BIOGRAPHICAL SKETCH

NAME:
William Parker Lyon Carter

TITLE: Research Chemist Emeritus

PLACE OF BIRTH:	**NATIONALITY:**
Eugene, Oregon, USA	United States

EDUCATION:

INSTITUTION AND LOCATION	DEGREE	YEAR	SCIENTIFIC FIELD
University of California, Riverside, CA	BA	1967	Chemistry
University of Iowa Iowa City, IA	Ph.D.	1973	Physical Chemistry

HONORS:
University of California, Riverside Non-Senate Distinguished Researcher Award, 1992; Institute of Scientific Information "Highly Cited" researcher, 2003; California Air Resources Board Haagen-Smit Clean Air Award, 2005; Atmospheric Environment Haagen-Smit Prize, 2005; First annual A&WMA Arthur C. Stern award, 2013.

MEMBERSHIPS:
South Coast AQMD Scientific Advisory Council (1989 - 1997); California ARB Modeling Advisory Committee (1990 - 1993); Air Research Advisory Board of the Texas Air Research Center (1999-present); the Scientific Advisory Committee for the Texas Environmental Research Consortium (2004-2010); Independent Technical Advisory Committee for the Texas Air Quality Research Program (2016-present)

MAJOR RESEARCH INTEREST:
Atmospheric Chemistry of Organic Compounds

RESEARCH AND PROFESSIONAL EXPERIENCE:

2005 - Present University of California, Riverside, CA. College of Engineering Center for Environmental Research and Technology. Research Chemist Emeritus. Develops methods for evaluating impacts of volatile organic compounds (VOCs) in photochemical air pollution. Develops chemical mechanisms for urban and regional airshed models used for research and regulatory applications. Develops atmospheric chemical mechanism generation systems. See http://www.cert.ucr.edu/~carter for additional information and links to reports and data.

1987 - 2005 University of California, Riverside, CA. Statewide Air Pollution Research Center and College of Engineering Center for Environmental Research and Technology. Research Chemist. Develops methods for evaluating relative ozone impacts of volatile organic compounds (VOCs) in photochemical air pollution. Develops chemical mechanisms for urban and regional airshed models used for research and regulatory applications. Develops procedures for using environmental chamber data for evaluating such mechanisms and VOC reactivity assessment. Directs environmental chamber research programs. Participates in or directs kinetic or mechanistic studies related to photochemical smog formation.

1973-1987 University of California, Riverside, CA. Statewide Air Pollution Research Center. Associate Research Chemist (1981-1987), Assistant Research Chemist (1976-1981) and Postgraduate Research Chemist (1973-1976). Developed chemical kinetic models for photochemical smog. Participated in planning and analysis of data for environmental chamber programs. Developed procedures and software for kinetic model calculations and analysis of chamber data. Participated in kinetic or mechanistic studies related to photochemical smog formation.

1970-1973 University of Iowa, Iowa City, IA. Graduate Research Assistant. Studied chemical activation systems involving photochemically produced free radicals employing vacuum and chromatographic techniques. Developed procedures and software for analysis of complex chemical activation systems.

1970-1972 University of Iowa, Iowa City, IA. Graduate Teaching Assistant. Assisted in physical chemistry and freshmen chemistry courses.

1967-1969 California Institute of Technology, Pasadena, CA. Graduate Research Assistant. Studied the mechanism of unimolecular pyrolysis reactions. Employed chromatographic and organic synthesis techniques.

RESEARCH PUBLICATIONS

Optical Isomerizations During the Pyrolysis of Alkylcyclo-propanes: Evidence for Diradical Intermediates and an Estimate of Their Relative Rates of Bond Rotation and Ring Closure
J. Amer. Chem. Soc., 90, 7344-7346 (1968)
Carter, W.P. and R.G. Bergman

Optically Active 1-Ethyl-2-Methylcyclopropanes in the Gas Phase. An Estimate of Relative Rates of Bond Rotation and Ring Closure in Diradical Intermediates
J. Amer. Chem. Soc., 91, 7411-7425 (1969)
Bergman, R.G. and W.P. Carter

Behavior of Collisonal Efficiencies in External Activation Systems.
J. Phys Chem., 78, 612-617 (1974)
Carter, W.P. and D.C. Tardy

Homoallylic Isomeriztion of 1-Penten-4-yl and the Critical Energy for Methyl + 1,3-Butadiene
J. Phys. Chem., 78, 1245-1248 (1974)
Carter, W.P. and D.C. Tardy

Ring Opening of Chemically Activated Cyclopentyl and Methyl Cyclobutyl Radicals
J. Phys. Chem., 78, 1573-1578 (1974)
Carter, W.P. and DC. Tardy

Analysis of External Activation Systems with Multiple Isomerizations and Decompositions
J. Phys. Chem., 78, 1579-1582 (1974)
Carter, W.P. and D.C. Tardy

Reactions of Chemically Activated Pentenyl Radicals: Kinetic Parameters of 1,4 H Shifts and the Cis-Trans Isomerization of Homoallylic Radicals
J. Phys. Chem., 78, 2201-2211 (1974)
Carter, W.P. and D. C. Tardy

The Effect of Latitude on the Potential for Formation of Photochemical Smog
Atmos. Environ., 10, 731-734 (1976)
Nieboer, H., A.C. Lloyd, W.P. Carter and J.N. Pitts, Jr.

Evidence for Alkoxy Radical Isomerizaiton in Photooxidations of C_4-C_6 Alkanes Under Simulated Atmospheric Conditions
Chem. Phys. Lett., 42, 22-27 (1976)
Carter, W.P., K.R. Darnall, A.C. Lloyd, A.M. Winer and J.N. Pitts, Jr.

Importance of RO_2 + NO in Alkyl Nitrate Formation from C_4-C_6 Alkane Photooxidations Under Simulated Atmospheric Conditions
J. Phys. Chem., 80, 1948-1950 (1976)
Darnal, K.R., W.P. Carter, A.M. Winer, A.C. Lloyd and J.N. Pitts, Jr.

Computer Modeling of Smog Chamber Data: Progress in Validating Detailed Mechanisms for the Photooxidation of Propene and n-Butane in Photochemical Smog
Int. J. Chem. Kinet., 11, 45-101 (1979)
Carter, W.P., A.C. Lloyd, J.L. Sprung and J.N. Pitts, Jr.

Effects of Ultraviolet Spectral Distribution on the Photochemistry of Simulated Atmospheres
Atmos. Environ., 13, 989-993 (1979)
Winer, A.M., G.M. Breuer, W.P. Carter, K.R. Darnall and J.N. Pitts, Jr.

Smog Chamber Studies of Temperature Effects on Photochemical Smog
Environ. Sci. Technol., 13, 1094-1100 (1979)
Carter W.P.L., A.M. Winer, K.R. Darnall and J.N. Pitts, Jr.

Reactions of C_2 and C_4 a-hydroxy Radicals with O_2
J. Phys. Chem., 83, 2305-2311 (1979)
Carter, W.P.L., K.R. Darnall, R.A. Graham, A.M. Winer and J.N. Pitts, Jr.

A Smog Chamber and Modeling Study of the Gas Phase NO_x-Air Photooxidations of Toluene and the Cresols
Int. J. Chem. Kinet., 12, 779-836 (1980)
Atkinson, R., W.P.L. Carter, K.R. Darnall, A.M. Winer and J.N. Pitts, Jr.

The Effect of Peroxyacetyl Nitrate on the Initiation of Photochemical Smog
Environ. Sci. Technol, 15, 831-834 (1981)
Carter, W.PL., A.M. Winer and J.N. Pitts, Jr.

Reaction of Hydrazines with Ozone Under Simulated Atmospheric Conditions
Environ. Sci. Technol., 15, 823-828 (1981)
Tuazon, E.C., W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Evidence for Chamber Dependent Radical Sources: Impact on Kinetic Computer Models for Air Pollution
Int. J. Chem. Kinet., 13, 735-740 (1981)
Carter, W.P.L., R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Major Atmospheric Sink for Phenol and the Cresols: Reaction with the Nitrate Radical
Environ. Sci. Technol, 15, 829-831 (1981)
Carter, W.P.L., A.M. Winer and J.N. Pitts, Jr.

