

COMMENTS by PROFESSOR GAGIK MELIKYAN

pertaining to Modification to Text of Proposed Regulation

Title 27, California Code of Regulations Sections 25821(a) and (c)

Level of Exposure to Chemicals Causing Reproductive Toxicity: Calculating Intake by the Average Consumer of a Product

Part I. Introduction

1. I am providing these comments as an expert in the fields of organic, organometallic, medicinal, enzymatic, computational, hormonal, and food chemistries, cancer drug development, endocrine disruptors, environmental toxicants, consumer product chemistry, human health risk and exposure assessment, as well as in application of these subjects to litigation cases related to California's Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65") and pertinent state and federal regulations.

2. I am a Professor of Chemistry in the Department of Chemistry and Biochemistry at California State University Northridge (CSUN) with 45 years of the professional experience conducting cutting-edge interdisciplinary research. My original contribution to science has culminated in numerous research publications (89), including nine (9) invited reviews and book chapters, as well as presentations (136) at national and international conferences, scientific gatherings, and public forums. The said contribution was recognized by awarding me the prestigious *Outstanding Faculty Award* and *Jerome Richfield Scholar Award*, the highest distinctions given by the university in recognition of excellence in faculty research. I am also a recipient of *The Kennedy Center Stephen Sondheim Inspirational Teacher Award* (Washington, D.C.). The work emanated from my laboratory was widely covered in print media, and through radio and TV outlets.

3. I am the author of the award-winning book titled "*Guilty Until Proven Innocent: Antioxidants, Foods, Supplements, and Cosmetics*" (2009, 368pp; www.imaginethe truth.com). In laymen terms, the book explains why chemical compounds in household items, foods, supplements, cosmetics, plasticware, jewelry, and other consumer products can cause irreparable damage to human health by being carcinogens, mutagens, teratogens, reproductive toxins, or endocrine disruptors. I am also an editor of on-line educational program (newsletters, youtube videos) that bring the latest news on consumer products and related health issues to the general public.

4. Over the last decade, as an expert and consultant, I have provided litigation support to consumer protection groups, served as an expert witness in toxic consumer product torts (cosmetics; foods; electronics; petrochemicals), supported non-profit organizations in the "failure to warn" litigations and the state actions initiated under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), petitioned government agencies on listed carcinogens and reproductive toxins, provided consulting services to cosmetic industry on cosmetic formulations, rendered consulting services on environmental pollution related to irresponsible mining practices and environmental product liability cases, provided technical guidance on sampling protocols for environmental pollutants, prepared expert declarations, provided trial depositions, developed wiping protocol for phthalates, conducted human exposure and health risk analysis, evaluated interactions between commercial products and the consumer population, and quantified the exposures to listed chemicals from materials in dispute according to NSRL and MADL standards.

5. I have a detailed knowledge of California's Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65") through my involvement with multiple projects as a consultant and an expert. I have an in-depth understanding of the Proposition 65 mission, societal ramifications, public health implications, major provisions, warning requirements to potential exposure to listed chemicals, basis for listing chemicals as carcinogens or reproductive toxins, warning obligations for businesses, and legal consequences for failure

to warn. Since 2009, I have been providing scientific backing to a number of litigations involving consumer products, such as foods, cosmetics, household items, and technical gadgets. The types of activities included evaluation of rebuttal files submitted by businesses in response to civil lawsuits alleging violations of the Proposition 65 requirement to warn, assessment of exposure to listed chemicals from consumer products in dispute, providing depositions, and testifying as a court expert witness.

6. On December 3, 2018, I have submitted comments to the proposed amendments to Title 27, California Code of Regulations Sections 25821(a) and (c) titled *“Level of Exposure to Chemicals Causing Reproductive Toxicity: Calculating the “Level in Question” for a Food Product and the Intake by the Average Consumer of a Product,”* and made several recommendations as to how the regulatory text should be modified so that the uncertainties and ambiguities would be removed, and the public interest would be best protected. I carefully reviewed the OEHHA’s proposed amendments *“Level of Exposure to Chemicals Causing Reproductive Toxicity: Calculating Intake by the Average Consumer of a Product”* dated July 5, 2019, and I have to conclude that while there are some incremental improvements with respect to the original version, there are also major setbacks and omissions that would further obscure calculations of the accurate level of exposure.

Part II. Recommendations

7. I recommend that the Proposition 65 proposed amendments to the *“Level of Exposure to Chemicals Causing Reproductive Toxicity: Calculating Intake by the Average Consumer of a Product”* be modified as described in sections 8-10 given below.

