

Curriculum vitae

First name: Ricardo
Middle name: Enrique
Last name: Alcalde

Date of birth: 11-02-49
Place: Godoy Cruz – Mendoza - Argentina
Citizenship: Argentine
Language: Spanish (mother tongue), English

E-mail: alcalde@arnet.com.ar

Water Quality/Water Pollution Assessment Specialist - Consultant

Education

University

1975 - BSc (Biochemistry) – “Juan Agustin Maza” University – Mendoza - Argentina

Post-graduate

1975 – Seminar on “*Drinking Water Quality Control*”, Buenos Aires organised by Nation Public Health Secretariat.

1977-1979 – Fellowship of National Scientific and Technical Research Council, Initiation in Scientific Research. Bahia Blanca - Argentina

1982 - Seminar on “Water Quality Data Management and Evaluation”, Dr Adrian Demayo, organised by the National Water Science and Technique Institute (INCYTH), Nation Secretariat of Water Resources and the Pan-American Sanitary Bureau.

1987 - Improving Course “*Workshop on Water Pollution*” (80 hours, theory and laboratory), organised by the Research Centre for the Environment (La Plata), under the auspices of Nation Science and

1991 - “*Training in Water Microbiology and Analysis of Vibrio cholerae*”, Laboratory of Buenos Aires Central Market, Buenos Aires, Argentina.

1993 – “*Advances in Microbiological Control of Waters*”, organised by the Federal Council of Sanitary Services Entities (COFES), Mendoza, Argentina

1983 –2001 - Several training courses, seminars, conferences, meetings, etc. on different aspects of water resources and drinking water quality.

Employment

1974 - (still student) – Work in the Laboratory of Water Department of Rio Negro Province (Argentina)

1975 - Professional of Laboratory of Water Department of Rio Negro Province (chemical and bacteriological analysis of water)

1979-1993 - Head of Water and Wastewater Laboratory of Water Department of Rio Negro Province. (natural waters, drinking water and wastewater analysis)

1993-1999 - Research and Water Quality Control Manager (natural water, drinking water and wastewater analysis) in Water Department of Rio Negro Province.

1994 – 1999 – Advisor to Limay, Neuquen and Negro Rivers Basins Authority (AIC) – Rivers water quality assessment and monitoring – quality assurance in water quality monitoring.

1999 (September) - Voluntary retirement from Water Department of Rio Negro province.

1999 - present – Independent professional – Water Quality and Water Pollution Consulting Services.

1996 - present – Advisor to Inter-jurisdictional Committee of Colorado River (COIRCO) – Design of water quality assessment and monitoring (river and reservoir). Quality assurance in water quality monitoring.

1999 - present – Advisor to Water Department of Rio Negro province – Design of water quality assessment and monitoring (rivers, lakes and reservoirs).

2002 – 2007 – Advisor to FUNBAPA (Foundation for the Patagonia Zoophytosanitary Barrier), Viedma, Rio Negro – Development of a quality assurance/quality control program (ISO/IEC 17025) for the water and wastewater laboratory. Quality managing in the water and wastewater laboratory.

Expertise

- Surface water quality assessment related to toxic substances (petroleum hydrocarbons, heavy metals, pesticides), nutrients and microbiological aspects. Water quality evaluation related to uses. Investigation and assessment of toxic substances in water column, bottom sediments and aquatic biota.
- Design of water quality survey and monitoring programs. Quality assurance in water quality monitoring.
- Trophic state evaluation in cold-temperate lakes and reservoirs.
- Institutional structures for drinking water quality management at local and provincial levels - Institutional strengthening and capacity development. Training program development.
- Organisation of water and wastewater laboratories. Development and managing of laboratory quality systems (ISO/IEC 17025).
- Drinking water supply to small (rural) communities - Quality assessment of water sources - Chemical and microbiological analysis of water - Appropriate technologies for water treatment – Treatment process control - Drinking water quality control.
- Institutional structures for drinking water quality management at local and provincial levels - Institutional strengthening and capacity development. Training program development.