An Experimental Protocol for the Determination of OH Radical Rate Constants with Organics Using Methyl Nitrite as an OH Radical Source
J. Air Pollut. Control Assoc., 31, 1090-1092 (1981)
Atkinson, R., W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Gas Phase Reactions of NO_x-Dimethylhydrazine with Ozone and NO_x in Simulated Atmospheres. Facile Formation of N-Nitrosodimethylane
In N-nitroso Compounds, R.A. Scanlan and S.R. Tannenbaum, Es., ACS Symposium Series 174, 117 (1981)
Carter W.P.L., E.C. Tuazon, A.M. Winer and J.N. Pitts, Jr.

Effects of Kinetic Mechanisms and Hydrocarbon Composition on Oxidant-Precursor Relations Predicted by the EKMA Isopleth Technique
Atmos. Environ., 16, 113-120 (1982)
Carter, W.P.L., A.M. Winer and J.N. Pitts, jr.

Studies of Trace Non-ozone Species Produced in a Corona Discharge Ozonizer
J. Air Pollut. Control Assoc., 32, 274-276 (1982)
Harris, G.W., W.P.L. Carter, A.M. Winer, R.A. Graham and J.N. Pitts, Jr.

Observations of Nitrous Acid in the Los Angeles Atmosphere and Implications for Predictions of Ozone-Precursor Relationships
Environ. Sci. Technol, 16, 414-419 (1982)
Harris, G.W. W.P.L. Carter, A.M. Winer, J.N. Pitts, Jr., U. Platt and D. Perner

Kinetics of the Reactions of OH Radical with n-Alkanes at 299 ± 2 K
Int. J. Chem. Kinet., 14, 781-788 (1982)
Atkinson, R., S.M. Aschmann, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Rate Constants for the Gas Phase Reaction of OH Radicals with a Series of Ketones at 299 ± 2 K
Int. J. Chem. Kinet., 14, 389-847 (1982)
Atkinson, R., S.M. Aschmann, W.P.L. Carter and J.N. Pitts, Jr.

Kinetics of the Gas Phase Reactions of OH Radicals with Alkyl Nitrates at 299 ∀ 2K
Int. J. Chem. Kinet., 14, 919-926 (1982)
Atkinson, R., S.M. Aschmann, W.P.L. Carter, A.M. Winer

Experimental Investigation of Chamber-Dependent Radical Sources
Int. J. Chem. Kinet., 14, 1071-1103 (1982)
Carter, W.P.L., R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Alkyl Nitrate Formation from the NO_x-Air Photooxidations of C_2-C_8 n-alkanes
J. Phys. Chem., 86, 4563-4568 (1982)
Atkinson, R., S.M. Aschmann, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Reply to "Comments on 'A Smog Chamber and Modeling Study of the Gas Phase NOx-Air Photooxidation of Toluene and the Cresols'"
Int. J. Chem. Kinet., 14, 813-814 (1982)
Carter, W.P.L., R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Rate Constants for the Gas Phase Reactions of OH Radicals with a Series of Bi- and Tri-Cycloalkanes at 299 ± 2K: Effects of Ring Strain
Int. J. Chem. Kinet., 15, 37-50 (1983)
Atinson, R., S.M. Aschmann and W.P.L. Carter

Kinetics of the Reactions of O_3 and OH Radicals with Furan and Thiphene at 298 ± 2 K
Int. J. Chem. Kinet., 15, 51-61 (1983)
Atkinson, R., S.M. Aschmann and W.P.L. Carter

The Gas Phase Reaction of Hydrazine and Ozone: A Non-photolytic Source of OH Radicals for Measurement of Relative OH Radical Rate Constants
Int. J. Chem. Kinet., 15, 619-629 (1983)
Tuazon, E.C., W.P.L. Carter, R. Atkinson and J.N. Pitts, Jr.

Effects of Pressure on Product Yields in the NO_x-Photooxidations of Selected Aromatic Hydrocarbons
J. Phys. Chem., 87, 1605-1610 (1983)
Atkinson, R., W.P.L. Carter and A.M. Winer

Gas Phase Reaction of 1,1-Dimethlhydrazine with Nitrogen Dioxide
J. Phys. Chem., 87, 1600-1605 (1983)
Tuazon, E.C., W.P.L. Carter, R.V. Brown, A.M. Winer and J.N. Pitts, Jr.

Effects of Temperature and Pressure on Alkyl Nitrate Yields in the NO_x Photooxidations of n-Pentane and n-Heptane
J. Phys. Chem., 87, 2012-1018 (1983)
Atkinson, R., W.P.L. Carter and A.M. Winer

Effects of Ring Strain on Gas Phase Rate Constants: 1. Ozone Reactions with Cycloalkenes
Int. J. Chem. Kinet., 15, 721-731 (1983)
Atkinson, R., S.M. Aschmann, W.P.L. Carter and J.N. Pitts, Jr.

OH Radical Rate Constants and Photolysis Rates of a-Dicarbonyls
Environ. Sci. Technol, 17, 479-484 (1983)
Plum, C.N., E. Sanhueza, R. Atkinson, W.P.L. Carter and J.N. Pitts, Jr.

Effects of Ring Strain on Gas Phase Rate Constants. 2. OH Radical Reactions with Cycloalkanes
Int. J. Chem. Kinet., 15, 1161-1177 (1983)
Atkinson, R., S.M. Aschmann and W.P.L. Carter

Atmospheric Reactions of N-Nitrosodimethylamine and Dimethylnitramine
Environ. Sci. Technol., 18, 49-54 (1983)
Tuazon E.C., W.P.L. Carter, R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Trace Nitrogenous Series in Urban Atmospheres
Environ.. Health Perspect., 52, 153-157 (1983)
Pitts, J.N., Jr., A.M. Winer, G.W. Harris, W.P.L. Carter and E.C. Tuazon

Kinetics of the Reactions of OH Radicals with a Series of Branched Alkanes at 297 $\pm$ 2 K
Int. J. Chem. Kinet., 16, 469-481 (1984)
Atkinson, R., W.P.L. Carter, S.M. Aschmann, A.M. Winer and J.N. Pitts, Jr.

Rate Constants for the Gas Phase Reactions of NO_3 Radicals with a Series of Organic in Air at 298 $\pm$ 1 K
J. Phys Chem., 88, 1210-1215 (1984)
Atkinson, R., C.N. Plum, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Rate Constants for the Gas Phase Reactions of NO_3 Radicals with a Series of Alkanes at 298 $\pm$ 1 K
J. Phys. Chem., 88, 2361-2364 (1984)
Atkinson, R., C.N. Plum, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Direct Determination of the Equilibrium Constant at 298 K for the $NO_2 + NO_3 \rightarrow N_2O_5$ Reactions
J. Phys. Chem., 88, 3095-3098 (1984)
Tuazon, E.C., E. Sanhueza, R. Atkinson, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Kinetics of the Gas Phase Reactions of NO_3 Radicals with a Series of Aromatics at 296 $\pm$ 2 K
Int. J. Chem. Kinet., 16, 887-898 (1984)
Atkinson, R., W.P.L. Carter, C.N. Plum, A.M. Winer and J.N. Pitts, Jr.

Effects of Temperature and Pressure on the Photochemical Reactivity of a Representative Aviation Fuel
Environ. Sci. Technol., 18, 556-561 (1984)
Carter, W.P.L., R. Atkinson and A.M. Winer

An Investigation of the Dark Formation of Nitrous Acid in Environmental Chambers
Int. J. Chem. Kinet., 16, 919-939 (1984)
Pitts, J.N., Jr., E. Sanhueza, R. Atkinson, W.P.L. Carter, A.M. Winer, G. W. Harris and C.N. Plum

Kinetics of the Reactions of O_3 and OH Radicals with a Series of Dialkenes and Trialkenes at 294 $\pm$ 2 K
Int. J. Chem.. Kinet., 16, 967-976 (1984)
Atkinson, R., S.M. Aschmann and W.P.L. Carter

Formation of Alkyl Nitrates from the Reaction of Branched and Cyclic Alkyl Peroxy Radicals with NO
Int. J. Chem.. Kinet., 16, 1085-1101 (1984)
Atkinson, R., S.M. Aschmann, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Kinetics and Mechanisms of the Gas Phase Reactions of Ozone with Organic Compounds Under Atmospheric Conditions
Chem. Rev., 84, 437-470 (1984)
Atkinson, R. and W.P.L. Carter

Rate Constants for the Gas Phase Reactions of OH Radicals and O_3 with Pyrrole at 295 ± 1 K and Atmospheric Pressure
Atmos. Environ., 18, 2105-2107 (1984)
Atkinson, R., S.M. Aschmann, A.M. Winer and W.P.L. Carter

Yields of Glyoxal and Methylglyoxal from the NO_x-Air Photooxidaitons of Toluene and m-and p-Xylene
Environ. Sci. Technol., 18, 981-984 (1984)
Tuazon, E.C., R. Atkinson, H. MacLeod, H.W. Biermann, A.M. Winer, W.P.L. Carter and J.N. Pitts, Jr.