8. OEHHA’s proposed regulatory text for 27 CCR § 25821(a)

27 CCR § 25821. Level of Exposure to Chemicals Causing Reproductive Toxicity

(a) For purposes of the Act, “level in question” means the chemical concentration of a listed chemical for the exposure in question. The exposure in question includes the exposure for

which the person in the course of doing business is responsible, and does not include exposure to a listed chemical from any other source or product. (~~removed: For purposes of this section, where~~) Where a business presents evidence for the “level in question” of a listed chemical in a food product based on the average of multiple samples of that food, the level in question may not be calculated by averaging the concentration of the chemical in food products from different manufacturers or producers, or that were manufactured or packaged in different manufacturing facilities from the product at issue. ***Added language:*** The level in question may be based on the concentration of the chemical in a food product as it is offered for sale to the end consumer, even if that product contains ingredients sourced from different manufacturers or producers.

Suggested changes to regulatory text amendment that pertains to averaging:

Section (a), lines 5-9: “Where a business presents evidence for the “level in question” of a listed chemical in a food product based on the average of multiple samples of that food, the level in question may not be calculated by averaging the concentration of the chemical in food products from different manufacturers, or that were manufactured or packaged in different manufacturing facilities from the product at issue ... “

Recommendation: Averaging should not be allowed not only for “different manufacturers”, but also different batches, lots, sellers, etc. This is the reason that in my prior comments submitted to OEHHA on December 3, 2018, the suggestion was made to introduce the following text:

For purposes of this section, where a business presents evidence for the “level in question” of a listed chemical in a food product based on the average of multiple samples of that food, the level

in question may not be calculated by averaging the concentration of the chemical in food products from different batches, lots, producers, sellers, or manufacturing facilities, as well as the combinations thereof.

Please consider introducing the text given above into an amended version of the proposed regulation. The suggested text is explicit, doesn't allow for misinterpretation, and most importantly, would prevent a business from averaging multiple lots or batches with no chemical(s), or very low levels of chemical(s), with lots or batches with high levels of chemical(s), thereby artificially skewing the final average concentration of chemical(s) downward. This "dilution" allows a business to sell an adulterated food product on the American market while the lot or batch with the high levels of chemical(s) would expose consumers to levels of chemical(s) that exceed the *No Significant Risk Level* or *Maximum Allowable Dose Level* as applicable to the chemical(s) at issue.

Section (a), lines 10-12: **Added language:** The level in question may be based on the concentration of the chemical in a food product as it is offered for sale to the end consumer, even if that product contains ingredients sourced from different manufacturers or producers.

Recommendation: This OEHHA-added text is a move in the right direction. In fact, the wording " ... concentration of the chemical in a food product *as it is offered for sale to the end consumer ...*" is consistent with the comments sent to OEHHA on Dec 3, 2018, that reads,

“... for every food item, the “level in question” must be such that the respective MADL/NSRL thresholds are not exceeded”

The reason is that whatever is “*offered for sale to the end consumer*” is in fact *an individual food item*, not a non-existing averaged product for which the industry has been advocating for.

Another important point is that in the proposed text, the word “may” should be replaced with “must,” thus converting “*The level in question **may** be based on the concentration of the chemical in a food product as it is offered for sale to the end consumer ...*” to “*The level in question **must** be based on the concentration of the chemical in a food product as it is offered for sale to the end consumer*”

Without this critical change, the word “may” could allow for different types of averaging of testing results on samples which were taken before the food product has been fully processed and may undergo further processing which could be in turn a source of additional chemical contamination, thus diminishing the actual exposure. This current wording (“may” vs “must”) also fails to protect *individual consumers* from harmful exposure, by calculating instead a hypothetical exposure for a non-existing *average consumer*.

9. OEHHA’s proposed regulatory text for 27 CCR § 25821(c)(2)

(2) For exposures to consumer products, the level of exposure shall be calculated using the

reasonably anticipated rate of intake or exposure for average users of the consumer product, and not on a per capita basis for the general population. (~~removed~~: *This rate of intake or exposure is calculated as the arithmetic mean of the rate of intake or exposure for users of the product.*) The rate of intake or exposure shall be based on data for use of a general category or categories of consumer products, such as the United States Department of Agriculture Home Economic Research Report, Foods Commonly Eaten by Individuals: Amount Per Day and Per Eating Occasion, where such data are available.

Recommendation: I would like to raise my strong opposition to OEHHA's decision to surrender their initial intention of introducing the arithmetic mean as a default calculating mode, without providing any scientific basis for this kind of critical, and consequential retraction. In communications related to Prop65 enforcement, I have pointed out – repeatedly – that geometric mean values were systematically lower than the arithmetic mean values, underestimate the human exposure to a given toxicant, and most importantly, their use was not scientifically justified. The former was designed to deal with subjects when each item has multiple properties that in turn, have substantially different numeric ranges. Food product analyses do not fall into this category, thus making the use of arithmetic means fully justified. Arithmetic mean values are more health protective than geometric mean values, and thus are more consistent with the purpose of Proposition 65, i.e. to protect the public health from harmful exposures.

10. OEHHA's proposed regulatory text for 27 CCR § 25821(c)(2)

(2) The rate of intake or exposure shall be based on data for use of a general category or categories of consumer products, such as the United States Department of Agriculture Home Economic Research Report, Foods Commonly Eaten by Individuals: Amount Per Day and Per

Eating Occasion, where such data are available.

