

In the Name of God



Seyyed Alireza Ebrahimzadeh Zonouzian

Date of birth: 11 September 1976 Place of birth: Tehran/Iran

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Professional Expertise

- 1- Operation and maintenance of water treatment plants.
- 2- Supervision of water treatment processes and installations.
- 3- Supervision of water disinfection systems.
- 4- Quality supervision of wells and reservoirs.
- 5- Maintenance and repair of disinfection systems.

Education

Degree	Field	Year	University
PhD	Applied Chemistry	2013	Bu-Ali Sina, Hamedan
MSc	Applied Chemistry	2005	Bu-Ali Sina, Hamedan
BSc	Pure Chemistry	1999	Tabriz

Doctoral dissertation:

Investigation on application of hydrodynamic cavitation and impinging streams in advanced oxidation processes for degradation of organic pollutants

Master's thesis:

Study of application of impinging streams and its influencing factors on the liquid-liquid Extraction process

Research Presentations and Publications

ISI-Indexed Articles

- 1- ["Optimization of a heterogeneous catalytic hydrodynamic cavitation reactor performance in decolorization of Rhodamine B: Application of scrap iron sheets"](#), *Ultrasonics Sonochemistry*, Volume 20, Issue 6, November 2013, Pages 1442-1449.
- 2- ["Optimization of a Multiple Impinging Jets Cavitation Reactor Using Zero-Valent Iron Powder as Catalyst"](#), *Chemical Engineering & Technology*, Volume 36, Issue 9, September 2013, pages 1585-1592.
- 3- ["Investigation of a Two Impinging Jets Contacting Device in Liquid-Liquid Extraction Processes"](#), *Chemical Engineering Science*, Volume 61, Issue 12, June 2006, Pages 3942-3950.

Books

- 1- "Operation of chlorination systems and response to related incidents", Avaye Ghalam, July 2016. ISBN: 9786007542477.
- 2- "Specifications for Technical and Safety Equipment of Chlorination System" (Co-Author), Avaye Ghalam, 2015. ISBN: 9786007542149.
- 3- "AWWA Manual of Water Supply Practices M65, On-Site Generation of Hypochlorite", Sotoudeh Publications, 2017 (Translation Editor). ISBN: 9786003250826.
- 4- Disinfectant Procurement Documents. Maks Nazar, 2023. ISBN: 9786006923765. (Co-author)

International Conferences

- 1- ["Chlorine Emergency Response Plan in Tehran Water and Wastewater Company"](#), IWA World Water Congress & Exhibition, October 2016, Brisbane, Australia.
- 2- ["Artificial Neural Networks Modeling of Decolorization of Rhodamine B Dye in a Multiple Impinging Jets Cavitation Reactor"](#), IWA World Water Congress & Exhibition, October 2016, Brisbane, Australia.

National Conferences

- 1- CFD-Based Numerical Simulation and Optimization of a Chlorine Contact Tank Compartment, The 34th Annual International Conference of Iranian Society of Mechanical Engineers 12 to 14 May, 2026, Tehran, Iran.
- 2- Chlorine Emergency Response Plan at Tehran Water and Wastewater Supply and Treatment Company. 8th National World Environment Day Conference, University of Tehran, 2014.
- 3- Application of Hydrodynamic Cavitation Based Reactors in organic wastewater treatment and prediction the results by artificial neural network, 17th Iranian Chemistry Congress, Vali-e-Asr University of Rafsanjan, Iran, September 2014 (in Farsi).
- 4- Application of a Contacting Device with Two Impinging Streams in Liquid-Liquid Extraction, 10th Iranian Chemical Engineering Congress, University of Sistan and Baluchestan, November 2005 (in Farsi).
- 5- Photocatalytic Decomposition of Catechol in Aqueous Media under Mild Conditions. Same congress. 10th Iranian Chemical Engineering Congress, University of Sistan and Baluchestan, November 2005 (in Farsi).
- 6- Effects of Different Pollutants on Liquid-Liquid Extraction Efficiency Using Direct Impinging Jets. 12th Iranian Chemical Engineering Congress, Sahand University of Technology, Tabriz, 2008.