Participation in Water Quality Projects

(all in Argentina)

Project: ***“Iron bacteria in Water Wells in Rio Negro province”***

Employer: Water Department of Rio Negro province

Position: Researcher

Years: 1979-1986

Description of the project: bacteriological techniques were developed for diagnosing iron bacterial fouling in water wells (*). These techniques were used to study the situation in several water supplies in Rio Negro province.

(*) see overview in Stuart A. Smith Internet page “Recent Innovations in Well Maintenance” Section “Recent Developments in Biofouling Monitoring Methods” (“Microscopic Examination and Analysis” and “Culturing Methods for Detection”) <http://www.groundwatersystems.com/maininnv.html>

Project: ***“Survey of Water Quality in the Lower Negro River”***

Employer: Water Department of Rio Negro province

Position: Study designer –Co-ordinator - Member of the Technical Committee

Years:1981-1982

Description of the project: it was studied a stretch of nearly 60 km of the Lower Negro river between its discharge in the Atlantic Ocean and the location of San Javier. The study mostly comprised the evaluation of chemical and bacteriological parameters related to municipal and industrial wastewater. It provided a diagnosis of the situation by that time.

Project: ***“Pesticides in the Rio Negro Basin, Argentina”***, Case Study of the Regional Program of the Pan-American Centre of Sanitary Engineering and Environmental Sciences (CEPIS), Pan-American Sanitary Bureau - “Evaluation and Management of Toxic Substances in Surface Waters”, INCYTH, INTA, University of Comahue (Argentina), Water Department of Rio Negro Province, and Provincial Administration of Water (Neuquen).

Employer: Water Department of Rio Negro province (DPA)

Position: Member of the technical committee – Representative of Rio Negro province

Years: 1985 –1989

Description of the project: the objectives of this study were to assess the presence of pesticides of agricultural use in the basin of Negro river, and to explain and forecast its transport and fate, by means of mathematical models. Also this study intended to assess the risks for the human health (across drinking water) and aquatic biota. Its results showed a non-risk situation by that time.

Project: ***“Biofouling and Microbiological Corrosion in Water Wells”***

Employer: Water Department of Rio Negro province (DPA)/Federal Council of Investments (CFI)

Position: Advisor for Iron Bacterial Fouling

Years: 1987 – 1990

Description of the project: survey of iron bacterial fouling in water wells in Rio Negro, Catamarca and Santa Cruz provinces (Argentina). By means of our technique for diagnosing iron bacteria, was detected filamentous iron bacterial fouling in wells in Catamarca and Santa Cruz provinces, and was extended the diagnosis to a larger number of wells in Rio Negro province. This allowed starting rehabilitation treatments in wells that customarily were abandoned, avoiding the consequent economic losses.

Project: ***“Development and Up dating of Federal Rules for Drinking Water Quality”***

Employer: Water Department of Rio Negro province (DPA)/ COFES, Argentina.

Position: Member of the Technical Committee, Representative of Water Department of Rio Negro province.

Year: 1993

Description of the project: a task group formed by representatives of different provinces of Argentina, reviewed and up dated the federal rules for drinking water quality existing since 1973, according to the last scientific criteria on chemical, physical and biological parameters.

Project: ***“Integrated Management Plan of the Patagonia Shore Area”*** funded by United Nations Development Program and co-ordinated Natural Patagonia Foundation and New York Zoological Society/The Wild Life Conservation Society

Employer: Water Department of Rio Negro province (DPA)

Position: Representative of Water Department of Rio Negro Province for Water Quality aspects.

Years:1993-1995

Description of the Project: an integrated management plan for the Patagonia shore area was developed as a tool for a sustainable development in this zone. The main aspects covered by this plan were water quality, wildlife conservation, fisheries, and tourism. Regarding to water quality, a survey in selected sites was carried out. These sites were selected on the basis of contaminants sources (mainly related to oil transport and municipal wastewater disposal). This activity allowed identifying sites with and without anthropogenic impact in the area.

