	Description
Book	Water Utility Accounting	This reference text explains basic water utility accounting, management, and financial functions. In addition to examining individual functions, you'll find out how these critical areas impact overall utility operations. This book follows and describes the accounting-cycle concept of budgeting, recording, and reporting. It explores how the finance, audit, and information system functions work in conjunction with accounting to comprise a utility's major financial management activities. The book includes numerous examples of accounting principles and procedures in action.
Book	Water Utility Management (M5)	Water utility management is challenging because it is unlike managing any other industry. Water utility managers guide organizations whose product -- safe drinking water -- is so essential that human life could not exist without it. This manual was written, reviewed, and approved by professional water utility managers. They provide procedures, insights, and details about all aspects of water utility management and leadership.
Book	Water Utility/Agricultural Alliances: Working Together for Cleaner Water	Working together, water suppliers and farmers can improve water quality and decrease treatment costs, which will provide long-lasting benefits to all consumers. Does your utility need to improve and strengthen its relationships with local and regional agricultural professionals? This report provides guidance to drinking water utilities on building alliances with farmers and agricultural organizations to promote agricultural practices that minimize runoff and help protect drinking water sources from contamination. You'll find out who to partner with, what benefits various organizations can bring to the alliance, how to structure an alliance, how to establish goals and accomplish them, and how to overcome common obstacles. Regulations, treatment costs, and the desire to protect and improve community water supplies are all reasons to form water utility and agricultural alliances. Additionally, because most utilities have little or no control of the land in their watershed, water utility/agricultural partnerships become essential to implement source water protection measures.
Book	Water Wells: Best Management Practices	The Best Management Practices Series is an award-winning series of innovative publications presenting affordable options for protecting soil and water resources on the farm, supporting individual farm planning and decision-making in the short and long term, and harmonizing productivity, business objectives and the environment. While most wells may adequately supply ground water to homes and farm buildings, some wells - old and new - may act as pathways for contamination. This 89-page book begins with the water cycle, the time and pathway for ground water contamination, and the effects on human and livestock health. Read on to learn how to implement best management practices for the construction, maintenance, monitoring and abandonment of the three major well types, drilled, dug/bored, and sand-point. This book provides many practical tips and troubleshooting tactics to help you assess and improve soil quality in the short and long term.
Journal	Water21: Magazine of the International Water Association	Published six times a year, Water21 covers key developments and provides a global perspective in relation to the most important business, technology and environmental issues affecting the water sector. As well as regular news and features, each issue also includes sections on water utility management and on global issues and initiatives.

Item	Title	Description
Book	Waterborne Pathogens (M48)	This operations manual provides basic information for water treatment operators about waterborne viral, bacterial, and parasitic pathogens. The manual provides operational procedures for assessing current levels of contaminants in source waters, containing these contaminants, optimizing treatment plant performance, and maintaining water quality in the distribution system. Includes: monitoring, sampling, and testing techniques; treatment and disinfection practices for all types of pathogens; control techniques including cross-connection control, dead-end flushing, and hydrant flushing; waterborne disease statistics.
Journal	Waterdrum	The Waterdrum is a quarterly newsletter published by the Aboriginal Water & Wastewater Association of Ontario (AWWAO). AWWAO is an information source for water environment and operator training and certification issues.
Journal	WCWC Bulletin	WCWC Bulletin provides information about drinking-water systems and drinking-water quality management practices, along with specific information on the Walkerton Clean Water Centre's programs, initiatives, and activities. The primary focus of the Bulletin is on systems serving small to mid-sized municipalities, communal systems and stand-alone facilities (both commercial and non-commercial). In pursuit of the Walkerton Clean Water Centre's mandate and vision, WCWC Bulletin fosters sharing of technical, scientific and regulatory information and expertise relating to: training available for operators, operating authorities and owners of drinking-water systems; the treatment of water necessary to ensure that drinking water is safe; the equipment and technology used to ensure that drinking water is safe; the operational requirements necessary to ensure that drinking water is safe; and other environmental issues relating to drinking water.
Leaflet	Well Aware: A guide to caring for your well and protecting your family's health	This booklet encourages Ontario's residential well owners to protect their wells and our common groundwater supplies. Every rural resident has an important role in the water cycle. We take water from wells, treat it, use or consume it, and then release it into septic systems, to eventually make its way back into the groundwater or surface water nearby. Well owners in Ontario are responsible for the safety and operation of their own wells and septic systems and for what those systems put back into the water cycle.
Book	Well Wise: A comprehensive consumer's guide for private water wells	This book provides well owners with comprehensive information that goes a step beyond. Readers will learn about the need to look after their well and environment. This book has a lot of pictures and descriptions to make the book more enjoyable, but also to ensure that the homeowner has a good understanding of what they are looking for with their own well. The book has many photos and diagrams to help explain aspects of hydrogeology, well maintenance and repair, well decommissioning and water testing. Between each chapter, personal accounts of interesting wells are included.
Brochure	WellWise: Helping well owners make wise decisions about their wells	This pamphlet is designed to help well owners make wise decisions about their wells.

Item	Title	Description
Book	What Do I Say Next? Talking Your Way to Business and Social Success	This book provides insights, ideas, tips, and techniques that can make anyone successful in conversation. Successful conversation is within our reach as long as we prepare, practice, pay attention to and respect others, and make a personal commitment to developing conversational prowess. The author teaches that conversation is a function of who are involved, what is happening for each person at that particular moment in time, the chemistry between them, and the lifetime experience of everybody. This book concludes with 'Ten Commandments of Conversation.' This book offers many words of wisdom and valuable insight that will lead to improvement of relationships as well as self-confidence.
Book	Workforce Planning for Water Utilities -- Successful Recruiting, Training, and Retaining of Operators and Engineers	This research report clearly frames the issues of recruiting, training, and retaining drinking water utility operators and engineers. It identifies short-term and long-term strategies that can be implemented by individual utilities and by the industry to address the issues.
CD	Working Together to Protect Ontario's Drinking Water	This CD provides information on protecting Ontario's drinking water.
Leaflet	Xeriscape: Landscape Water Conservation	To reduce the excessive use of water for maintaining landscapes, the Texas Agricultural Extension Service encourages Texans to adopt Xeriscape landscaping. This concept conserves water and protects the environment.
Leaflet	You & Your Well	This leaflet is designed for people who have a well or are considering replacing or upgrading an existing water supply. It includes basic information on how to receive construction approval, how to install, the responsibilities of well owners and pump installers and requirements.
Leaflet	Your Actions Can Help Protect Our Drinking Water	This leaflet discusses how everyday actions can help to protect our drinking water. It gives guidelines for handling hazardous household products that may destroy our environment and water supply. It also gives tips on how to safely store and dispose of hazardous products.