Rate Constants for the Gas Phase Reactions of NO_3 Radicals with Furan, Thiophene and Pyrrole at 295 ± 1 K and Atmospheric Pressure
Environ. Sci. Technol., 19, 159-163 (1985)
Atkinson, R., S.M. Aschmann, A.M. Winer and W.P.L. Carter

Atmospheric Chemistry of cis- and trans-3-Hexene-2,5-dione
Environ. Sci. Technol., 19, 265-269 (1985)
Tuazon, E.C., R. Atkinson and W.P.L. Carter

Extent of H-Atom Abstraction from the Reaction of the OH Radical with 1-Butene Under Atmospheric Conditions
Int. J. Chem. Kinet., 17, 725-734 (1985)
Atkinson, R., E.C. Tuazon and W.P.L. Carter

Atmospheric Chemistry of Alkanes
J. Atmos. Chem., 3, 377-405 (1985)
Carter, W.P.L., and R. Atkinson

a-Dicarbonyl Yields from the NO_x-Air Photooxidations of a Series of Aromatic Hydrocarbons in Air
Environ. Sci. Technol., 20, 383-387 (1986)
Tuazon, E.C., H. MacLeod, R. Atkinson and W.P.L. Carter

An Experimental Study of Incremental Hydrocarbon Reactivity
Environ. Sci. Technol., 21, 670-679 (1987)
Carter, W.P.L. and R. Atkinson

A Computer Modeling Study of Incremental Hydrocarbon Reactivity
Environ. Sci. Technol, 23, 864-880 (1989)
Carter, W.P.L. and R. Atkinson

Alkyl Nitrate Formation from the Atmospheric Photooxidation of Alkanes; A Revised Estimation Method
J. Atmos. Chem., 8, 165-173 (1989)
Carter, W.P.L. and R. Atkinson

Computer Modeling Studies of Incremental Reactivities of Organics with Respect to Urban Ozone Formation
Transactions of the APCA International Specialty Conference on "The Scientific and Technical Issues Facing Post-1987 Ozone Control Strategies," November 16-19, 1988, Hartford, CT (1989)
Carter, W.P.L.

Formation of Ring-Retaining Products from the OH Radical-Initiated Reactions of Benzene and Toluene
Int. J. Chem. Kinet., 21, 801-827 (1989)
Atkinson, R., S.M. Aschmann, J. Arey and W.P.L. Carter

A Detailed Mechanism for the Gas-Phase Atmospheric Reactions of Organic Compounds
Atmos. Environ., 24A, 481-518 (1990)
Carter, W.P.L.

A Method for Evaluating the Atmospheric Ozone Impact of Actual Vehicle Emissions
Transactions of the SAE International Congress and Exposition, Detroit, MI, February 26-March 2, 1990
Lowi, A. and W.P.L. Carter

Aggregation and Analysis of Volatile Organic Compound Emissions for Regional Modeling
Atmos. Environ., 24A, 1107-1133 (1990)
Middleton, P., W.R. Stockwell and W.P.L. Carter

Thermal Decomposition of Peroxyacetyl Nitrate and Reactions of Acetyl Peroxy Radicals with NO and NO_2 Over the Temperature Range 283-313 K
J. Phys. Chem., 95, 2434-2437 (1991)
Tuazon, E.C., W.P.L. Carter and R. Atkinson

Products of the Gas-Phase Reaction of Methyl-tert-Butyl Ether with the OH Radical in the Presence of NO_x
Int. J. Chem. Kinet., 23, 1003-1015 (1991)
Tuazon, E.C., W.P.L. Carter, S.M. Aschmann and R. Atkinson

Reactions Alkoxy Radicals under Atmospheric Conditions: The Relative Importance of Decomposition Versus Reaction with O_2
J. Atmos Chem., 13, 195-210 (1991)
Atkinson R. and W.P.L. Carter

Evaluation of a Detailed Gas Phase Atmospheric Reaction Mechanism Using Environmental Chamber Data
Atmos. Environ., 25A, 2771-2806 (1991)
Carter, W.P.L. and F. W. Lurmann

Development of Ozone Reactivity Scales for Volatile Organic Compounds
J. Air and Waste Manage. Assoc., 44, 881-899 (1994)
Carter, W. P. L.

Environmental Chamber Studies of Maximum Incremental Reactivities of Volatile Organic Compounds
Atmospheric Environment, 29, 2499-2511 (1995)
Carter, W. P. L., J. A. Pierce, D. Luo, and I. L. Malkina

Computer Modeling of Environmental Chamber Measurements of Maximum Incremental Reactivities of Volatile Organic Compounds
Atmospheric Environment, 29, 2513-2527 (1995)
Carter, W. P. L.

Rate Constants for the Reactions of $O(^3P)$ with Selected Monoterpenes
Int. J. Chem. Kinet., 28, 1-8 (1996)
D. Luo, J. A. Pierce, I. L. Malkina, and W. P. L. Carter

Development and Evaluation of a Detailed Mechanism for the Atmospheric Reactions of Isoprene and NO_x.
Int. J. Chem. Kinet., 28, 497-530 (1996)
Carter, W. P. L. and R. Atkinson

Condensed Atmospheric Photoxidation Mechanisms for Isoprene
Atmospheric Environment, 30, 4275-4290 (1996)
Carter, W. P. L.

Investigation of the Atmospheric Reactions of Chloropicrin
Atmospheric Environment, 31, 1425-1439 (1997)
CE-CERT Document no. 96-AP-029J
W. P. L. Carter, D. Luo, and I. L. Malkina

The reactions of Selected Acetates with the OH Radical in the Presence of NO: Novel Rearrangement of Alkoxy Radicals of Structure RC(O)CH(O)R'
Journal of Physical Chemistry A, 102, 2316-2321 (1998)
E. C. Tuazon S. M. Aschmann, R. Atkinson and W. P. L. Carter

The Concept of Species age in Photochemical Modeling.
Atmospheric Environment, 32, 3403-3413 (1998)
A. Venkatram, S Du, R Hariharan, W.P.L. Carter, R Goldstein

Reactivity Estimates for Aromatic Compounds 1. Uncertainty in Chamber-Derived Parameters.
Atmospheric Environment, 34, 4337-4348 (2000)
L. Wang, J. B. Milford, and W. P. L. Carter

Reactivity Estimates for Aromatic Compounds 2. Uncertainty in Incremental Reactivities.
Atmospheric Environment, 34, 4349-4360 (2000)
L. Wang, J. B. Milford, and W. P. L. Carter

Atmospheric Oxidation Mechanism for Methyl Pivalate, $CH_3CC(O)OCH_3$.
J. Phys. Chem A. 105: 7225-7235 (2001)
Wallington, T. J., Y. Ninomiya, M. Mashino, M. Kawasaki, V. L. Orkin, R. E. Huie, M. J. Kurylo, W. P. L. Carter, D. Luo, and I. L. Malkina

Analysis of Chamber-Derived Incremental Reactivity Estimates for N-Butyl Acetate and 2-Butoxy Ethanol
Atmospheric Environment, 36, 115-135 (2002)
Wang, L, J. B. Milford, and W. P. L. Carter

The Ozone Formation Potential of 1-Bromo-propane
J. Air & Waste Manage. Assoc., 53, 262-272 (2003)
Whitten, G. Z., J. P. Cohen, T. C. Myers and W. P. L. Carter

A New Environmental Chamber for Evaluation of Gas-Phase Chemical Mechanisms and Secondary Aerosol Formation
Atmospheric Environment, 39 7768–7788 (2005)
William P. L. Carter, David R. Cocker III, Dennis R. Fitz, Irina L. Malkina, Kurt Bumiller, Claudia G. Sauer, John T. Pisano, Charles Bufalino, and Chen Song

Evaluation of alkene degradation in the detailed tropospheric chemistry mechanism, MCM v3, using environmental chamber data
J Atmos Chem 55, 55–79 (2006)
P. G. Pinho, C.A. Pio, W. P. L. Carter, and M. E. Jenkin

Impact of an Updated Carbon Bond Mechanism on Predictions from the Community Multiscale Air Quality (CMAQ) Modeling System: Preliminary Assessment
Journal of Applied Meteorology and Climatology, 47, 3-14, 2008
G. Sarwar, D. Luecken, G. Yarwood, G. Z. Whitten, and W. P. L. Carter