Project: ***“Survey and Evaluation of Lake Nahuel Huapi Water Quality”*** – Water Department of Rio Negro province (DPA) – University of Comahue – Limay, Neuquen, and Negro Rivers Basins Authority
Employer: Water Department of Rio Negro province .

Position: Study designer - Member of the Technical Committee - Representative of Water Department of Rio Negro province

Years: 1994 - 1997

Description of the project: the scope of this study was to assess the trophic state of the lake and forecast its possible evolution by using eutrophication models. Nutrient loads from different sources (rivers, streams, wastewater discharges, and atmospheric precipitation) were measured. The study showed that the lake is ultra-oligotrophic to oligotrophic and it would be in that state, in the worse conditions (discharge of untreated wastewater), until the year 2026. These conclusions allowed to set limits to nutrients contents in the effluent of the Bariloche sewage treatment plant.

Project: ***“Water Quality Survey and Monitoring in the Limay, Neuquen, and Negro rivers”***

Employer: Limay, Neuquen, and Negro Rivers Basins Authority.

Position: Advisor

Years: 1994 – 1999

Description of the project: a water quality survey and monitoring program at basin scale for the Limay, Neuquen and Negro rivers was designed and operated. This program was designed to meet water quality management purposes in the basin. It made necessary to establish a field and laboratory quality assurance program in order to guarantee the quality of the water quality data generated. These data were processed and stored in a database for statistical analysis purposes.

Project: ***“Development and Up dating of Federal Rules for Drinking Water Quality”*** COFES, Argentina.

Employer: Water Department of Rio Negro province (DPA)

Position: Member of the Technical Committee, Representative of Water Department of Rio Negro province.

Year: 1996

Description of the project: a task group formed by representatives of the different provinces of Argentina, reviewed and up dated the federal rules for drinking water quality issued in 1993, according to the last scientific criteria on chemical, physical and biological parameters.

Project: ***“Water Quality Program of Colorado River”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Study designer- Co-ordinator - Evaluation

Years: 1996 - 1999

Description of the project: the scope of this study was to assess the water quality of Colorado river-Casa de Piedra reservoir system, related to oil spills, agricultural activity and municipal wastewater discharges. Different compartments of the aquatic environment (water column, bottom sediments and fish) were studied looking for heavy metals, polyaromatic hydrocarbons and pesticides. A field and laboratory operations quality assurance program was set. This study showed that water quality was apt for different uses (source of drinking water, irrigation, livestock). Some aspects related to bottom sediments, aquatic life protection and mercury and selenium detection in fish muscle remained to be investigated in more detail in a next stage.

Project: ***“Development of Limits for Pesticides in the Wastewater from Fruit Packaging Plants in Rio Negro Province”***

Employer: Water Department of Rio Negro province (DPA)

Position: Member of the Technical Committee.

Years: 1998 – 1999

Description of the project: this project was carried out with the purpose of setting standards for post harvest pesticides in wastewater of fruit packaging plants. This study comprised the evaluation of the acute toxicity of pesticides on different test organisms by means of ecotoxicological essays and the wastewater evaluation for level presence of these substances.

Project: ***“Heavy Metals Survey in the Upper Rio Negro Ecosystem”*** funded by IAEA (Project ARG/2/010) carried out by Water Department of Rio Negro Province and Atomic Centre of Bariloche (National Commission of Atomic Energy).

Employer: Water Department of Rio Negro province

Position: Member of the Technical Committee - First counterpart of the Project

Years: 1998 – 2000

Description of the project: the scope of this project was to carry out a heavy metals survey in the aquatic environment in the upper Rio Negro. This study stressed the investigation of mercury, since a chlor-alkali plant operated several years in the area. Were analysed those matrices that could have accumulated heavy metals, such as bottom sediments, aquatic macrophytes and fish. The results showed places with mercury levels in macrophytes and bottom sediments lightly higher than the reference site. Mercury levels in fish were no so high as to recommend limitations to human consumption.