Recommendation: The proposed regulatory text severely limits options for finding the best available data on the rate of intake by the general public. The amendment given below (underlined) would allow the parties involved to use the alternative databases as well, whenever the said databases are deemed appropriate, scientifically sound, based on a larger number of parameters and confounding factors, being published in peer-reviewed journals, or compiled by the authoritative state and federal agencies.

“The rate of intake or exposure may be based on data for use of a general category or categories of consumer products, such as the United States Department of Agriculture Home Economic Research Report, Foods Commonly Eaten by Individuals: Amount Per Day and Per Eating Occasion. Nothing in this section prevents the use of alternative databases or sources of information whenever deemed appropriate or scientifically justified.”

PART III. Conclusions

11. I reserve the right to modify my opinions as new information is discovered or brought to my attention.

12. I am available for taking part in public hearings, or expert panel discussions, as well as for presenting findings to the Carcinogen Identification Committee of OEHHA’s Science Advisory Board.

Dated 08 05 19

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book website: <http://imaginethetruth.com>

research website: <http://www.csun.edu/science-mathematics/chemistry-biochemistry/gagik-melikyan>

CURRICULUM VITAE

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RESEARCH INTERESTS

Radical and ionic reactions of transition metal-complexed unsaturated systems; synthetic methodologies in organic and organometallic chemistry; novel therapeutic agents for breast cancer treatment; enzymatic chemistry; cancer drug development; aromatase metabolism; hormonal chemistry; food chemistry; antioxidants; supplements; cosmetics; environmental chemistry; consumer product chemistry; environmental laws; history of chemistry.

CONSULTING AND EXPERT SERVICES

2006-to-date provided litigation support to consumer protection groups; served as an expert witness in toxic consumer product torts (cosmetics; foods; electronics; petrochemicals); supported non-profit organizations in the “failure to warn” litigations and the state actions initiated under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65); petitioned government agencies on listed carcinogens and reproductive toxins; provided consulting services to cosmetic industry on cosmetic formulations; rendered consulting services on environmental pollution related to mining practices and environmental product liability cases; provided technical guidance on sampling protocols for environmental pollutants; prepared expert declarations; provided trial depositions; developed wiping protocol for phthalates; conducted human exposure and health risk analysis; quantified the exposures to listed chemicals from materials in dispute according to NSRL and MADL standards; directed 24 meta-analysis projects related to toxicity of Prop65 listed chemicals, such as heavy metals (lead, chromium, cadmium, arsenic, mercury), phthalates, estrogens, and androgens.

PUBLICATIONS & BOOKS & PATENTS & PRESENTATIONS & PETITIONS

89 papers in peer-reviewed journals, including
9 reviews/book chapters;
3 patents;
136 presentations, including:
national, regional and international conferences – 66 (7 - invited);

- invited talks at academic institutions – 18;
- public hearings on carcinogens, reproductive and developmental toxicants at the state and federal agencies – 1;
- expert depositions and trial testimonies on carcinogens, reproductive and developmental toxicants on behalf of the consumer protection groups – 5;
- invited public presentations – 30;
- radio interviews – 9;
- TV interviews – 7;
- 10 expert declarations on carcinogens, reproductive and developmental toxicants on behalf of the consumer protection groups;
- 6 chairing sessions at ACS national and regional conferences;
- 2 petitioning state and federal agencies to protect American public from carcinogens and reproductive toxicants.

BOOK *Guilty Until Proven Innocent: Antioxidants, Foods, Supplements and Cosmetics*. Delta 2010, 368pp (www.imaginethe truth.com).

SCIENTIFIC CITATION SCORES (as of 05.09.14)

- 874 sum of the times cited;
- 626 sum of times cited without self-citations;
- 17 h-index.

PUBLIC OUTREACH: EXPLAINING CHEMISTRY TO THE GENERAL PUBLIC

53,853 number of views of the health-related youtube videos.

PROFESSIONAL EXPERIENCE

- 1978-1990 Institute of Organic Chemistry, National Academy of Sciences, Yerevan, Armenia: Principal Researcher (1990); Senior Research Fellow (1983-1990); Junior Research Fellow (1978-1983); Research Group Leader (1978-1990);
- 1990-1992 Alexander von Humboldt Fellow, Institute of Organic Chemistry, University Erlangen-Nurnberg, Erlangen, Germany;
- 1993-1995 Adjunct Professor of Chemistry, Department of Chemistry&Biochemistry, University of Oklahoma, OK;
- 1995-1998 Assistant Professor of Chemistry, Department of Chemistry, CSUN, Northridge, CA;
- 1998-2003 Associate Professor of Chemistry, Department of Chemistry, CSUN, Northridge, CA;
- 2003-to-date Professor of Chemistry, Department of Chemistry&Biochemistry, CSUN, Northridge, CA.

