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Pesticide/ Insect/ Environmental Research Scientist

CAREER GOAL:

A position as an Environmental Biologist/ Toxicologist/ Ecotoxicologist/ consultant in universities/ colleges/ government/ laboratories.

AREAS OF RESEARCH INTEREST & EXPERTISE

Pesticides/ chemicals/ Genetically Modified (GM) Reduction & Regulations

Education for pesticide/ chemicals pollution reduction and regulations for developing countries.

Excellent knowledge of PMRA, CFIA, ECHA & REACH, OECD, EPA, DPR and other pesticide regulations, wide experience with problems and obstacles of implementing pesticides/ chemicals regulations in developing countries. DDT alternatives for control/ management of malaria (environmental modification, manipulation and management methodologies and non-pesticide personal treatments according to WHO). REACH implications for developing countries. I am particularly interested/ getting expertise on different ECHA/ REACH laws and regulations. Medical geology studies in developing countries. Laws and regulations for genetically modified crops/ food in developing countries. Pioneering Global Harmonization System (GHS) for pesticide/ chemicals classification and regulations in developing countries. Safe cleaning and cosmetic products, risk assessment for widely used/ not regulated cleaning and cosmetic products in developing countries. Nanosafety, Nanotoxicology, Nano-ecotoxicology and Nano-regulation for developing countries. Toxicology and regulatory issues for biocides. Sustainable Consumption and Production (SCP), Education for Sustainable Lifestyle (SLE) working on pesticide/ chemicals pollution reduction and regulations for developing countries, neem tree, *Azadirachta indica* in the Persian Gulf region. I am highly involved in Education for Sustainable Lifestyle for developing countries with focus on Middle Eastern countries. Education for climate change mitigation and climate smart agriculture.

Pioneering scientifically safe toxicity testing and bioassays in IRAN for measuring acute and chronic toxic effects of any pesticides/ chemicals on any animals, many theses were guided in the University of Tehran, University of Tarbiat modarres, Olumo Tahghat etc.

Neem tree, *Azadirachta indica* Juss in the Persian Gulf and other environmental related activities in the Persian Gulf

Introduction of the Neem tree, *Azadirachta indica* Juss from the Qeshm, Kish and other parts of the Persian Gulf to the World more than 20 years ago. Neem tree research including insecticidal/ nematocidal properties and environmental aspects of neem. Please see below the section: Leadership and community involvement. I started planting the miraculous neem tree in the Persian Gulf area actively in 2012 and it is under expansion. Natural products and in particular pesticidal plants as alternatives to synthetic conventional pesticides.

Cooperation with Convention on Migratory Species (CMS) and CMS poisoning group, Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES) and Ramsar (wetland convention) and many other UN related agencies to conserve biodiversity on the planet.

Effects of toxic pollution and GM crops on biodiversity. I invented the words **Reversed/ Backward speciation** which mean that the beautiful and complicated natural process of speciation that was responsible for expansion of species during 100s of million years under the processes called evolution and coevolution not only is stopping now but is reversed and every day we are losing many species. Study on toxic pollution in wetlands and rice paddies of the Northern Provinces of Iran by the Caspian Sea connected to wetlands. Cooperation with IUCN for wildlife conservation. Study on diversity of protected areas and National Parks of Iran. Methodologies for studying hot spot polluted areas (pesticides/ chemicals) in protected areas/ endangered species and habitats.

Education and people/ environmental awareness about: Cumulative exposure, the whole cup and synergistic effects

Cumulative exposure, the whole cup and synergistic effects between chemical compounds and their metabolites. From early morning to night we are exposed to different doses of toxic compounds that now are surrounding our life from dairy products in our breakfast to toxic air outside, workplace pollution, lunch and so on. Possibility of synergism between these compounds makes the situation more complicated and its outcome is more cancer. The worst thing, for people in developing countries is more exposure due to different factors as compared to people in developed world. Less knowledge, more pesticide exposure, fewer NGOs, no regulations and enforcement, more exposure from geogenic sources among others are few of these factors.