A study of VOC Reactivity in the Houston-Galveston Air Mixture Utilizing an Extended Version of SAPRC99 Chemical Mechanism
Atmospheric Environment, 42, 5733–5742, 2008
B. Czader; Daewon W Byun; Soon-Tae Kim; W. P. Carter

Reactivity scales for Volatile Organic Compounds using the SAPRC-07 and MCMv3.1 Chemical Mechanisms
J. Air & Waste Manage. Assoc, 60, 914-924, 2010
R. G. Derwent, M. E. Jenkin, M. J. Pilling, W. P.L. Carter, A. Kaduwela

Development of the SAPRC-07 Chemical Mechanism
Atmospheric Environment, 44, 5324-5335, 2010
W, P. L. Carter

Development of a Condensed SAPRC-07 Chemical Mechanism
Atmospheric Environment, 44, 5336-5345.2010
W, P. L. Carter

Modeling Alkene Chemistry Using Condensed Mechanisms for Conditions Relevant to Southeast Texas, USA
Atmospheric Environment, 44, 5365-5374, 2010.
G. Heo, Yosuke Kimura, E. McDonald-Buller, W. P.L. Carter, G. Yarwood, D. T. Allen

A New Condensed Toluene Mechanism for Carbon Bond: CB05-TU
Atmospheric Environment, 44, 5346-5355, 2010
G. Z. Whitten, G. Heo, Y. Kimura, E. McDonald-Buller, D. T. Allen, W. P. L. Carter, and G Yarwood

Rate of Gas Phase Association of Hydroxyl Radical and Nitrogen Dioxide
Science, 2010, 330, 646-649
Mollner, A. K., S. Valluvadasan, L. Feng, M. K. Sprague, M. Okumura, D. B. Milligan, W. J. Bloss, S. P. Sander, P. T. Martien, R. A. Harley, A. B. McCoy, and W. P. L. Carter

Secondary Organic Aerosol from Ozonolysis of Biogenic Volatile Organic Compounds: Chamber Studies of Particle and Reactive Oxygen Species Formation
Environ. Sci. Technol, 2011, 45, 276–282
X. Chen, P. Hopke, and W.P.L. Carter

Interpreting predictions from the SAPRC07 mechanism based on regional and continental simulations
Atmospheric Environment, 2012, 46, 417-429
Hutzell, W. T., D.J. Luecken, K.W. Appel, and W.P.L. Carter.

Winter ozone formation and VOC incremental reactivities in the Upper Green River Basin of Wyoming
Atmospheric Environment, 50, 255-266 (2012)
W. P. L. Carter and J. H. Seinfeld

Modeling ozone formation from alkene reactions using the Carbon Bond chemical mechanism
Atmospheric Environment, 59, 141-150 (2012)
G. Heo, Elena McDonald-Buller, W. P. L. Carter, G. Yarwood, G. Z. Whitten, and D. T. Allen

Potential impacts of two SO_2 oxidation pathways on regional sulfate concentrations: aqueous-phase oxidation by NO_2 and gas-phase oxidation by Stabilized Criegee Intermediates
Atmospheric Environment, 68 186-197 (2013)
G. Sarwar, K. Fahey, R. Kwok, S. J. Roselle, R. Mathur, J. Xue, J. Yu, W. P. L. Carter

Development of revised SAPRC aromatic mechanisms
Atmospheric Environment, 77, 404-414 (2013)
W. P. L. Carter and G. Heo

Understanding the impact of recent advances in isoprene photooxidation on simulations of regional air quality
Atmospheric Environment, Atmos. Chem. Phys., 13, 8439–8455 (2013)
Y. Xie, F. Paulot, W. P. L. Carter, C. G. Nolte, D. J. Luecken, W. T. Hutzell, P. O. Wennberg, R. C. Cohen, and R. W. Pinder

Development of a database for chemical mechanism assignments for volatile organic emissions
Journal of the Air & Waste Management Association, 65, 1171-1184 (2015)
W. P. L. Carter

Modeling the current and future roles of particulate organic nitrates in the southeastern United States
Environ. Sci. Technol. 49, 14195-14203 (2015)
H. O. T. Pye, D. J. Luecken, Lu Xu, C. M. Boyd, N. L. Ng, K. R. Baker, B. R. Ayres, J. O. Bash, K. Baumann, W. P. L. Carter, E. Edgerton, J. L. Fry, W. T. Hutzell, D. Schwede, and P. B. Shepson

New directions: Atmospheric chemical mechanisms for the future
Atmos. Environ. 112, 609-610 (2015)
Kaduwela, A, D. Luecken, W. Carter, and R. Derwent

Perspective on Mechanism Development and Structure-Activity Relationships for Gas-Phase Atmospheric Chemistry
International Journal of Chemical Kinetics 60, 435-469 (2018)
L. Vereecken, B. Aumont, I. Barnes, J.W. Bozzelli, M.J. Goldman, W.H. Green, S. Madronich, M.R. Mcgillen, A. Mellouki, J.J. Orlando, B. Picquet-Varrault, A.R. Rickard, W.R. Stockwell, T.J. Wallington, and W.P.L. Carter

Analysis of SAPRC16 chemical mechanism for ambient simulations
Atmospheric Environment 192, 136-150 (2018)
M.A. Venecek, C. Cai, A Kaduwela, J. Avise, W.P.L. Carter, and M.J. Kleeman

Updating the SAPRC Maximum Incremental Reactivity (MIR) scale for the United States from 1988 to 2010
Journal of the Air & Waste Management Association, 68, 1301-1316. https://doi.org/10.1080/10962247.2018.1498410
M.A. Venecek, W.P.L. Carter, and M.J. Kleeman

Database for the kinetics of the gas-phase atmospheric reactions of organic compounds
Earth Syst. Sci. Data, 12, 1203-1216, https://doi.org/10.5194/essd-12-1203-2020
M. R McGillen, W. P. L. Carter, A. Mellouki, J. J. Orlando, B. Picquet-Varrault, and T. J. Wallington

Development and Evaluation of a Detailed Mechanism for Gas-Phase Atmospheric Reactions of Furans
ACS Earth Space Chem. 4, 8, 1254-1268 (2020)
J. Jiang, W. L. L. Carter, D. R. Cocker III, and K. C. Barsanti

Development of ozone reactivity scales for volatile organic compounds in a Chinese megacity
Atmos. Chem. Phys., 21, 11053–11068, 2021 https://doi.org/10.5194/acp-21-11053-2021
Yingnan Zhang, Likun Xue, William P. L. Carter, Chenglei Pei, Tianshu Chen, Jiangshan Mu, Yujun Wang, Qingzhu Zhang, and Wenxing Wang

Observation-Based Estimations of Relative Ozone Impacts by Using Volatile Organic Compounds Reactivities
Environ. Sci. Technol. Lett. 9, 10-15, 2022 https://doi.org/10.1021/acs.estlett.1c00835
Chenxin Zhang, Yu Song*, Hongli Wang, Limin Zeng, Min Hu, Keding Lu, Shaodong Xie, and William P. L. Carter

Estimation of Rate Constants for Reactions of Organic Compounds Under Atmospheric Conditions
Atmosphere 2021, 12(10), 1250; https://doi.org/10.3390/atmos12101250
William P L. Carter

The use of the electrotopological state as a basis for predicting hydrogen abstraction rate coefficients: a proof of principle for the reactions of alkanes and haloalkanes with OH
Environ. Sci., Atmos., 4, 18-34, 2024. https://doi.org/10.1039/D3EA00147D
Max R. McGillen, Lisa Michelat, John J. Orlando, and William P. L. Carter

PUBLISHED PROCEEDINGS AND REPORTS
(Note: most project reports dated after 1993 are available at http://www.cert.ucr.edu/~carter/pubs)

Estimates of Photochemical Reactivities of Solvent Species Used in Architectural Coatings
82nd Annual Meeting of the Air and Waste Management Association, Anaheim, CA, June 25-30, 1989

Estimates of Photochemical Reactivities of Solvent Species Used in Architectural Coatings
Proceedings, 82nd Annual Meeting of the Air and Waste Management Association, Anaheim, California, June 25-30, 1989
W.P.L. Carter

Computer Simulation of Atmospheric Chemistry
California Air Environment, 4, No. 3 (1974)
A.C. Lloyd, W.P. Carter and J.L. Sprung

Development of Experimentally Validated Models for Photochemical Air Pollution
Proceedings of Second Annual NSF-RANN Trace Contaminants Conference Asilomar, CA, August 29-31, 1974 (1975)
J.N. Pitts, Jr., W.P. Carter, K.R.. Darnall, G.J. Doyle, W. Kuby, A.C. Lloyd, J.M. McAfee, C. Pate, J.P. Smith, J.L. Sprung and A.M. Winer

Evidence for Alkoxy Radical Isomerization in C_4-C_6 Alkanes in NO_x-Air Systems
Proceedings of 12th Informal Conference on Photochemistry Gaithersburg, MD, June 28-July 1, 1976, NBS SP 526, P. 305, October 1978
W.P.L. Carter, K.R. Darnall, A.C. Lloyd, A.M. Winer and J.N. Pitts, Jr.