NEW REACTIONS DISCOVERED

- 1984 Pd-induced, one-step transformation of 5-alkyn-4-olids to 4E-alkenoic acids;
- 1990 oxidative methylene-extrusion reaction converting 2H-pyrans into furan derivatives;
- 1997 conversion of propargyl alcohols into cyclic and acyclic 1,5-alkadiynes mediated by heteroatom-containing organic molecules;
- 2003 spontaneous generation and coupling of Co-complexed propargyl systems;
- 2019 aerobic, solvent-free, solid-state carbon-carbon bond formation *via* cationic and radical intermediates.

NEW CONCEPTS and TERMS INTRODUCED INTO SCIENCE

- 1995 "reductive decomplexation";
- 2006 "unorthodox organometallic radical chemistry";
- 2013 "sequestered" organometallic radicals;
- 2015 "chiralization by metal complexation";
- 2015 "caged triple bond;"
- 2019 "background/threshold steric factor."

AWARDS & DISTINCTIONS

- 2002 *Polished Apple Award*, University Ambassadors, CSUN;
- 2008 *Outstanding Faculty Award*, CSUN;
- 2008 *Foreign Member*, National Academy of Sciences, Yerevan, Armenia;
- 2010 *Jerome Richfield Research Scholar Award*, CSUN;
- 2015 *The Kennedy Center Stephen Sondheim Inspirational Teacher Award*, Washington, D.C.

LITERARY AWARDS

- 2011 *Finalist* in the "Science" category, The USA "Best Books 2011" Awards competition sponsored by the USA Book News;
- 2012 *Second Place Award* in the "Science" category, 2012 International Book Awards competition sponsored by JPX Media.

INVITED PRESENTATIONS AT CONFERENCES (from a total of 7)

- 1999 35th ACS Western Regional Meeting, 1999 Pacific Conference, Ontario CA;
- 2000 American-German-French Symposium "Carbon-Rich Organometallics", Erlangen, Germany;
- 2002 National Foundation on Science & Advanced Technologies (NFSAT)-Civilian Research & Development Foundation (CRDF, Washington) 5th Anniversary Conference, Yerevan, Armenia;
- 2008 International Organometallics Conference 2008, ZING Conferences, Cancun, Mexico;

2009 General Assembly, National Academy of Sciences, Yerevan, Armenia.

CHAIRING SESSIONS AT ACS CONFERENCES

1998 "Organometallic Synthesis," 34th ACS Western Regional Meeting, 1998 Pacific Conference, San-Francisco, CA;
2011 "New Reactions and Methodology," 241st ACS National Meeting, Anaheim, CA;
2012 "Metal-Mediated Reactions and Syntheses," 243st ACS National Meeting, San Diego, CA;
2013 "Metal-Mediated Reactions and Syntheses," 245st ACS National Meeting, New Orleans, GA;
2014 "Asymmetric Reactions and Syntheses," 246st ACS National Meeting, San Francisco, CA;
2015 "New Reactions and Methodology," 250st ACS National Meeting, Boston, MA.

INVITED PRESENTATIONS AT ACADEMIC INSTITUTIONS (from a total of 18)

UC San Diego, CA (1997); CSU Los Angeles, CA (1998); USC, Los Angeles, CA (1999); UC Riverside, CA (1996); University of Oklahoma, Norman, OK (1993); University of Erlangen-Nurnberg, Germany (1992); University of Hamburg, Germany (1991); University of Hannover, Germany (1991); Institute of Organic Chemistry, NAS, Yerevan, Armenia (1991); Department of Natural Sciences, NAS, Yerevan, Armenia (1998, 2009); University of Pierre and Marie Curie, Paris, France (2001); CSU Long Beach, CA (2009); California State University Northridge, Northridge, CA (2014); University of Oklahoma, Norman, OK (2014); California State University Northridge, Northridge, CA (2015), University of Southern California (USC), Los Angeles, CA (2017).

GRANT AWARDS & HONORS

1970-1973 "Best Student of the Department of Chemistry", Department of Chemistry, Yerevan State University, Yerevan, Armenia;
1987 Deutscher Akademischer Austauschdienst (DAAD), Germany;
1990 Alexander von Humboldt Fellowship, Germany;
1997 Collaborative Research Award, Civilian Research and Development Foundation (CRDF);
1998 Hewlett Packard Corporation;
1998 Judge Julian Beck Foundation;
2001 NATO, Physical and Engineering Science and Technology;
2002 American Chemical Society, Petroleum Research Fund;
2007,2011 National Science Foundation (NSF), Research at Undergraduate Institutions (RUI).

EDUCATION

- 1973 B.S. in Chemistry, Yerevan State University, Yerevan (*summa cum laude*);
- 1977 Ph.D. in Organic Chemistry, Institute of Elementorganic Compounds, National Academy of Sciences, Moscow;
- 1990 D.Sc. (Doctor of Sciences) in Organic/Organometallic Chemistry, Institute of Organic Chemistry, National Academy of Sciences, Yerevan;
- 1990-1992 Alexander von Humboldt Fellow in Organic/Organometallic Chemistry, Institute of Organic Chemistry, University Erlangen-Nurnberg, Erlangen, Germany.

