Coordinating Research Council, Inc.

Organizational Overview

May 2022

What type of organization is the CRC?

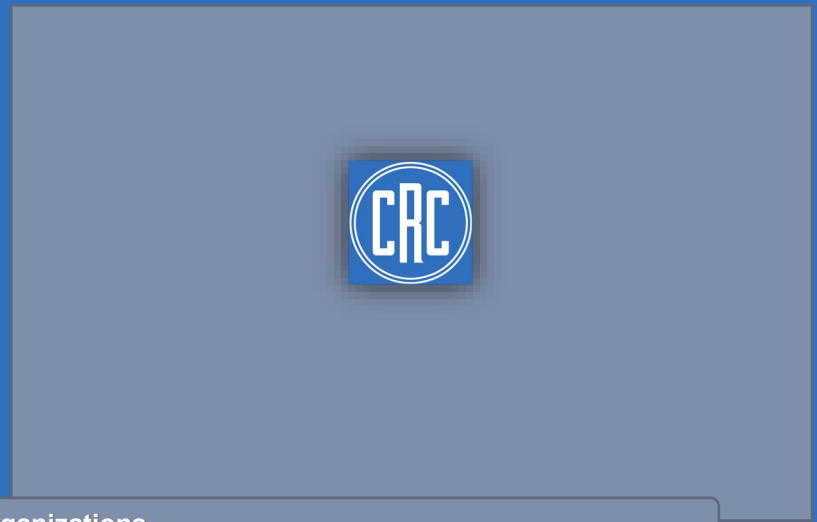
Examples of associations of companies that engage on policy

501(c)(6) Organizations

Can Lobby

Examples of associations of people with a strictly scientific role

Examples of associations of companies with a strictly scientific role



501(c)(3) Organizations

Can Not Lobby

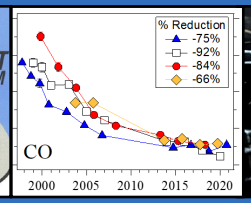
CRC is an association of companies
organized and operated exclusively for scientific purposes
for the benefit of the public.

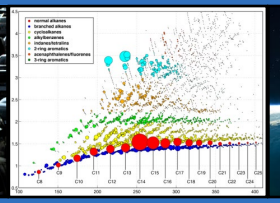
A Century of CRC History

1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s	2020s+
Beginning: Cooperative Fuels Research (CFR) Committee of SAE		**Military Research: Aviation & Vehicle Performance**			**Air Quality: Light-Duty Vehicle Focus**			**Wider View: +Autos, +Committees**		**Global View: Sustainability**



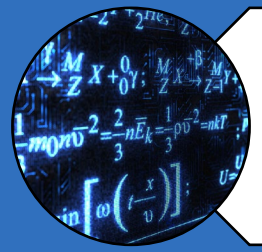





Research emphasis of the Council adapts to the needs of Members. More diverse than this simple summary, research continues today in all of the topics listed.

CRC Objectives



Be a focal point for cooperative, pre-competitive research.

Provide a forum for all stakeholders to participate in the research.

Make technical information available to industries, governments and the public.

Formed in 1919, incorporation in 1942.	501(c)(3) nonprofit association organized to direct scientific research.	No advocacy or lobbying. Intellectual property and antitrust protections.	All CRC research reports are available to the public.

What are the benefits of Membership in CRC?

Members *Contribute*:

Researchers – the people that make cooperative research successful

Funding - annual base, and additional cost-share when appropriate

In-Kind Support - Laboratory testing, equipment, and materials

Members *Receive*:

Interaction with expansive **research network**

Extraordinary **leveraging of research funds** - full access to projects funded by far more funds than the individual member cost