Project: ***“Water Quality Program of Colorado River”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Study designer- Co-ordination - Evaluation

Year: 2000

Description of the project: this study was a second stage of that carried out between 1996 and 1999. It had the purpose of to investigate in more detail some aspects of the previous stage that remained unclear. These aspects were the bioavailability of heavy metals in bottom sediments, the significance of some PAHs in bottom sediments, exceeding the guidelines for aquatic life protection, the significance of some metals in concentrations higher than the guideline for aquatic life protection. To evaluate this aspects were carried out ecotoxicological assays with bottom sediments and water. The bioavailability of heavy metals was evaluated by means of the determination of “total recoverable metals”. All these assays showed a no risk situation. Fish monitoring showed increased levels of selenium and not detectable mercury with respect to the prior stage.

Project: ***“Water Quality Program of Colorado River”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Program designer- Co-ordination - Evaluation

Year: 2001

Description of the project: this study was the continuation of that carried out in the year 2000. Its purpose was to continue monitoring toxic substances (PAHs and heavy metals) in water column and fish, and to investigate the source of mercury and selenium by means of soil and water sampling in the basin. The results showed that selenium nor mercury were not detected in high levels in soils. Fish monitoring continued showing high levels of selenium and non-detectable mercury. Water monitoring detected selenium coming from one of the Colorado’s river tributaries. Selenium would come from a natural source. Mercury source remains unknown.

Project: ***“Water Quality Program of Colorado River”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Program designer- Co-ordination - Evaluation

Year: 2002

Description of the project: this study was the continuation of that carried out in the years 2000 and 2001. Its purpose was to continue monitoring toxic substances (PAHs and heavy metals) in water column, bottom sediments and fish. Fish monitoring showed lower levels of selenium and non-detectable mercury. This can be due to the antagonist action between selenium and mercury. Water monitoring in the upper basin detected selenium in the two Colorado’s river tributaries.

Project: ***“Water Quality Program of Colorado River”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Program designer- Co-ordination - Evaluation

Year: 2003

Description of the project: this study is the continuation of that carried out in the years 2000, 2001 and 2002. Its purpose was to continue monitoring toxic substances (PAHs and heavy metals) in water column, bottom sediments and fish in the Colorado river system.

Project: ***“Water Quality Program of Colorado River”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Program designer- Co-ordination - Evaluation

Year: 2004

Description of the project: this study is the continuation of that carried out in the years 2000, 2001, 2002 and 2003. The project is currently under execution. Its purpose is to continue monitoring toxic substances (PAHs and heavy metals) in water column, bottom sediments and fish in the Colorado river system.

Project: ***“Trophic State Assessment of Casa de Piedra Reservoir”***

Employer: Inter-jurisdictional Committee of Colorado River (COIRCO)

Position: Advisor – Co-ordination – Evaluation

Years: 1999 – 2001

Description of the Project: the purpose of this study was to determine the trophic state of Casa de Piedra reservoir, to identify models to forecast its possible evolution, and to determine nutrients loads. The results showed that this reservoir is oligo-mesotrophic, being the main nutrients source the solid load of Colorado river. This solid load probably is mainly originated in soil erosion. Phosphorus and nitrogen loads coming from human activities are of lesser extent.

Project: ***“Reclaimed Water Quality Evaluation for Use in Non-food Crops Irrigation in General Pico (La Pampa)”***

Employer: CORPICO

Position: Advisor – Project Designer – Co-ordination - Evaluation

Year: 2000

Description of the project: La Pampa province is carrying out a plan for agricultural reuse of reclaimed water in irrigation of non-food crops. The study comprised the evaluation of reclaimed water quality from a sanitary and agricultural point of view. In the sanitary aspect were studied heavy metals, biological agents (parasites and bacteriological indicators). The evaluation showed that the reclaimed water is suitable for use in irrigation. Also the project comprises the study of the soil and ground water prior the use of the reclaimed water. These aspects will be covered in a next stage.