Proceedings of the Conference on Chemical Kinetic Data Needs for Modeling the Lower Troposphere
Reston, VA, May 15-17, 1978, pp. 20-23, p 65, p. 77 and pp. 78-79

Mechanisms of Photochemical Reactions in Urban Air
Final Report, EPA-600/3-79-110, November 1979
J.N. Pitts, Jr., K. Darnall, W.P.L. Carter, A.M. Winer and R. Atkinson

Atmospheric Chemistry of Hydrazines: Gas Phase Kinetics and Mechanistic Studies Final Report, U.S. Air Force Contract F08635-78-C-0307, No. ESL-TR-80-39, August 1980
J.N. Pitts, Jr., E.C. Tuazon, W.P.L. Carter, A.M. Winer, G.W. Harris, R. Atkinson and R.A. Graham

Chemical Consequences of Air Quality Standards and of Control Implementation Programs
Final Report, California Air Resources Board Contract No A7-175-30, 1980

Studies of Trace Gases from Corona Discharge Ozonizers
Final Report, Chemical Manufacturers Association Agreement No. 79/80, June 1980

Chemical Consequences of Air Quality Standards and Control Implementation Programs
Final Report, California Air Resources Board Contract No. A8-145-31, March 1981

Gas Phase Reactions of N,N-Dimethylhydrazine with Ozone and NO_x in Simulated Atmospheres. Facile Formation of N-Nitrosodimethylamine
"N-Nitroso Compounds," ACS Symposium Series No. 174, R.A. Scanlan and S.R. Tannenbaum, Eds., p. 117 (1981)
W.P.L. Carter, E.C. Tuazon, A.M. Winer and J.N. Pitts, Jr.

Atmospheric Chemistry of Hydrocarbon Fuels
Final Report, U.S. Air Force, No. ESL-TR-81-53, November 1981
W.P.L. Carter, P.S. Ripley, C.G. Smith and J.N. Pitts, Jr.

Gas Phase Reactions of N,N-Dimethylamine with Ozone in Simulated Atmospheres: Facile Formation of N-nitrosodimethylamine
181st ACS National Meeting, Atlanta, GA, March 29-April 3, 1981

Photooxidaiton Mechanisms of Higher Alkanes in Polluted Atmospheres
28th Congress International Union of Pure and Applied Chemistry, Vancouver, British Columbia, August 16-21, 1981
W.P.L. Carter, R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Alkyl Nitrate Formation from the NO_x-Air Photooxidation of C_2-C_8 n-Alkanes
15th Informal Conference on Photochemistry, Stanford, CA, June 27-July 1, 1982 R. Atkinson, S.M.. Aschmann, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Atmospheric Reaction Mechanisms of Amine Fuels
Final Report, U.S. Air Force, No. ESL-TR-82-17, March 1982
E.C. Tuazon, W.P.L. Carter, R.V. Brown, R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Experimental Protocol for Determining Hydroxyl Radical Reaction Rate Constants
EPA-600/3-82-038, October, 1982
J.N. Pitts, Jr., A.M. Winer, S.M. Aschmann, W.P.L. Carter and R Atkinson

High Altitude Jet Fuel Photochemistry
Final Report, U.S. Air Force, No. ESL-TR-82-38, October 1983
A.M. Winer, R. Atkinson, W.P.L. Carter, W.D. Long, S.M. Aschmann an J.N.. Pitts, Jr.

Effect of Ring Strain on Gas Phase OH Radical Reaction Rate Constants with Bi- and Tri-Cycloalkanes at 299 $\pm$ 2 K
15th Informal Conference on Photochemistry, Stanford, CA, June 27-July 1, 1982
R. Atkinson, S.M. Aschmann and W.P.L. Carter

Unknown Radical Source in Environmental Chambers
15th Informal Conference on Photochemistry, Stanford, CA, June 27-July 1, 1982
W.P.L. Carter, R. Atkinson, A.M. Winer and J.N. Pitts, Jr.

Chemical Consequences of Air Quality Standards and of Control Implementation Programs
Final Report, California Air Resources Board Contract No. A1-030-32, April 1983
J.N. Pitts, Jr., R. Atkinson, W.P.L. Carter, A.M. Winer and E.C. Tuazon

Evaluation of Hydrocarbon Reactivities for Use in Control Strategies
Final Report, California Air Resources Board Contract No. A0-105-32, May 1983
R. Atkinson, W.P.L. Carter and A.M. Winer

Experimental Protocol for Determining Photolysis Reaction Rate Constants
Report to EPA Grant No. 806661-01, 1983
W.P.L. Carter, R. Atkinson, A.M. Winer and J. N. Pitts, Jr.

Correspondence on "Effect of Nitrogen Oxide Emissions on Ozone Levels in Metropolitan Regions" by W.B. Innes: "Effect of NO_x Emission Rates in the South Coast Air Basin by D.P. Chock, A.B.. Dunker, S. Kumer and C.S. Sloane; and "Effect of Hydrocarbon and NO_x on Photochemical Smog Formation Under Simulated Transport Conditions" by W.A. Glasson
Environ. Sci. Technol, 17, 54-57 (1983)
J.N. Pitts, Jr., A.M. Winer, R. Atkinson and W.P.L. Carter

Photolysis Rates of the a-Dicarbonyls: Implications for Mechanisms for the Atmospheric Photooxidations of Aromatic Hydrocarbons
XIth International Conference on Photochemistry, College Park, MD, August 21-26, 1983
W.P.L. Carter, R. Atkinson, C.N. Plum, E. Sanhueza and J.N. Pitts, Jr.

Kinetics of the Gas Phase Reactions of NO_3 Radicals with Organics: Implications for the Chemistry of Nighttime Atmospheres
XIth International Conference on Photochemistry, College Park, MD, August 21-26, 1983
R. Atkinson, A.M. Winer, W.P.L. Carter, C.N.. Plum and J.N. Pitts, Jr.

Atmospheric Photochemical Modeling of Turbine Engine Fuels. Phase I. Experimental Studies
U.S. Air Force Contract F08635-83-0278, No. ESL-TR-84-32, June 1983-June 1984
W.P.L. Carter, A.M. Winer, R. Atkinson, M.C.. Dodd, W.D.. Long and S.M. Aschmann

Formation and Fate of Toxic chemicals in California's Atmosphere
Final Report, California Air Resources Board Contract No. A2-115-32, July 1984
J.N. Pitts, Jr., R. Atkinson, A.M. Winer, H.W. Biermann, W.P.L. Carter, H. MacLeod and E.C. Tuazon

Outdoor Chamber Study to Test Multi-Day Effects
Final Report, U.S. Environmental Protection Agency Cooperative Agreement No. CR81026-01, June 1984
W.P.L. Carter, M.C. Dodd, W.D. Long and R. Atkinson

Experimental Protocol for Determining the Reactivity of Volatile Organics
Final Report, U.S. Environmental Protection Agency Contract No. K30143, August 1984
W.P.L. Carter and R. Atkinson

The Extent of Alkyl Nitrate Formation from the RO_2 + NO Reaction
8th International Symposium on Gas Kinetics, Nottingham, UK, July 15-20, 1984
R. Atkinson, W.P.L. Carter, A.M. Winer and J.N. Pitts, Jr.