Detailed and immediate insights into **latest results**

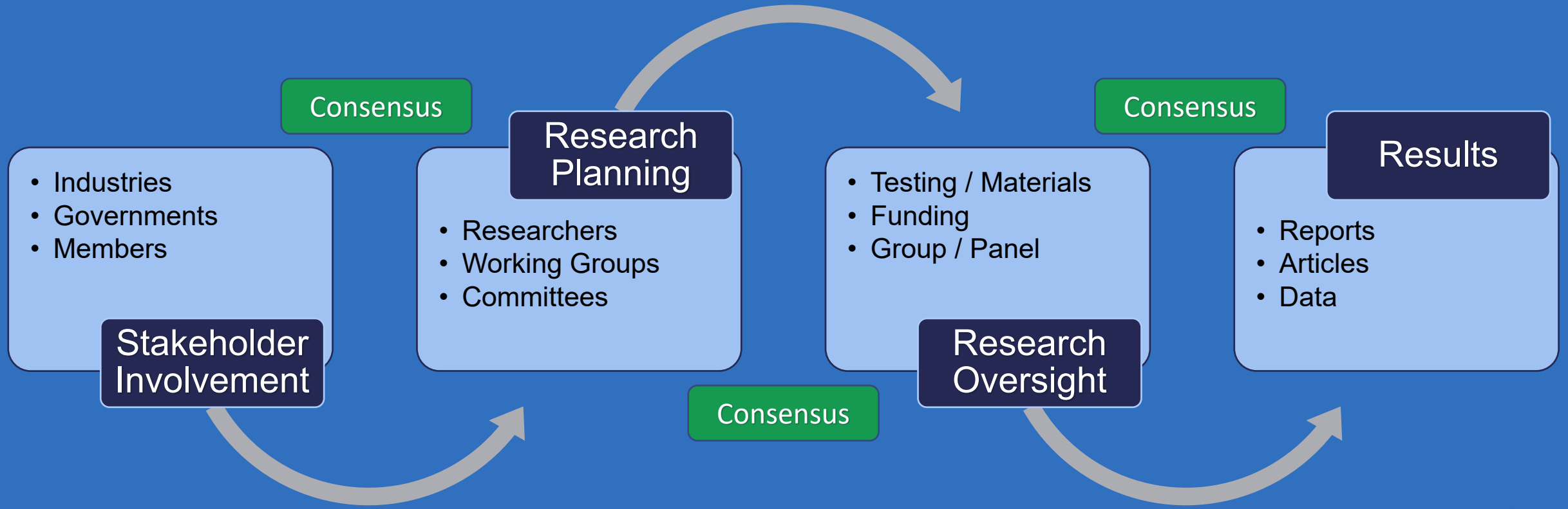
Benefits for All:

Well-informed public policy based on sound science where all stakeholders have contributed

Improved standards allowing all segments of the mobility industry to work together

Open exchange of information to move technology forward

The Process for Cooperative Research



CRC Organizational & Technical Committee Structure

Corporate Governance:
- Contract review
- Base Funding
- Staffing

Technical Activity:
- Research Plans
- Project Oversight
- Report Review
- Workshops

CRC Sustaining Member Board of Directors

Auto/Oil/Other Committee of the Board

Auto/Oil Management Committee

Oil/Other Committee of the Board

Sustainable Mobility Steering Committee

Sustainable Mobility Committee Partners

Electrification | Fuels | Novel Carbon Reduction Strategies

Life Cycle Analysis | *Other Groups and Panels TBD*

Working Groups and Major Panels

Aviation Steering Committee

Aviation Technical Committee

Advanced Research and Test Methods | Fuel Handling, Contamination, and Microbiology | Operability

Aviation Gasolines & Piston Fuels | Fuel System Safety | Fuel System Stability | Publications

Low Temperature | Properties and Emissions | Production and Delivery | Emerging Fuels

Thermal Stability

Working Groups and Major Panels

Performance Committee

Gasoline Engine Deposits

Volatility

Gasoline Combustion

Diesel Performance | DP Cleanliness Panel | DP Corrosion Panel | DP Deposit Panel | DP Low Temperature Operability Panel