TEACHING RESPONSIBILITIES

Courses taught at CSUN since 1995 (12WTU/semester):

- CHEM103 General Chemistry I;
- CHEM235 Introductory Organic Chemistry (for non-Science majors);
- CHEM331 Organic Chemistry I (for Chemistry majors);
- CHEM332 Organic Chemistry II (for Chemistry majors);
- CHEM331L Organic Chemistry I Laboratory course;
- CHEM332L Organic Chemistry II Laboratory course;
- CHEM333 Principles of Organic Chemistry I (for Science majors);
- CHEM334 Principles of Organic Chemistry II (for Science majors);
- CHEM333L Principles of Organic Chemistry I Laboratory course;
- CHEM334L Principles of Organic Chemistry II Laboratory course;
- CHEM595F Organometallic Chemistry (for graduate students).

INDIVIDUAL STUDENT TRAINING & MENTORING

- 1984-1992 4 graduate students awarded Ph.D. degrees;
- 1999-2019 12 graduate students awarded *Master of Science* degrees;
- 1996-2019 graduate (up to 3/semester) and undergraduate (up to 6/semester) students enrolled in CHEM696, CHEM495, and CHEM499 courses (total number of research students – 103, including 92 undergraduate students; total of 578 student-semesters including 408 undergraduate student-semesters);
- 1997-2019 123 student presentations (including 74 - by undergraduate students) at the departmental, school, university, state and national levels, including the ACS National and Regional Meetings, Southern California Conferences on Undergraduate Research, National Conferences on Undergraduate Research (NCUR), CSUN Student Research Symposia, CSU-Wide Students' Research Symposia, Sigma Xi Competitions, American Association for the Advancement of Science (AAAS) Annual Meetings;
- 1996-2019 54 student awards (including 37 by undergraduate students), such as Donald Bianchi Research Awards, Best Presentation, 1st, 2nd and 3rd Place

Awards at Sigma Xi Competitions (CSUN, 1996, 1997, 1998, 1999, 2003, 2005, 2006, 2007, 2009, 2013, 2015); First Place Awards at CSUN Student Research Symposia (CSUN, 1996, 1997, 2004, 2005, 2007, 2010, 2013); Second Place Award at CSUN Student Research Symposium (CSUN, 2002; 2006, 2010, 2013, 2014, 2018); Second Place Award at CSU Student Research Competition (CSU Chico, 1998); Second Place Award at CSU Student Research Competition (CSU Hayward, 2008), Nathan O. Freedman Memorial Award (CSUN, 2010); Outstanding Junior Award (CSUN, 1998); Hypercube Scholar Award (CSUN, 1999); Organic Chemistry Award (CSUN, 2000, 2012); Outstanding Graduate Student Teaching Award (CSUN, 2005, 2007, 2009); Graduate Fellow Award for Outstanding Research Promise in Science and Mathematics (CSUN, 2009); First Place Award, Award of Excellence, AAAS Pacific (San Francisco, 2010), Outstanding Freshman Chemistry Award (CSUN, 2011); Analytical Chemistry Award (CSUN, 2011); Henry Klostergard Award for Outstanding Graduating Chemistry Major (CSUN, 2012); Outstanding Graduating Senior Award (2014); 2014 Wolfson Award (2014); Outstanding Oral Presentation Award, ACS Southern California Undergraduate Research Conference (SCURC, 2015, 2017); Leslie and Terry Cutler Scholarship Award (2015); 2016 National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) Fellowship (2016); 2018 Dr. Vanessa Bustamante Greek Leadership Scholarship Award (2018); Third Place Award, American Association for the Advancement of Science (AAAS) Annual Meeting, Pacific Division, Pomona, CA (2018); Patricia A. Maloney Student Travel Fund Award (2019).

1996-2019

31 student proposals (funded – 26; submitted by undergraduate students – 16, funded - 15), University Corporation, CSUN; Associated Students, CSUN.

CURRICULUM DEVELOPMENT / PROFESSIONAL SERVICES

- I. Revised the curriculum of Organic Chemistry laboratory for chemistry majors (CHEM331L/332L) bringing up the level of instruction to that in research laboratory;
- II. Introduced high-resolution chromatographic methods and state-of-the-art experiments into Organic Chemistry curriculum;
- III. Initiated and ran new seminar series for undergraduate and graduate students “Students’ Research Seminar”;
- IV. Evaluator, Single-subject credential evaluation of science teacher;
- V. Acted as a member, and chaired, the Curriculum Committee, College of Science and Mathematics, CSUN;
- VI. Coordinated Organic Chemistry laboratory courses (CHEM235/333/334);
- VII. Acted as a library liaison for Department of Chemistry&Biochemistry;
- VIII. Continuously upgraded undergraduate Organic Chemistry lecture