Atmospheric Photooxidations of 3-Hexene-2,5-dione: Implications for the NO_x-Air Photooxidation Mechanisms of the Aromatics
XIth Informal Conference on Photochemistry, Harvard University, Cambridge, MA, August 20-24, 1984
E.C. Tuazon, R. Atkinson and W.P.L. Carter

Effects of Methanol Fuel Substitution on Multi-Day Air Pollution Episodes
Final Report, California Air Resources Board Contract No. A3-125-32, April 1986
W.P.L. Carter, W.D. Long, L.N. Parker and M.C. Dodd

Development and Testing of a Surrogate Species Chemical Reaction Mechanism
EPA-600/3-86-031, August 1986
W.P.L. Carter, F.W. Lurmann, R. Atkinson and A.C. Lloyd

A Surrogate Species Chemical Reaction Mechanism for Urban-Scale Air Quality Simulation Models. Volume I. Adaptation of the Mechanism
Final Report, U.S. Environmental Protection Agency Contract No. 68-02-4104, 1987
F.W. Lurmann, W.P.L. Carter and L.A. Coyner

A Surrogate Species Chemical Reaction Mechanism for Urban-Scale Air Quality Simulation Models. Volume II. Guidelines for Using the Mechanism
Final Report, U.S. Environmental Protection Agency Contract No. 68-02-4104, 1987
F.W. Lurmann and W.P.L. Carter

A Computer Modeling Study of Incremental Hydrocarbon Reactivity
Report, U.S. Environmental Protection Agency Cooperative Agreement No.. CR810214-01, March 1987
W.P.L. Carter and R. Atkinson

An Experimental and Modeling Study of the Photochemical Reactivity of Heatset Printing Oils
Report, U.S. Environmental Protection Agency Cooperative Agreement No. CR810214-01, March 1987
W.P.L. Carter

Atmospheric Photochemical Modeling of Turbine Engine Fuels. Phase II. Computer Model Development
Draft Report, U.S. Air Force Contract No. F08635-83-0278, April 1987
W.P.L. Carter, A.M. Winer, R. Atkinson, S.E. Heffron, M.P. Poe and M.A. Goodman

Users Manual for the U.S. Air Force Atmospheric Photochemical Reactivity Modeling System
Draft Report, U.S. Air Force Contract No. F08635-83-0278, April 1987
W.P.L. Carter, A.M. Winer, R. Atkinson, S.E. Heffron, M.P. Poe and M.A. Goodman

Development and Implementation of an Up-to-Date Photochemical Mechanism for Use in Airshed Modeling
Final Report, California Air Resources Board Contract No. A5-122-32, October 1988
W.P.L. Carter and R. Atkinson

Documentation of a Gas-Phase Photochemical Mechanism for Use in Airshed Modeling
Report, California Air Resources Board Contract No. A5-122-32, October 1988
W.P.L. Carter

Documentation for the SAPRC Atmospheric Photochemical Mechanism Preparation and Emissions Processing Program for Implementation on Airshed Models
Report, California Air Resources Board Contract No. A5-122-32, October 1988
W.P.L. Carter

Architectural Coatings in the South Coast Air Basin: Survey, Reactivity and Toxicity Evaluation
Final Report to the South Coast Air Quality Management District, December 1988
B.R. Wier, A.S. Resenbaum. L.A. Gardner, G.Z. Whitten and W.P.L. Carter

Ozone Reactivity Analysis of Emissions from Motor Vehicles
Draft Report to the Western Liquid Gas Association, July 1989
W.P.L. Carter

Evaluation of the RADM Gas-Phase Chemical Mechanism
Final Report, EPA-600/3-90-001, 1990
W.P.L. Carter and F.W. Lurmann

Determination of the Atmospheric Lifetimes of Organosilicon Compounds
Final Report to Dow Corning Corporation, September 1990
R. Atkinson, W.P.L. Carter and S.M. Aschmann

Investigation of the Atmospheric Chemistry of Methyl t-butyl Ether (MTBE)
Draft Report to the Coordination Research Council, Inc. for the Automotive Emissions Cooperative Research Program, October 1990
W.P.L. Carter, E.C. Tuazon and S.M. Aschmann

Development of Ozone Reactivity Scales for Volatile Organic Compounds
Draft Final Report for EPA Cooperative Agreement No. CR-814396-01-0, November 1990
W.P.L. Carter

Implementation of the 1990 SAPRC Chemical Mechanism in the Urban Airshed Model
Final Report to the South Coast Air Quality Management District, Sonoma Technology, Inc., Document STI-99290-1164-FR October 1991
F.W. Lurmann, M. Gery and W.P.L. Carter

Procedure for Producing a Task-Specific Protocol for Evaluating Oxidant Mechanism for Urban and Regional Models
Report for EPA Cooperative Agreement No. 81579, 1992
H.E. Jeffries, M.W. Gery and W.P.L. Carter

Development and Application of an Up-To-Date Photochemical Mechanism for Airshed Modeling and Reactivity Assessment
Draft Report to the California Air Resources Board, Contract No. A934-094, April 26, 1992
W. P. L. Carter

Investigation of the Ozone Formation Potential of Selected Volatile Silicone Compounds
Final Report to Dow Corning Corporation, November 1992
W.P.L. Carter, J.A. Pierce, I.L. Malkina and D. Luo

Experimental Determination of the Reactivity of Isoprene with Respect to Ozone Formation
Final report for UCAR Contract No. 59166, Southern Oxidant Study, January 28, 1993.
https://intra.engr.ucr.edu/~carter/pubs/isoprct.pdf
W. P. L. Carter, J. A. Pierce, I. L. Malkina, D. Luo, and W. D. Long

Environmental Chamber Studies of Maximum Incremental Reactivities of Volatile Organic Compounds.
Final Report to the California Air Resources Board, The Coordinating Research Council, and the South Coast Air Quality Management District, April 1, 1993.
https://intra.engr.ucr.edu/~carter/pubs/rct1rept.pdf
W.P.L. Carter, J.A. Pierce, I.L. Malkina, D. Luo and W.D. Long.

An Experimental and Modeling Study of the Photochemical Ozone Reactivity of Acetone
Final Report to Chemical Manufacturers Association Contract No. KET-ACE-CRC-2.0, December 10, 1993.
https://intra.engr.ucr.edu/~carter/pubs/acetrept.pdf
W. P. L. Carter, D. Luo, I. L. Malkina, and J. A. Pierce.

Screening Experiments to Evaluate the Aerosol Forming Potential of Selected Volatile Silicone Compounds
Final Report to Dow Corning Corporation, Midland, MI. June 16, 1994.
W. P. L. Carter, D. Luo, I. L. Malkina, and C. Venkataraman.

The University of California, Riverside Environmental Chamber Data Base for Evaluating Oxidant Mechanism. Indoor Chamber Experiments through 1993
Final Report submitted to the U. S. Environmental Protection Agency, EPA/AREAL, Research Triangle Park, NC., March 20, 1995
https://intra.engr.ucr.edu/~carter/absts.htm#databas
W. P. L. Carter, D. Luo, I. L. Malkina, and D. Fitz

Environmental Chamber Studies of Atmospheric Reactivities of Volatile Organic Compounds. Effects of Varying ROG Surrogate and NO_x
Final report to Coordinating Research Council, Inc., Project M-9, California Air Resources Board, Contract A032-0692, and South Coast Air Quality Management District, Contract C91323, March 24, 1995.
https://intra.engr.ucr.edu/~carter/pubs/rct2rept.pdf
Carter, W. P. L., D. Luo, I. L. Malkina, and J. A. Pierce

Environmental Chamber Studies of Atmospheric Reactivities of Volatile Organic Compounds. Effects of Varying Chamber and Light Source

Final report to National Renewable Energy Laboratory, Contract XZ-2-12075, Coordinating Research Council, Inc., Project M-9, California Air Resources Board, Contract A032-0692, and South Coast Air Quality Management District, Contract C91323., March 26, 1995.
https://intra.engr.ucr.edu/~carter/pubs/explrept.pdf
W. P. L. Carter, D. Luo, I. L. Malkina, and J. A. Pierce

Atmospheric Ozone Formation Potential of Common Aluminum Rolling Lubricant Constituents

Report to Aluminum Company of America, Alcoa Center, PA, April 9, 1995.
W. P. L. Carter and S. Venkataraman

Atmospheric Process Evaluation of Mobile Source Emissions

Final Report to National Renewable Energy Laboratory, Midwest Research Institute Contract No. XCC-4-14161-01, June, 1995
CE-CERT Document No. 94-AP-043F.
W. P. L. Carter, J. M. Norbeck, A. Venkatram, M. J. Barth, R. Hariharan, T. D. Durbin, S. E. Belinski, R. Fitzgerald, and P. G. Stein

Development of the Flexible Chemical Mechanism Version of the Urban Airshed Model

Report to California Air Resources Board, Agreement no. 93-716. Document No. STI-94470-1508-FR, Sonoma Technology, Inc. Santa Rosa, CA, August, 1995.
N. Kumar, F. W. Lurmann, and W. P. L. Carter