Project: ***“Reclaimed Water Quality Evaluation for Use in Non-food Crops Irrigation in Santa Rosa (La Pampa)”***

Employer: COPAHI

Position: Advisor – Project Designer – Co-ordination - Evaluation

Year: 2001

Description of the project: this study is similar to that carried out in General Pico (La Pampa)

Project: ***“Toxic Substances Survey in Bottom Sediments in the Middle Valley of Negro river”***

Employer: Water Department of Rio Negro province (DPA)

Position: Advisor – Study designer - Member of the Technical Committee - Evaluation

Year: 2001-2002

Description of the project: the scope of this study is to evaluate the presence of toxic substances (pesticides and heavy metals) in the Middle Negro river bottom sediments. The possible sources of toxic substances are agriculture and municipal wastewater discharges. This project is currently in execution.

Project: ***“Monitoring of Lake Nahuel Huapi Water Quality”***

Employer: Water Department of Rio Negro province

Position: Advisor - Evaluation

Year: 2001-2002

Description of the project: it is a continuation of the project “Survey and Evaluation of Lake Nahuel Huapi Water Quality”. Its main purpose is to detect trends in the lake water quality related to its trophic state.

Project: ***“Assessment of Water Quality for Public Supply in Villalonga (Buenos Aires) related to the presence of Pesticides Residues”***

Employer: Patagones Council

Position: Consultant – Evaluation

Year: 2006

Description of the project: it consisted in a survey of pesticides (insecticides, herbicides, fungicides) classified as carcinogenic in the source of water for drinking water supply to Villalonga (Buenos Aires).

Project: **“Water Quality Assessment in the Lake Lacar Basin (Eastern)- Neuquen province”**

Employer: Neuquen Water Resources Provincial Directorate

Position: Consultant

Year: 2006

Description of the project: it consisted in an assessment of the past and present information on water quality of the main tributaries of lake Lacar in the eastern basin and of the lake itself, with the purpose of diagnosing the situation with relation to the disposal of sewage of San Martin de los Andes human settlements.

Publications

Alcalde, R. E., Vidal, V., Yordanoff, M., 1982, *Study on Water Pollution in the Lower Rio Negro, San Javier-River Mouth Stretch (1981 – 1982)*, Technical Report, Water Department of Rio Negro province (Spanish)

Alcalde, R.E. and Castronovo-Knott, E., 1986, *Occurrence of Iron Bacteria in Wells in Rio Negro (Argentina)*, In *Proceedings of: International Symposium on Biofouled Aquifers: Prevention and Restoration*; (D.R. Cullimore, ed.) American Water Resources Association, Atlanta, Georgia, U.S.A. (English)

Alcalde, R.E., 1989, *Diagnosis and Treatment of Phenomena of Encrustation and Corrosion of Biological Origin in Groundwater Abstraction Systems*, IVth Technical Meeting on Technological Development and Appropriate Technologies for Sanitation, Buenos Aires, Argentina (Spanish)

Alcalde, R.E. and Gariboglio, M.A., 1990, *Biofouling in Sierra Colorada Water Supply: a case study*, in *Proceedings of: International Conference on Microbiology in Civil Engineering* (P. Howsam, ed.), Cranfield Institute of Technology, Bedford, England (English)

Alcalde, R.E. and Gariboglio, M.A., 1990, *Monitoring, Maintenance and Rehabilitation Strategies for Biofouling Control in Water Wells in Rio Negro, Argentina*, in *Proceedings of: International Conference on Monitoring, Maintenance and Rehabilitation of Water Wells* (P. Howsam, ed.), Cranfield Institute of Technology, Bedford, England (English)

Alcalde, R.E., 1990, *Prevention of Destructive Effects of Biofouling in Groundwater Abstraction Systems: overview in Rio Negro Province*. Sanitary and Environmental Engineering, 3, 34-35 (Spanish)

Alcalde *et al.*, 1993, *Rules for Drinking Water Quality*, Technical Document Series # 2 – Available in Federal Council of Sanitary Services Organisations (COFES), Argentina (Spanish)

Alcalde, R.E. and Barkovich, J.F., 1994, *Monitoring Program for Microbiological Encrustation and Corrosion Control in Boreholes for Groundwater Abstraction (Water Department of Rio Negro)*, Sanitary and Environmental Engineering, 15, 52-58 (Spanish)