Exposure/ Bioassays/ Toxicity Testing and Impact Assessment

Good knowledge about exposure science/ exposure of children to toxic compounds and ways to reduce it. Risk assessment of pesticides/ chemicals for human and environment. Assessing exposure of people in urban environment to different toxics. Worker protection against pesticides/ chemicals/ Occupational safety measures. Discovery of new/ safe insecticides, Detection of insecticide resistance and its mechanisms, Resistant Pest Management, Resistance of pests to BT transgenic crops, insect toxicology, insect biochemistry and biochemical toxicology.

Integrated Pest Management (IPM), Insect- plant interactions/ chemical and biochemical ecology

Excellent knowledge about IPM methods (at least 20 years of teaching IPM), a pioneer of new IPM methods in Iran. Demonstrated strong research/ publication on the effects of plant allelochemicals (secondary plant metabolites) on metabolizing/ detoxifying enzymes in insects.

Environmental Toxicology and Ecotoxicology

Extensive knowledge and experience with pesticides/ chemicals safety, fate of pesticides/ chemicals in the

environment. Geogenic and anthropogenic medical geology. Impact of pesticides/ related chemicals on aquatic life, Persistent Organic Pollutants (POPs), obsolete pesticides and their stockpiles and origin in developing countries. Pesticides and endangered species, worker protection, environmental safety in using BT transgenics. Ecotoxicology of nanoparticles. Toxicity of crude oil toxic components to marine life systems. Ozone program including alternatives for ozone depleting substances like methyl bromide. PCBs pollution assessment and management.

Medical geology studies in developing countries

As one of pioneers of the multidisciplinary science of Medical Geology in Iran, I work on impact of different anthropogenic and geogenic environmental pollutants on people and environment considering high exposure of people/ other living organisms to different toxic pollutants like asbestos, mercury and its related compounds, lead and dust and many types of heavy metals in developing countries, all unregulated with no enforcement. I am getting involved in the impact of mercury pollution in Iranian gold miners. Mercury pollution risk assessment and management for developing countries. Children exposure to mercury.

Pesticide Residue Analysis

Good knowledge of Gas Chromatography (GC) and other chromatographic analysis systems, extraction, separation and clean-up systems and methodology.

Home Pest Control

Good knowledge and working experience (in Ontario) about controlling pests in home/ cities. Ontario home/ structural pest control certificate.

Other Interest and Expertise

Environmental toxicology of the Persian Gulf and Caspian Sea- Reduction of pesticide use and pest resistance, improving environmental safety and pesticide efficacy by employing proper spraying technology. Sterile Insect Technique (SIT)-Area wide control of insect pests using SIT. Resistant natural enemies- Using resistance of natural enemies to pesticides in IPM programs.

COMPUTER SKILLS

Excellent software skills, e.g. involved in beta testing of a version of Probit Analysis. I started working on PCs 1985 the year of starting my PhD in Guelph. Other programs include: Sigma Plot, SPSS and other statistical/ graphic softwares, MS Word, PowerPoint, Excel, Corel WordPerfect, Corel Draw, Adobe Acrobat. I am familiar/ working with different toxicological/ ecotoxicological software eg. Aquatox, Ecotox., CRW3 (Chemical Reactivity Program), AiiDA (Aquatic Impact Indicator Database)etc.

MEMBERSHIP OF SOCIETIES

Member of CMS poisoning group,

Member of SETAC North America,

Member of Entomological Society of America,

Member of Iranian Society of Toxicology,

Founding member of the Iranian Society of Toxinology,

Member of Iranian Society of Entomology,

Member of Iranian Society of Biotechnology,

Member of the saving the frogs group,

Member of different sections of PAN (Pesticide Action Network) and many other pesticides/ chemicals reduction groups.

PROFESSIONAL EXPERIENCE

Director – Sustainable agriculture and environment (NGO) 1990-2014 (continues)

Pesticides/ chemicals pollutions prevention/ reduction and regulations for developing countries. IPM advocacy for developing countries. Medical geology for developing countries. Threat of pesticides/ chemicals pollution to protected areas. Management and conservation of biodiversity in protected areas. Supporting wide cultivation and propagation of neem tree *Azadirachta indica* in the Persian Gulf region.