- 7- Degradation of Rhodamine B Using Submerged Cavitating Jets at Pilot Scale Operation, 15th Iranian Chemistry Congress, Bu-Ali Sina University Hamedan, Iran, September 2011 (in Farsi).
- 8- Simulation of Chlorine Release and Dispersion and Assessment of Its Consequences Using PHAST 7.11. 8th National Meeting of Water Quality Control Managers, Kermanshah, 2015.
- 9- Presentation and workshop: Chlorine Gas Safety in Chemical Industries. 6th Iranian Conference on Applied Chemistry, Malayer University, 2022.

Contributions to Technical Publications, Translations and Guidelines

- 1- Comprehensive Chlorine Emergency Response Program booklet. The first and second editions were developed by the Tehran Water and Wastewater Chlorine Gas and Safety Committee; issued and implemented at Tehran Water and Wastewater Supply and Treatment Company from 2011–2012.
- 2- A Guideline for Chlorination Systems of Water and Wastewater Treatment Plants (Co-Author), Management and Planning Organization of Islamic Republic of Iran, Rule No. 673, 2014. ISBN: 9789641796251.
- 3- Procurement Documents for Disinfectants, Treatment-Plant Chemicals, and Chemicals and Filter-Bed Materials Used in Treatment Plants. Publication No. 468-A, National Water Industry Technical Criteria Program, Ministry of Energy, 2022.
- 4- Disinfectant Procurement Documents: Invitation, Prequalification and Tender Documents (OP102). National Water and Wastewater Engineering Company, 2019.
- 5- Procurement Documents for Chemicals Used in Treatment Plants: Invitation, Prequalification and Tender Documents (OP306). National Water and Wastewater Engineering Company, 2020.
- 6- First Aid, Medical Management/Surveillance and Occupational Hygiene Monitoring Practices for Chlorine, Pamphlet 63, Chlorine Institute Inc. Translation circulated in 2009.
- 7- Drinking-Water Treatment: Shock Chlorination. Translation; circulated within Tehran's water and wastewater organization, 2009.
- 8- Preparation of saturation-index calculation guidance and an Excel spreadsheet based on the latest edition of Standard Methods for the Examination of Water and Wastewater, 2022.

Current and Former Memberships

- 1- Member of the "Iranian Chemical Society".
- 2- Member of the "National Committee of Water Disinfection Plants Assessment" in Iran's National Water & Wastewater Engineering Company.
- 3- Member and Secretary of the "Chlorine Gas and Safety Committee" of Tehran Water Supply and Water and Wastewater Treatment Company.
- 4- Member of the "Disinfection Systems Committee" of Iran's National Water & Wastewater Engineering Company.
- 5- Member, Water Quality Control Working Group, Management Development and Research Office, Tehran Province Water and Wastewater Company.
- 6- Member and Chair, Internal Working Group on Tehran Water Treatment Plant Operation.
- 7- Member and Chair, Internal Working Group on Process Control and Quality Monitoring at Tehran Water Treatment Plants.

Skills

- 1- Design, installation, startup and operation of water chlorination and hypochlorination systems.
- 2- Chlorine safety and security. Design and implementation of chlorine emergency plans (CHLOREPs) for individual water chlorination plants. Risk assessment of water chlorination plants.
- 3- Dispersion modeling of chlorine gas release using DNV PHAST software.
- 4- Treatment-process assessment and selection of suitable methods based on water or wastewater quality.