Investigation of the Atmospheric Reactions of Chloropicrin

Report to The Chloropicrin Manufacturers' Task Force, August 30, 1996.
https://intra.engr.ucr.edu/~carter/pubs/clpicrin.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Impact of Methyl Acetate

Report to Eastman Chemical Company, July 17, 1996
https://intra.engr.ucr.edu/~carter/pubs/meacetr.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of t-Butyl Alcohol, N-Methyl Pyrrolidinone and Propylene Carbonate

Report to ARCO Chemical Corporation, July 8, 1996
https://intra.engr.ucr.edu/~carter/pubs/arcorpt.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina, Ernesto C. Tuazon, Sara M. Aschmann, and Roger Atkinson

Investigation of the Atmospheric Ozone Formation Potential of Trichloroethylene

Report to the Halogenated Solvents Industry Alliance, August 29, 1997
https://intra.engr.ucr.edu/~carter/pubs/tcerpt.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of Atmospheric Ozone Formation Potentials of C_{12} - C_{16} n-Alkanes

Report to the Aluminum Association, October 28, 1996.
https://intra.engr.ucr.edu/~carter/pubs/alkrept.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Environmental Chamber Studies for Development of an Updated Photochemical Mechanism for VOC Reactivity Assessment

final report to California Air Resources Board Contract 92-345, Coordinating Research Council Project M-9, and National Renewable Energy Laboratory Contract ZF-2-12252-07. November 26, 1997
https://intra.engr.ucr.edu/~carter/pubs/rct3rept.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of Acetylene
Report to Carbide Graphite Corp., August 29, 1997
https://intra.engr.ucr.edu/~carter/pubs/acetylr.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of Selected Alkyl Bromides
Report to Albemarle Corporation, November 10, 1997
https://intra.engr.ucr.edu/~carter/pubs/alkbr.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of Propylene Glycol
Report to Philip Morris, USA, May 2, 1997
https://intra.engr.ucr.edu/~carter/pubs/pgrept.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potentials of Selected Dibasic Esters
Report to the Dibasic Esters Group, SOCMA, May 15, 1997
https://intra.engr.ucr.edu/~carter/pubs/dberpt.pdf
W. P. L. Carter, S. M. Aschmann and R. Atkinson

Analysis of the Effectiveness of the PremAir(TM) Catalyst for Stationary Source Applications: Review and Recommendations
Final Report to Engelhard Corporation, May 30, 1997
W. P. L. Carter, D. R. Fitz, J. M. Norbeck, and T. J. Truex

Investigation of the Atmospheric Ozone Formation Potentials of Selected Mineral Spirits Samples
Report to Safety-Kleen Corporation, July 25, 1997
https://intra.engr.ucr.edu/~carter/pubs/msrept.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of t-Butyl Acetate
Report to ARCO Chemical Corporation, August 8, 1997
https://intra.engr.ucr.edu/~carter/pubs/tbuacetr.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of Toluene Diisocyanate
Report to the Society for the Plastics Industry, Inc., December 2, 1997
https://intra.engr.ucr.edu/~carter/pubs/tdirpt.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of Para Toluene Isocyanate and Methylene Diphenylene Diisocyanate
Report to the Chemical Manufacturers Association Diisocyanates Panel, March 8, 1999
https://intra.engr.ucr.edu/~carter/pubs/mdirpt.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Evaluation of the PM and Ozone Producing Potential of Natural Gas-Powered Vehicles
Final Report to California Institute For Energy Efficiency, Lawrence Berkeley National Laboratory, Agreement 4910210, October 19, 1998.
https://intra.engr.ucr.edu/~carter/pubs/cieerpt.pdf
D. R. Fitz, W. P. L. Carter and D. Cocker

Investigation of the Atmospheric Impacts and Ozone Formation Potentials of Styrene
Report to Styrene Information and Research Center. March 10, 1999.
https://intra.engr.ucr.edu/~carter/pubs/styrept.pdf
W. P. L. Carter, D. Luo, and I. L. Malkina

Experimental Evaluation of Ozone Forming Potentials of Motor Vehicle Emissions
Final Report to California Air Resources Board Contract No. 95-903, and South Coast and Air Quality Management District Contract No 95073/Project 4, Phase 2. May 14, 1999.
https://intra.engr.ucr.edu/~carter/pubs/exhrept.pdf
W. P. L. Carter, M. Smith, D. Luo, I. L. Malkina, T. J. Truex, and J. M. Norbeck

Implementation of the SAPRC-99 Chemical Mechanism into the Models-3 Framework.
Final Report to the United States Environmental Protection Agency. January 29, 2000.
https://intra.engr.ucr.edu/~carter/pubs/s99mod3.pdf
W. P. L. Carter

Measurement of Nitrogenous Species and Solar Intensity during the 1997 Southern California Oxidant Study
Final Report to California Air Resources Board Contract No. 96-540
D. L. Fitz., W. P. L. Carter, and E. C. Tuazon

Documentation of the SAPRC-99 Chemical Mechanism for VOC Reactivity Assessment
Final Report to California Air Resources Board Contract No. 92-329, and 95-308, May, 2000.
https://intra.engr.ucr.edu/~carter/absts.htm#saprc99
W. P. L. Carter

Reactivity Estimates for Aromatic Compounds
Final Report to California Air Resources Board Contract No. 95-331, April 10, 2000.
https://intra.engr.ucr.edu/~carter/pubs/arouncrp.pdf
L. Wang, J. B. Milford and W. P. L. Carter

Uncertainty in Reactivity Estimates for n-Butyl Acetate and 2-Butoxy Ethanol
Final Report to California Air Resources Board Contract No. 95-331, January 5, 2001.
https://intra.engr.ucr.edu/~carter/pubs/cpuncrpt.pdf
L. Wang, J. B. Milford and W. P. L. Carter

Investigation of Atmospheric Reactivities of Selected Consumer Product VOCs
Final Report to California Air Resources Board Contract No. 95-308, May 30, 2000.
https://intra.engr.ucr.edu/~carter/pubs/cpreport.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Chemical Mechanisms for Representation of Aromatic Hydrocarbons in Airshed Models: Effects of Structure on Ozone Reactivity
Proceedings of the Workshop on "Chemical Behavior of Aromatic Hydrocarbons in the Troposphere", Valencia, Spain, February 27-29, 2000.
W.P.L. Carter

Development and Evaluation of an Updated Detailed Chemical Mechanism for VOC Reactivity Assessment.
Proceedings of the A&WMA 93rd Annual Conference and Exhibition, Salt Lake City, Utah, June 18-22. (2000)
W. P. L. Carter

Experimental Evaluation of Ozone Forming Potentials of Motor Vehicle Emissions.
Proceedings of the A&WMA 93rd Annual Conference and Exhibition, Salt Lake City, Utah, June 18-22. (2000)
W. P. L. Carter, M. Smith, T. J. Truex and J. M. Norbeck

Investigation of the Atmospheric Ozone Formation Potential of Dimethyl Sulfoxide

Final Report to Gaylord Chemical Corporation, August 21, 2000
https://intra.engr.ucr.edu/~carter/pubs/dmsorpt.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Atmospheric Chemistry of Bromine-Containing Compounds
Final Report to the Brominated Solvents Consortium, September 27, 2000
https://intra.engr.ucr.edu/~carter/pubs/brreport.pdf
W. P. L. Carter and E. C. Tuazon

Investigation of the Atmospheric Ozone Formation Potential of Methyl Pivalate
Final Report to ExxonMobil Chemical Company, November 17, 2000
https://intra.engr.ucr.edu/~carter/pubs/me-pvatr.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potential of Selected Carbonates
Final Report to ExxonMobil Chemical Company, November 17, 2000
https://intra.engr.ucr.edu/~carter/pubs/carbonat.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Peer Review of ARB Ozone Modeling for Southern California
Report to the California Air Resources Board, July 2, 2001
https://intra.engr.ucr.edu/~carter/pubs/arbmod1.pdf
W. P. L. Carter

Determination of Aldehyde and PAN Formation Potentials for Volatile Organic Compounds
Final Report to the California Office of Environmental Health Hazard Assessment, September, 23, 2001
https://intra.engr.ucr.edu/~carter/pubs/aldrpt.pdf
W. P. L. Carter

Development of a Next-Generation Environmental Chamber Facility for Chemical Mechanism and VOC Reactivity Research
Report to the United States Environmental Protection Agency, January 3, 2002
https://intra.engr.ucr.edu/~carter/epacham/report1.pdf
W. P. L. Carter

Development and Application of Improved Methods for Measurement of Ozone Formation Potentials for Volatile Organic Compounds
Final Report to the California Air Resources Board, May 22, 2002.
https://intra.engr.ucr.edu/~carter/pubs/rmethrpt.pdf
W. P. L. Carter and I. L. Malkina

Collaborative Environmental Chamber and Modeling Studies gor Evaluating Effects of Emissions on Air Quality in Mexico City
Final Report to UC MEXUS, June 27, 2002
https://intra.engr.ucr.edu/~carter/pubs/mexusimp.pdf
Rafael Villaseñor-Gutiérrez, Julio Sandoval-Fernández, Graciela Bravo-Pérez, José Carlos Gallardo-García, William P. L. Carter, and Gail S. Tonnesen

Investigation of the Ozone Formation Potentials of Selected Branched Alkanes and Mineral Spirits Samples
Final report to Safety-Kleen Corporation, July 11, 2002
https://intra.engr.ucr.edu/~carter/pubs/msrpt2.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

A Smog Simulation Chamber for Determining Atmospheric Reactivity and Evaluating Measurement Techniques
Proceedings of the A&WMA Symposium on Air Quality Measurement Methods and Technology, San Francisco, CA November 13-15, 2002.
Carter, W.P. and D.R. Fitz.