- courses;
- IX. Faculty Hearing Panel, CSUN;
 - X. Post Promotion Increase (PPI) Committee, Department of Chemistry, CSUN;
 - XI. Judge, 12th Annual Sigma Xi Student Research Symposium, CSUN;
 - XII. Member, Part-time faculty personnel committee, Department of Chemistry, CSUN;
 - XIII. Member, Department Chair Search and Screen Committee, Department of Chemistry, CSUN;
 - XIV. Member, Post-tenure faculty evaluation committee, Department of Chemistry, CSUN;
 - XV. Organic Chemistry Faculty Hiring Committee, Department of Chemistry & Biochemistry, CSUN.

EXTRAMURAL FUNDING

- 2011 National Science Foundation (NSF) - \$240K;
- 2007 National Science Foundation (NSF) - \$240K;
- 2003 American Chemical Society, Petroleum Research Fund (ACS PRF) – \$50K;
- 2001 NATO, Physical and Engineering Science and Technology - \$7K;
- 1998 Hewlett Packard - \$83K;
- 1997 Civilian Research & Development Foundation (CRDF) - \$40K.

MEDIA COVERAGE and SOCIAL MEDIA PRESENCE

- 1994 The Norman Transcript, Norman, OK (article titled “Accelerated Course in Organic Chemistry Offered by University of Oklahoma);
- 1995-2005 SCOPE, College of Science&Math Newsletter (quarterly; multiple publication and presentation reports);
- 2003 Chemical and Engineering News, Science & Technology Concentrate page (Sept 22; p.28) featuring a new reaction discovered at CSUN and published in Organic Letters 2003, 5, 3395;
- 2004 CSUN Press Release “Cal State Northridge Chemistry Professor on a Quest to Defeat Breast Cancer”;
- 2004 Northridge Magazine (article titled “Cancer Research and Outreach”);
- 2005 New Times (Novoye Vremya) newspaper, Yerevan, Armenia; an interview on the US and Armenian educational systems and reorganization plan of the Armenian National Academy of Sciences;
- 2005 Northridge Magazine (article titled “Chemistry Professor on a Quest to Defeat Breast Cancer”);
- 1998-2008 @CSUN newspaper (multiple presentation and publication reports);
- 2006-2008 CSUN web banner “Gagik Melikyan is on a mission to find a breast cancer cure”;
- 2008 The Armenian Reporter, April 2008, No. 58, p.3;

2009 Asbarez daily newspaper, February 2, 2009; “ARPA Board Members Elected as Foreign Members of National Academy of Sciences of Armenia”;

2009 @CSUN newspaper, January 20, 2009; “Chemistry Professor Elected to Armenian Science Academy”;

2009 *California Courier*, February 5, 2009;

2009 *The Armenian Reporter*, February 14, 2009;

2009 *The Armenian Observer*, February 18, 2009;

2011 *North Valley Community News*, January 2011;

2011 *The Armenian Observer*, January 5, 2011;

2011 *The California Courier*, January 13, 2011;

2011 *In Focus*, California Writers Club / West Valley, February, 2011;

2011 *Daily Sundial*, CSUN, Northridge, CA; February 2, 2011;

2011 Community@CSUN, CSUN, Northridge, CA; February 2011 (Vol X, #5);

2011 @CSUN, CSUN, Northridge, CA;

2011 *Northridge Magazine*, Word’s Out, #61, Summer 2011, CSUN, Northridge, CA;

2012 *Valley Scribe*, California Writers Club /San Fernando Valley, February, 2012;

2012 *USA Armenian Life Magazine*, March 23, 2012;

2012 Radio-TV Interview Report (RTIR), March-June 2012;

2012 *Chemical and Engineering News*, June 25, 2012;

2012 *Speaker Showcase*, Bradley Communications, Broomall, PA;

2013 *Discussing the Facts vs. Hypes of Antioxidants, Supplements and Cosmetics*, CSUN Today, Feb 25, 2013;

2013 *Northridge Magazine*, Spring 2013, CSUN, Northridge, CA;

2013 *Writer’s Website of the Month*, The Valley Scribe, California Writers Club / West Valley, February, 2013;

2014 *CSUN SHINE*, Spring 2014, CSUN, Northridge, CA;

2014 *TheRoundUp*, May 2014, Pierce College, CA;

2015 *CSUN SHINE*, Spring 2015, CSUN, Northridge, CA;

2015 *The Marquee, News and Views from MTI*, New York, NY;

2015 *Massis Post*, Thousand Oaks, CA;

2015 *SCV News*, Santa Clarita, CA;

2015 *Groong News ANN*, April 6, 2015, Los Angeles, CA;

2015 *Aravot*, April 2015, Yerevan, Armenia (in Armenian);

2015 *Asbarez News*, April 13, 2015, CA (in Armenian);