Consultant in University of Tehran Research Park 2010- 2013

Consulting for different industrial, environmental and agricultural projects via the University of Tehran Research Park. Neem tree cultivation program in Western Persian Gulf, a project started 1391 (2012) for cultivation of neem tree in Bandar Imam Petrozone (Mahshahr) and different cities of Bushehr and khuzistan Provinces.

Home Pest Control (Canada)

2006

Professor and Researcher

1998- 2003

University of Tehran

Tehran, Iran

- Developed and taught pesticide toxicology, IPM, ecology and plant protection courses
- Developed and taught pioneering courses in environmental toxicology (graduate course), Sterile Insect Technique (SIT) + scintillation counting and food irradiation for the first time in Iran.
- Proposed, designed, executed and delivered the first draft of environmental laws and regulations for pesticides, biocides, fertilizers and genetically modified crops and foods for Iran (joint project between the University of Tehran and the department of environment of Iran).

Assistant Professor and Researcher

1982- 1985 and 1990- 1998

University of Mazandaran

Sari, Iran

- Taught Entomology, Pesticide Toxicology, Integrated Pest Management and Ecology

- Established an insect collection with more than 10000 specimens in standard cupboards designed by myself.
- Established a live collection of local aquatic insects in small aquariums.
- Established a live collection of stored products pests in protected jars (about 40 species)
- Taught Pesticide Toxicology (graduate course) at University of Tarbiat Moddarres as a guest lecturer.

Laboratory AssistantPlant Protection Organization , Ministry of Agriculture

1981

Tehran, Iran

- Laboratory tests for pesticide quality control

Laboratory AssistantUniversity of Tehran, College of Agriculture

1977-1981

Karaj, Iran

- Pesticide residue analysis by Gas Chromatography

Field Technician (expert!) and College TeacherEnvironmental Conservation Organization and its College

1975-1977

Tehran, Iran

- Participation in a team for an integrated pest management project, field monitoring for pesticide safety and teaching entomology and pesticide safety.

EDUCATION**Ph.D., Insect/ Environmental Toxicology**Dept. of Environmental Biology, University of Guelph

Graduated 1990

Guelph, Ontario, Canada

- Thesis Title: **Metabolic mechanisms of resistance of Colorado potato beetle (CPB), *Leptinotarsa decemlineata* Say to synthetic pyrethroids Permethrin and Fenvalerate.**
- **Involvement of the MFOs in the resistance of the CPB to permethrin and fenvalerate was demonstrated both in vivo [synergism by piperonyl butoxide (PB)] and in vitro (measuring enzyme activity). A method was presented for combining LD50s for use in calculating and comparing synergistic ratios (SR).**
- **Pesticide Resistance Management (PRM) for different agricultural and health insect pests.**

M.Sc., Agricultural Entomology/ ToxicologyDept. of Plant Protection., College of Agriculture

Graduated 1981

University of Tehran (Karaj)

- Thesis Title: **Determination of residue of Diazinon in different varieties of apple fruit by Gas Chromatography in two methods of spraying, fixed program and surveying program.**

B.Sc., Agricultural EntomologyFrom College of Agriculture

Graduated 1974

University of Tehran (Karaj)

- Thesis Title: Study the biology of quince moth, *Euzophora bigella* Zeller (Lepidoptera: Pyralidae) in Karaj and testing four insecticides to control it.

LEADERSHIP AND COMMUNITY INVOLVEMENT**Founder and Executive Director**Sustainable Agriculture and Environment

1990-2010 (continue)

- Pioneering Environmental toxicology both as a science and as a practice between farmers in developing

countries;

- Co-operated with Ministry of Agriculture and Department of Environment of Iran for pesticide residue analysis in vegetables, food, crops;
- Discovering and introducing the neem tree, *Azadirachta indica* in Kish, Qeshm and other Islands and ports of the Persian Gulf, wide community work to introduce it and its importance to the people of Southern Iran, starting scientific research on neem in Iran. Research on mango ecosystems/ protected areas of the Persian Gulf ports and Islands; Cooperation with the Iranian petrochemical industries for propagation of the neem trees.
- Wide global work/ movement for pesticides/ chemicals pollutions reductions and regulations for developing countries. Many conference presentations, workshops, demonstrations and very wide online communications were conducted during the past ten years in Iran, Canada, Middle Eastern and European countries;
- Working on implications of REACH laws and regulations for developing countries.