Investigation of the Ozone Formation Potentials of Exxsol® D95, Isopar-M®, and The Exxate® Fluids
Final Report to ExxonMobil Corporation, October 31, 2000 (Released November, 2002)
https://intra.engr.ucr.edu/~carter/pubs/exxprods.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Investigation of the Atmospheric Ozone Formation Potentials of Selected C≥12 Normal And Cyclic Alkanes
Final Report to the Aluminum Association, October 31, 2000 (Released November, 2002)
https://intra.engr.ucr.edu/~carter/pubs/alkrpt2.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Investigation of the Ozone Formation Potentials of Selected Compounds
Final Report to Eastman Chemical Corporation, August 30, 2000 (Released November, 2002)
https://intra.engr.ucr.edu/~carter/pubs/eastman.pdf
W. P. L. Carter, D. Luo and I. L. Malkina

Investigation of Air Quality Effects Using Existing Regional Air Quality Models
Final report to the American Chemistry Council and the Reactivity Research Working Group, April, 27, 2003
https://intra.engr.ucr.edu/~carter/pubs/ddmrept1.pdf
W. P. L. Carter, G. Tonnesen and G. Yarwood

Evaluation of Gas-Phase Atmospheric Reaction Mechanisms for Low NO_x Conditions
Final Report to the California Air Resources Board, May 5, 2004
https://intra.engr.ucr.edu/~carter/pubs/lnoxrpt.pdf
William P. L. Carter

Development of Chemical Speciation Database and Software for Processing VOC Emissions
Proceedings of the the 13th Annual Emissions Inventory Conference, Clearwater, FL, June 8-10, 2004
William P. L. Carter

Evaluation of Atmospheric Impacts of Selected Coatings VOC Emissions
Final report to the California Air Resources Board Contract No. 00-333, March 21, 2005.
https://intra.engr.ucr.edu/~carter/coatings/coatrpt.pdf
W. P. L. Carter. and I. L. Malkina

Development of a Next-Generation Environmental Chamber Facility for Chemical Mechanism and VOC Reactivity Research
Final Report to the United States Environmental Protection Agency Cooperative Agreement CR 827331-01-0, June 27, 2005.
https://intra.engr.ucr.edu/~carter/pubs/chamrpt.pdf
W. P. L. Carter, D. R. Fitz, D. R. Cocker, III, I. L. Malkina, K. Bumiller, C. G. Sauer, J. T. Pisano, C. Bufalino, and C. Song

Integration of the SAPRC Chemical Mechanism in the SMOKE Emissions Processor for the CMAQ/Models-3 Airshed Model
Final report to American Chemistry Council Agreement No. 1846. 2005.
https://intra.engr.ucr.edu/~carter/pubs/smokespr.pdf
Z. Adelman, J. Vukovich, and W. P. L. Carter

Investigation of the Atmospheric Ozone Impacts of Selected Pesticides
Final Report to the California Air Resources Board, Contract No. 04-334, January 10, 2007
https://intra.engr.ucr.edu/~carter/pubs/pestrep.pdf
W. P. L. Carter and I. L. Malkina

Investigation of the Atmospheric Ozone Impacts of Methyl Iodide
Final Report to Arysta LifeScience Corporation Contract UCR-07041867, July 31, 2007
https://intra.engr.ucr.edu/~carter/pubs/ch3irep.pdf

W. P. L. Carter

Reactivity Estimates for Selected Consumer Product Compounds
Final Report to the California Air Resources Board Contract No. 06-408, February 19, 2008
https://intra.engr.ucr.edu/~carter/pubs/aminrep.pdf
W. P. L. Carter

Investigation of Atmospheric Ozone Impacts of Trans 1,3,3,3-Tetrafluoropropene
Final Report to Honeywell International Inc, February 9, 2009
https://intra.engr.ucr.edu/~carter/pubs/ZEErept.pdf
W. P. L. Carter

Investigation of Atmospheric Ozone Impacts of 2,3,3,3-Tetrafluoropropene
Final Report to Honeywell International Inc, June 2, 2009
https://intra.engr.ucr.edu/~carter/pubs/YFrept.pdf
W. P. L. Carter

Investigation of the Atmospheric Ozone Impacts of Trans 1-Chloro-3,3,3-Trifluoropropene
Final Report, June 8, 2009
https://intra.engr.ucr.edu/~carter/pubs/ZDErept.pdf
W. P. L. Carter

Development of the SAPRC-07 Chemical Mechanism and Updated Ozone Reactivity Scales
Final Report to the California Air Resources Board Contract No. 03-318, January 27, 2010.
https://intra.engr.ucr.edu/~carter/SAPRC/saprc07.pdf
W. P. L. Carter

Development of a Condensed SAPRC-07 Chemical Mechanism
Final Report to the California Air Resources Board Contract No. 05-750, January 28, 2010
https://intra.engr.ucr.edu/~carter/SAPRC/csaprc07.pdf
W. P. L. Carter

Investigation of Atmospheric Ozone Impacts of 3-Methoxy-3-Methyl-1-Butanol
Final Report to Kuraray Co, July 8, 2010
https://intra.engr.ucr.edu/~carter/pubs/MMBrept.pdf
W. P. L. Carter, W. S. Goliff, R. Atkinson, J. Arey and S. M. Aschmann

Environmental Chamber Studies of Ozone Impacts of Coatings VOCs
Final Report to California Air Resources Board Contract 07-339, May 11, 2011
https://intra.engr.ucr.edu/~carter/pubs/coatrpt2.pdf
W. P. L. Carter

Environmental Chamber Experiments to Evaluate NO_x Sinks and Recycling in Atmospheric Chemical Mechanisms
Final Report to Texas AQRP Project 10-042, February 17, 2012
G. Yarwood, G. Heo, W. P. L. Carter, and G. Z. Whitten

Development of Revised SAPRC Aromatics Mechanisms
Report to the California Air Resources Board Contracts No. 07-730 and 08-326, April 12, 2012
https://intra.engr.ucr.edu/~carter/SAPRC/saprc11.pdf
W. P. L. Carter and G. Heo

SOA Formation: Chamber Study and Model Development
Final report to California Air Resources Board Contract 08-326, May 29. 2012
https://intra.engr.ucr.edu/~carter/SAPRC/pmchrpt.pdf
W. P. L. Carter, G. Heo, D. R. Cocker III, and S. Nakao

Documentation of the SAPRC-18 Mechanism
Report to the California Air Resources Board Contract No. 11-761, May 29, 2020
https://intra.cert.ucr.edu/~carter/SAPRC/18/S18doc.pdf
W. P. L. Carter

Documentation of the SAPRC Chemical Mechanism Modeling Software and Files
Report to the California Air Resources Board Contract No. 11-761. October 7, 2020
https://intra.cert.ucr.edu/~carter/SAPRC/ModelPgm.pdf
W. P. L. Carter

Documentation of the SAPRC-22 Mechanism
Report to California Air Resources Board Contract No. 21AQP011, September 9, 2023
https://intra.engr.ucr.edu/~carter/SAPRC/22/S22doc.pdf
W. P. L. Carter

Users Manual for the SAPRC Atmospheric Chemical Mechanism Generation System
https://intra.cert.ucr.edu/~carter/SAPRC/22/MechGen.pdf
W. P. L. Carter