Alcalde, R.E., Manuel, M. Pedrozo, F. Lopez, W., Satti, P. and Roselli, L., 1994, *Survey and Evaluation Program of Lake Nahuel Huapi Water Quality*, in *Proceedings of: XXIV Inter-American Meeting of Sanitary and Environmental Engineering*, Buenos Aires, Argentina (Spanish)

Natale, O.E., Gomez, C.E., Vermeulen, J.D., Casamiquela, C.H., Pechen de D'Angelo, A.M., Loewy, M., Alcalde, R.E. *et al.*, 1995, *Handbook of Evaluation and Management of Toxic Substances in Surface Waters – Study Case: Pesticides in the Negro River, Argentina*, World Health Organisation, Pan-American Health Organisation, Environmental Health Program (Spanish)

Alcalde, R.E., Manuel, M. Lopez, W., Pedrozo F., Satti, P., Baffico, G., Roselli, L., 1996, *Survey and Evaluation of Lake Nahuel Huapi Water Quality: Second Stage*, Sanitary and Environmental Engineering, 24, 25-28 (Spanish)

Alcalde *et al.*, 1996, *Quality Rules for Drinking Water in Public Supplies*, Technical Document Series # 3, Available in Federal Council of Sanitary Services Organisations (COFES), Argentina (Spanish)

Pedrozo F., Alcalde, R., Manuel M., 1997, *Trophic State of Lake Nahuel Huapi – Preliminary Evaluation of its Evolution*, Technical Report available in Water Department of Rio Negro Province and in Comahue University, Bariloche (Spanish)

Alcalde, R.E., Pedrozo, F., Manuel, M., Gil, M.I., Baffico, G., 1997, *The Trophic State of Lake Nahuel Huapi*, in *Proceedings of: 7th International Conference on Lakes Conservation and Management*, San Martín de los Andes, October 26 - 31 1997 (English)

Alcalde, R. E., Labollita, H. Pedrozo, F., (1999) *Lake Nahuel Huapi: Water Quality Study*, Technical Report - Limay, Neuquen and Negro Rivers Basins Inter-jurisdictional Authority, Water Department of Rio Negro Province and University of Comahue (Spanish)

Alcalde, R. E., Gil, M. I., Daurade, L. 1999, *Survey and Monitoring of Water Quality Program of Colorado River-Casa de Piedra Reservoir System*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), National Secretariat of Energy, Inter-enterprise Group (Spanish)

Alcalde, R. E., Arribere, M. A., Daurade, L., Gil, M.I., Kestelman, A. J., Ribeiro Guevara, S., Roman Ross, G., Sanchez, R., 2000, *Heavy Metals Survey in the Upper Rio Negro Ecosystem*, Rio Negro province, Argentina, Technical Report, Water Department of Rio Negro Province, Bariloche Atomic Centre, IAEA Technical Assistance Project (Spanish)

Gotelli, C., Lobos, J.E., Alcalde, R.E., 2000, *Quality and Uses of Colorado River -Oil Spills Risk Assessment*, Inter-disciplinary Technical Meeting, March 31, 2000, Catriel, Rio Negro Province (Spanish)

Alcalde, R. E., Perl, J.E., Andres F. O., 2000, *Water Quality Assessment of Colorado river-Casa de Piedra reservoir system for different uses*, 4th Meeting on Water, Air, and Soil Preservation in Oil and Gas Industry, October 2000 – Salta – Argentina (Spanish).

Alcalde, R. E., 2001, *Water Quality Program of Colorado River- Year 2000*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), National Secretariat of Energy and Mining, Inter-enterprise Group, Bahia Blanca, Argentina (Spanish).