2015 *USA ARMENIAN LIFE*, April 10, 2015; Glendale, CA;

2015 *ARPA Institute Newsletter*, April 2015, Tarzana, CA;

2015 *Novoye Vremya*, May 2015, Yerevan, Armenia (in Russian);

2015 *Lragyr*, April 2015, Yerevan, Armenia (in Armenian);

2015 *Tert* media outlet, April 2015, Yerevan, Armenia (in Armenian);

2015 *Hetq* media outlet, April 2015, Yerevan, Armenia;

2015 *Armenpress* media outlet, April 2015, Yerevan, Armenia;

- 2015 *Armenpress* media outlet, April 2015, Yerevan, Armenia (in Russian);
- 2015 *Armenpress* media outlet, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *News.am* media outlet, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *168.am* media outlet, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *Blognews.am* media outlet, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *Slaq.am* media outlet, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *Ankakh.com (Independent)*, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *Hetq* media outlet, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *Tert* media outlet, April 2015, Yerevan, Armenia (in Russian);
- 2015 *Digital News World*, April 2015;
- 2015 *NewHub*, April 2015;
- 2015 *Nyut.am*, April 2015, Yerevan, Armenia (in Armenian);
- 2015 *Analitikaua*, May 2015 (in Russian);
- 2015 *Makarats*, May 2015 (in Russian);
- 2015 *MaxInfo*, May 2015 (in Armenian);
- 2015 *Norlur*, May 2015 (in Armenian);
- 2016 <http://www.dor.md.net/taking-antioxidant-supplements-may-harm-good/>
DorMD.net;
- 2017 http://ru.hayazg.info/Меликян_Гагик_Георгиевич;
- 2017 [http://novostink.ru/diaspora/109043-professor-armyanin-stal-pervym-laureatom-gospremii-uchitel-vdohnoveniya.html;](http://novostink.ru/diaspora/109043-professor-armyanin-stal-pervym-laureatom-gospremii-uchitel-vdohnoveniya.html)
- 2017 *Valley Scribe*, California Writers Club /San Fernando Valley Branch, February 2017;
- 2019 <https://www.horizonatv.com/2019/03/27/asbarez-with-gagik-melikyan/>

TV APPEARANCES

- 2009 AMGA channel, Glendale, CA;
- 2011 USArmenia channel, Burbank, CA;
- 2011 CBS KCAL9, Studio City, CA;
- 2012 USArmenia channel, Burbank, CA;
- 2013 The Book Beat, LA TALK LIVE channel, Los Angeles, CA;
- 2019 LA36 / CSUN on Point, Los Angeles, CA;
- 2019 Horizon TV, Los Angeles, CA.

RADIO INTERVIEWS

- 2012 DresserAfterDark, BBS Radio;
- 2012 KYNT KSWR radio;
- 2012 KCWR radio;
- 2012 KERN Bakersfield Good Morning News radio;

2012 WOCM radio;
 2012 KCSN-FM radio;
 2012 KFNX radio;
 2012 IssuesToday radio;
 2012 Dr. Joe Radio Show.

PUBLIC APPEARANCES: *interpreting chemistry for the public, promoting public engagement with science, diverse educational activities (total of 30)*

2002 Invited speaker, U.S. Civilian Research & Development Foundation (CRDF) and Armenian Diaspora meeting, Glendale, CA;
 2007 Speaker, Alumni & Friends of Armenian Studies program (AFASP) banquet, CSUN, Northridge, CA;
 2008 Speaker, Graduation Ceremony, Armenian Studies Program, CSUN, Northridge, CA;
 2008 Speaker, 25th Anniversary Meeting of the Armenian Studies Program, CSUN, Northridge, CA;
 2009 Invited speaker, Ferrahian High School, Tarzana, CA;
 2009 Invited speaker, High School Junior Honor's Day, CSUN, Northridge, CA;
 2010 Invited speaker, ARPA Institute, book presentation, Thousand Oaks, CA;
 2011 Invited speaker, Ararat-Eskijian Museum, book presentation, Mission Hills, CA;
 2011 Invited speaker, Phi Delta Epsilon, book presentation, CSUN, Northridge, CA;
 2011 Invited speaker, Organization of Istanbul Armenians (OIA), Glendale, CA;
 2011 Invited speaker, California Writers' Club, San Fernando Valley Chapter, Canoga Park, CA;
 2011 Invited speaker, Mission Community Hospital, Panorama City, CA;
 2011 Invited speaker, Provost Colloquium, Jeromy Richfield Award presentation, CSUN, Northridge, CA;
 2011 Keynote Health Speaker, Filipino American Chamber of Commerce of Orange County (FACCOC), Garden Grove, CA;
 2011 Keynote Health Speaker, *Staying Healthy and Insights into "Natural" in Health Foods, Remedies, and Cancer Prevention*. Inland Empire Asian Business Association (IEABA), Riverside, CA;
 2011 Invited speaker, *Health is Wealth*. USANA Inc. Regional Center, Signal Hills, CA;
 2012 Book Bazaar, California Writers' Club, San Fernando Valley, Woodland Hills, CA;
 2012 Invited speaker, Armenian Engineers and Scientists of America (AESAs), Glendale, CA;
 2013 Panelist, California Writers' Club, San Fernando Valley, Woodland Hills, CA;