SELECTED PUBLICATIONS AND CONFERENCE PRESENTATIONS

Books and book chapters:

Mahdavi, A. 2011. Impacts of the pesticides to Protected Areas' biodiversity, their management and monitoring, in: Protected Areas: Planning-Management-Monitoring. Proceedings of the First International Conference on Protected Areas, 26-30 September. University of Isparta, Turkey.

2011: Book Chapter - Aydin, G. & Avci, A.B. (Eds.). ISBN 978-605-87432-0-5.

Mahdavi, A. 1991. Metabolic mechanisms of resistance of the Colorado potato beetle (Coleoptera: Chrysomelidae) to synthetic pyrethroids, permethrin and fenvalerate. Dissertation: Thesis (Ph. D.)--University of Guelph, 1990. Publisher: Ottawa: National Library of Canada = Bibliothèque nationale du Canada, 1991. Series: Canadian theses = Thèses canadiennes. Edition/ Format: Thesis/dissertation : Thesis/dissertation : Microfiche :

English.  **WorldCat**

Papers, conference presentations/ workshops (conducted/ participated)/ courses:

Mahdavi, A. 2014a. Pesticidal Plants. Key talk as invited speaker in the 3rd Iranian national congress on Natural toxins (Toxinology) (www.naturaltoxins.ir). Feb. 18-20. College of Pharmacy, Shahid Beheshti University. Tehran, Iran.

Mahdavi, A. 2014b. A comprehensive review on cyanotoxins and their importance in Iran. Oral presentation in the 3rd Iranian national congress on Natural toxins (Toxinology) (www.naturaltoxins.ir). Feb. 18-20. College of Pharmacy, Shahid Beheshti University. Tehran, Iran.

Mahdavi, A. 2014c. Feasibility study for cultivation and propagation of the neem tree, *Azadirachta indica* in the Mahshahr Petrozone. 4th Report (report for study, executive and experimental phases). 50pp. Feb. 2014. Mahshahr Petrozone, Mahshahr, Iran.

Mahdavi, A. 2013. Pesticides, past and present, a comprehensive review. Oral presentation in 12th International congress of the Iranian Society of Toxicology. May 15-17. Sari, Iran.

Mahdavi, A. 2013. Feasibility study for cultivation and propagation of the neem tree, *Azadirachta indica* in the Mahshahr Petrozone. Report of the study phase. 20 pp. Aug. 15. Mahshahr Petrozone, Mahshahr, Iran.

Mahdavi, A. 2013. Petroleum Compounds Toxicology, workshop conducted and panel discussions in: First National HSE Conference for Oil and Gas industry. Nov. 27-28. Abadan Institute of Technology. Iran.

Mahdavi, A. 2013. Feasibility study for cultivation and propagation of the neem tree, *Azadirachta indica* in the Mahshahr Petrozone. Supplementary report of the study phase and report of the executive phase. 30 pp. Dec. 18. Mahshahr Petrozone, Mahshahr, Iran.

Mahdavi, A. 2012a. Science and Technology Diplomacy for Developing Countries, Case study: Toxic Pollution, in proceedings of the INTERNATIONAL WORKSHOP ON SCIENCE AND TECHNOLOGY DIPLOMACY FOR DEVELOPING COUNTRIES TEHRAN, IRAN, 13-16 MAY 2012 Organized by: Centre for Innovation and Technology Cooperation of Iran Presidency (CITC), Tehran, Iran and Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi, India.

Mahdavi, A. 2012b. The Miraculous Neem tree, *Azadirachta Indica* in Western Persian Gulf. Third Danaei Festival of the Persian Gulf. The Persian Gulf (For ever Persian Gulf) Celebration Week, April 29- 6 May. Bushehr. Iran.

Mahdavi, A. 2012c. Neem in the Persian Gulf. Farming Matter, March 2012. Farming Matters is published by ILEIA, the Centre for Learning on Sustainable Agriculture. ILEIA is a member of AgriCultures, a global network of organizations that share knowledge and provide information on small-scale, sustainable agriculture worldwide. www.farmingmatters.org.