Contributions to Iranian National Standards

- 1- Liquid Chlorine — Determination of Moisture and Residue — Test Method. Iranian National Standard No. 20652, first revision, 2021.
- 2- Liquid Chlorine — Specifications. Iranian National Standard No. 18408, first revision, 2021.
- 3- Materials for treatment of drinking water and other human consumption- Sodium hypochlorite- Specifications and test methods. Iranian National Standard No. 8394, 2019.
- 4- Chemicals used for treatment of water intended for drinking and other human consumption — Calcium hypochlorite. Iranian National Standard No. 7098, 2020.
- 5- Chemicals used for treatment of water intended for drinking and other human consumption — Ozone — Characteristics and test method. Iranian National Standard No. 22740, 2020.
- 6- Chemicals used for treatment of water intended for drinking and other human consumption — High-calcium lime. Iranian National Standard No. 22741, 2020.
- 7- Chemicals used for treatment of water intended for drinking and other human consumption — Sodium chloride for on site electrochlorination using membrane cells. Iranian National Standard No. 22738, 2020.
- 8- Chemicals used for treatment of water intended for drinking and other human consumption — Sodium chloride for on site electrochlorination using non-membrane technology. Iranian National Standard No. 22739, 2020.
- 9- Chemicals used for treatment of water intended for drinking and other human consumption — Sodium chloride for regeneration of ion exchangers. Iranian National Standard No. 22742, 2020.
- 10- Water quality –coagulation – flocculation – pressure in-line filtration test - Code of practice. Iranian National Standard No. 16740, 2020.
- 11- Water quality – Determination of free cyanide with flow injection analysis (FIA) utilizing gas diffusion separation and amperometric detection. Iranian National Standard No. 17947, 2020.

Teaching in the Above Areas of Expertise since 2007

Hundreds of hours of multi-day theoretical and practical courses on water disinfection system operation, including chlorination and chlorine safety; civil defense in chlorine operations; and practical drills. Audiences have included water and wastewater companies across Iran, Shahid Mofatteh Power Plant in Hamedan, Tehran Municipality Crisis Management, and Tehran fire stations. Courses delivered through established training institutions and universities, including Shahid Beheshti University's technical campus and regional higher education and research institutes for the water and electricity industry.

Selected International General and Specialized Training

- 1- Crisis Management at Water Utilities: Concept, Preparedness and Latest Technology Development in Decision Support System using Artificial Intelligence, Brisbane Convention and Exhibition Centre, 09 Oct 2016

(One-day course held in Brisbane, Australia, at the venue of the IWA 2016 World Water Congress.)

- 2- Water Management Program, a program offered by DelftX (Delft University of Technology), in collaboration with edX, 2017

(The Water Management Program comprises the following three online courses offered by Delft University of Technology, the Netherlands, through edX.)

- 2-1- Drinking Water Treatment (DelftX - CTB3365DWx, Organized by Delft University of Technology via edx.org). 25 January–4 April 2017.
- 2-2- Urban Sewage Treatment (DelftX - CTB3365STx, Organized by Delft University of Technology via edx.org). 12 April–6 June 2017.
- 2-3- Introduction to Water and Climate (DelftX - CTB3300WCx, Organized by Delft University of Technology via edx.org). 6 September–1 November 2017.
- 3- Chlorine Emergencies: An Overview For First Responders, The Chlorine Institute in collaboration with TRANSCAER® (Transportation Community Awareness Emergency Response), Jan 25, 2021

Additional short specialist webinars.

Selected Domestic and In-Service General and Specialized Training

- 1- Crisis Management in Water and Wastewater Utilities. Organized by the Natural Disasters Research Institute of Iran.
- 2- Health and safety in water and wastewater industry.
- 3- Emergency response and disaster risk reduction in water and wastewater industry
- 4- Fundamentals, structure and documentation of Environmental Management System in accordance with ISO 14000 Series.
- 5- Fundamentals, structure, documentation and auditing of Health, Safety, Environment Management System HSE-MS.
- 6- Planned Maintenance (PM).
- 7- Total productive maintenance systems.
- 8- Raw-Water Quality Optimization and Introduction to Polidex. Training seminar.
- 9- Health, Safety and Environment. Training seminar.
- 10- Internal Auditing of OHSAS 18001 Occupational Health and Safety Systems.
- 11- Chlorine emission modeling using DNV PHAST software.