- 2013 Invited speaker, Student Organization for a Holistic Approach to Health and Leadership (SOHHL), Phi Delta Epsilon Fraternity, Chicanos for Community Medicine (CCM) Student Organization, CSUN, Northridge, CA;
- 2013 Guest Speaker, *Women's History Month event*, United States Citizenship and Immigration Services (USCIS) San Fernando Valley Field Office (SFV);
- 2013 Speaker, 30th Anniversary of the Armenian Studies Program, CSUN, Northridge, CA;
- 2013 Guest Speaker, Kiwanis International, Northridge Chapter, Northridge, CA;
- 2014 Invited Speaker, *Toxicity of Heavy Metals and a Long-Term Impact of Irresponsible Mining on Public Health*, CSUN, Northridge, CA;
- 2014 Invited Speaker, *Antioxidants and Natural Supplements: Unraveling the Truth*, Pierce College, Woodland Hills, CA;
- 2014 Invited Speaker, *American Public's Perpetual Struggle Against Harmful Business Practices*, Public Advocacy Group Renaissance Armenia (via satellite), Yerevan;
- 2014 Speaker, *Why "Natural" Is Not Synonymous to "Good" and Harmless,*" Vroman's Bookstore, Pasadena, CA.
- 2014 Invited Speaker, *Antioxidants, Supplements, and Cosmetics: Perils of Ignoring Science*, Regional High School Science Teachers' Conference, Ferrahian High School, Encino, CA;
- 2014 Invited Speaker, *Teaching Science in the 21st Century: Challenges and Solutions*, Regional High School Science Teachers' Conference, Ferrahian High School, Encino, CA;
- 2015 Invited Speaker, *The Centennial of Armenian Genocide: Did the World Learn the Lesson, or How to Prevent Genocides in the 21st Century?* CSUN, Northridge, CA.

REVIEWER / EVALUATOR / PANELIST / CONSULTANT / ADVISOR

Reviewer: National Science Foundation (NSF), American Chemical Society, Petroleum Research Fund (ACS PRF), *Organometallics*, *J. Amer. Chem. Soc.*, *Chem. Rev.*, *Org. Lett.*, *Tetrahedron*, *J. Organometal. Chem.*, *J. Cluster Sci.*, and *Canadian J. Chem.*; ARPA Institute, Student Innovation Competition; Grant Committee, State Committee on Science and Technology, Armenia; Fellowship Selection Committee – Chemistry, Foundation for Armenian Science and Technology (FAST).

Panelist: National Science Foundation (NSF), Washington, D.C.; California Writers' Club, San Fernando Valley, CA.

Expert/Consultant: Consumer Advocacy Group, Los Angeles, CA; Renaissance Armenia Los Angeles, Los Angeles, CA; Thomson Reuters Expert Witness Services; Round Table Group, Washington, D.C.; National Academy of Sciences

(NAS), Armenia; Foundation for Armenian Science and Technology (FAST).

National Registries:

2013-2014 Business Who's Who Registry;
American Men and Women of Science;
America's Registry of Outstanding Professionals 2005-2006;
Who's Who in Sciences Higher Education (WWSHE, 2006);
Marquis Who is Who in America (2019).

Scientific Advisory Board: Center for Responsible Mining's Independent Monitoring Technical Advisory Board (IMTAB), American University of Armenia (AUA), Yerevan, Armenia; ARPA Institute, Tarzana, CA.

Thesis committee: Department of Chemistry and Biochemistry, CSUN; Department of Family and Consumer Sciences, CSUN.

Judge: American Association for the Advancement of Science (AAAS) Annual Meeting, Pacific Division, Pomona, CA; Science Olympiad, Armenian Private/Charter Schools, Los Angeles, CA; CSUN Student Research Symposia, CSUN, Northridge, CA.

AFFILIATIONS

American Chemical Society; American Chemical Society, Organic Division; American Association for the Advancement of Science (AAAS); ACS Consulting Network; California Faculty Association (CFA); American Association of University Professors (AAUP); California Teachers Association (CTA); National Education Association (NEA); Service Employees International Union (SEIU); California Writers' Club - San Fernando Valley & West Hills Chapters; Independent Writers of Southern California (IWOSC); Institute for Community Health and Wellbeing (CSUN); Book Publicists of Southern California (BPSC); Union of Concerned Scientists (UCS); Public Citizen Foundation; Council on Undergraduate Research (CUR); National Association of Science Writers (NASW); Armenian Engineers and Scientists of America (AESA); Greater Los Angeles Writers Society (GLAWS).