Mahdavi, A. 2012. Persian Gulf Environmental Situation with emphasis on toxic/ chemicals pollutions. Special/ key talk presented in the Iranian National Congress on Aquatic Animals. Boushehr, 20 Dec. 2012.

Mahdavi, A. 2011c. Medical Geology and its importance for developing countries. Paper presented in the 11th International Congress of the Iranian Society of Toxicology. Proceedings of the 11th International Congress of the Iranian Society of Toxicology, September 2011, Mashad, Iran.

Mahdavi, A. 2011b. Laws and regulations for pesticides and dangerous chemicals in developing countries, Workshop presented in the 1st Environmental Remediation Technologies Conference. 24-26 May 2011, Sharif University, Tehran, Iran.

Mahdavi, A. 2011a. Neem tree in the Persian Gulf. Proceedings of the Seventh National Persian Gulf Congress. 28-30 April 2011, Qeshm Island, Iran.

Mahdavi, A. and Reza Zarinfar. 2010c. Methodology for medical geology studies in developing countries. Full paper in: proceedings of the 1st international symposium of medical geology. 14-16 June 2010, Tehran, Iran.

Mahdavi, A. 2010b. Pesticides/ chemicals pollutions reductions and regulations for developing countries, Workshop presented (in English) for international participants in the 1st international symposium of medical geology. 14-16 June 2010, Tehran, Iran.

Mahdavi, A. 2010a. Pesticide regulations in developing countries. Full paper in: Proceedings of the conference on: Half century of the pesticide use in Iran, 2-3 March 2010, Tehran, Iran.

Mahdavi, A. 2009. Bridging the gap between South and North for pesticide/ chemical regulations and research. Proceedings of the 10th Iranian congress of toxicology, 18-20 May 2009, Tehran, Iran.

MAHDAVI, A., MR. BIABANI, and S. MIRHOSSEINI. 2003. COMPARISON OF EFFECT OF NPV ON 9 HYBRIDS OF SILKWORM BOMBYX MORI L. JOURNAL OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY 15 (53), 6.

MAHDAVI, A., B. KIABI, and M. OMIDVAR ASHTIANI. 2002. ACUTE FOXICITY OF BUTACHLOR FOR CASPIAN SEA GAMMARIDS. JOURNAL OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY 14 (47), 5.

Mahdavi, A. 2002. Remediation technologies for soils polluted with hallogenated pesticides. Proceedings of the First ground improvement conference, March 2002, university of Amir Kabir, Iran.

MAHDAVI A., and RFF. GHOLAM. 2001. Biological control of *Chilo suppressalis* in rice fields and its role in pesticide reduction in North of Iran. Journal of Environmental Science and Technology 9 (31), 4.

Mahdavi, A. 2000. Metabolic mechanism (s) of resistance of Colorado potato beetle, *Leptinotarsa decemlineata* Say to synthetic pyrethroids. Proceedings of the conference: Insect toxicology 2000, Berkeley, California.

Mahdavi, A. 1995. Combined LD50s, a computerized method for calculating and comparing LD50s and Synergistic Ratios. Proceedings of the 12th Plant Medicine Congress of Iran. Karadj, Iran.

Mahdavi, A. 1992. Microsomal NADPH-oxidation (in the absence and presence of cytochrome c) and NADPH-cytochrome c(P-450) reductase activity in adults of the resistant and susceptible strains of Colorado potato beetle, *Leptinotarsa decemlineata* Say (Coleoptera: Chrysomelidae). Proceedings of the Nineteenth International Congress of Entomology. Beijing, China.

Mahdavi, A., K. R. Solomon, and J. J. Hubert. 1991. Effect of *Solanaceous* hosts on toxicity and synergism of permethrin and fenvalerate in Colorado potato beetle (Coleoptera: Chrysomelidae) larvae. Environ. Entomol. 20: 427-432.

Mahdavi, A. and K. R. Solomon. 1988. Synergism of permethrin and fenvalerate in freshly-molted fourth-instar larvae of the Colorado potato beetle, *Leptinotarsa decemlineata* Say (Coleoptera: Chrysmelidae) by piperonyl butoxide. Proceedings of the Eighteenth International Congress of Entomology. Vancouver, Canada.