Alcalde, R.E., 2001, *Evaluation of Trophic State of Casa de Piedra Reservoir*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), Bahia Blanca, Argentina (Spanish)

Alcalde, R. E., Perl, J.E., Andres, F.O., 2001, *Trophic State of Casa de Piedra Reservoir*, International Seminary on Environmental Management and Hydroelectricity “A way towards Sustainability”, September 2001 – Salto Grande – Argentina – Uruguay. (Spanish)

Alcalde, R. E., 2002, *Water Quality Program of Colorado River- Year 2001*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), National Secretariat of Energy and Mining, Inter-enterprise Group, Bahía Blanca, Argentina (Spanish)

Arribere, M.A., Ribeiro Guevara, S., Sánchez, R.S., Gil, M.I., Roman Ross, G., Daurade, L.E., Fajon, V., Horvat, M., Alcalde, R., Kestelman, A.J., 2003, *Heavy metals in the vicinity of a chlor-alkali factory in the upper Negro River ecosystem, Northern Patagonia, Argentina*, *Sci Total Environ* 301: 187-203 (English)

Alcalde, R., 2003, *Lake Nahuel Huapi water quality monitoring network – 2001-2002*, Technical Report, Limay, Neuquen and Negro Rivers Basins Inter-jurisdictional Authority (AIC) – Water Department of Rio Negro province.

Alcalde, R. E., Perl, J. E., Andres, F. O., 2003, *Water Quality Program of Colorado River- Year 2002*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), National Secretariat of Energy and Mining, Inter-enterprise Group, Bahia Blanca, Argentina (Spanish)

Alcalde, R. E., Perl, J.E., Andres F. O., 2003, *Quality of the Aquatic Environment in the Colorado river system*, 5th Meeting on Water, Air, and Soil Preservation in Oil and Gas Industry, November 2003 – Mendoza – Argentina (Spanish).

Alcalde, R. E., Perl, J. E., Andres, F. O., 2004, *Water Quality Program of Colorado River- Year 2003*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), National Secretariat of Energy and Mining, Inter-enterprise Group, Bahia Blanca, Argentina (Spanish), 127 pp.

Alcalde, R.E., Perl, J.E., Andrés, F., 2005, *Water Quality Assessment in the Colorado River Basin (Argentina)*, XXth National Meeting of Water – IIIrd Symposium Water Resources of South America, May 9 - 14 , Mendoza, Argentina (Spanish).

Alcalde, R. E., Perl, J. E., Andres, F. O., 2006, *Water Quality Program of Colorado River- Years 2004-2005*, Technical Report, Inter-jurisdictional Committee of Colorado River (COIRCO), National Secretariat of Energy and Mining, Inter-enterprise Group, Bahia Blanca, Argentina (Spanish).

Training to professionals

Gariboglio, M.A. y Alcalde, R.E., 1987, *Microbiological Corrosion in Groundwater Abstraction Systems*, Technology and Applied Sciences College, University of Catamarca and under the auspices of the Federal Council of Investments and Science and Technique Secretariat of Catamarca, Argentina

Gariboglio, M.A., Alcalde, R.E. et al., 1990, Seminar on “*Encrustation and Biological Corrosion Phenomena in Groundwater Abstraction Systems*”, held in the Mining and Groundwater Technologic Institute “Los Alamos”, under the auspices of Federal Council of Investments, Water Department of Rio Negro province and Mining and Groundwater Technologic Institute “Los Alamos”; Las Grutas, Rio Negro, Argentina

Alcalde, R.E. et al. 1996, Seminar on -“*The Challenge of New Demands of Drinking Water Quality*”, in the 9th Argentine Convention of Sanitation and Environment, organised by Argentine Association of Sanitary Engineering and Environmental Sciences (AIDIS), Cordoba, Argentina.

Alcalde, R. E., 2000, “*Study on the Trophic State of Casa de Piedra Reservoir – Study on Water Quality of Colorado River*”. In Seminar on “*Rivers and Reservoirs Water Quality*”, organised by Agricultural Hydraulic and Hydrology Department – College of Agronomy, University of Comahue and Polytechnic University of Valencia (Spain), Neuquen, Argentina.

Alcalde, R. E., 2001, “*Drinking Water*”, in *XIV Course of Auxiliary in Urban Pests Control*, organised by the Ministry of Health of Buenos Aires province, Sanitation Directorate and Municipality of Carmen de Patagones, Villalonga, Buenos Aires, Argentina.