Atmospheric Impacts Committee

Atmospheric Impacts

Emissions Committee

Real World Emissions & Emissions Modeling

Advanced Vehicle/Fuel/Lubricants Committee

Fuels for Advanced Combustion Engines

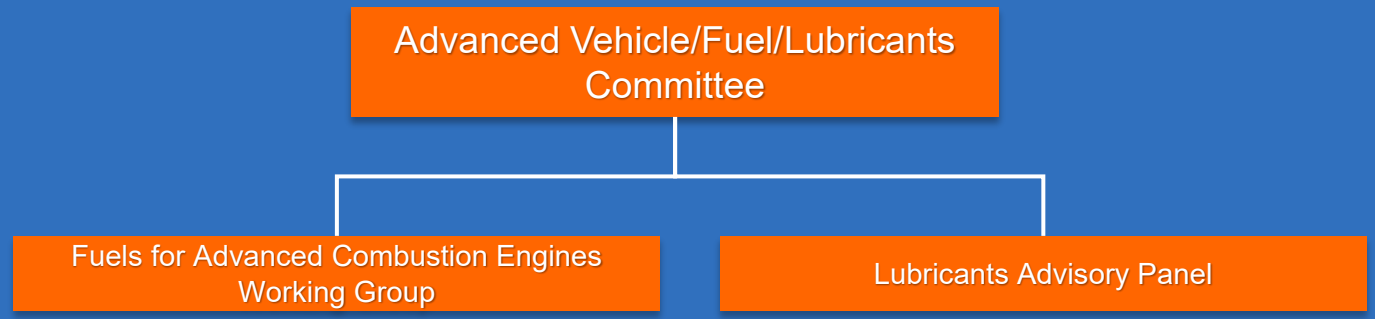
Lubricants Advisory Panel

Working Groups and Major Panels

Advanced Vehicle/Fuel/Lubricants Committee

Co- Chair:
Elana Chapman, GM

- Advanced automotive hardware and new fuel formulation effects on automotive emissions (3-10 years out).
- Durability and operability of new fuel formulations in advanced hardware (3-10 years out).



Co- Chair:
Steve McConnell, Marathon

Atmospheric Impacts Committee

Co- Chair:
Sandy Winkler,
Ford

- Focus resources to improve science and regulations related to air quality
- Improve the ability to predict effects of emissions on air quality by:
  - Improving inventories
  - Understanding air chemistry
  - Strengthening air quality models
- Predict the importance of emerging data

Atmospheric Impacts Committee

Atmospheric Impacts Working Group

Co- Chair:
Chris Rabideau,
Chevron

Aviation Committee

Chair:
Dan Kadlecek
ExxonMobil

- Provide an organization and forum for aviation fuel producers, users and equipment manufacturers, government, and academia to collectively address and fund fuel research.
- Develop the technical information and data required to allow the aviation industry to resolve fuel-related problems and issues.
- Provide a forum for the dissemination of technical information, to foster relationships between the development of industry experts, and to discuss research, problems, issues, and concerns.

Vice-Chair:
Amy Carico
Airlines for America

Aviation Steering Committee

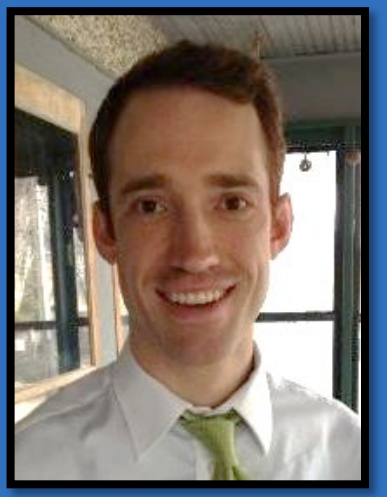
Aviation Technical Committee

Advanced Research and Test Methods	Fuel Handling, Contamination, and Microbiology	Operability
Aviation Gasolines & Piston Fuels	Fuel System Safety	Fuel System Stability	Publications
Low Temperature	Properties and Emissions	Production and Delivery	Emerging Fuels
Thermal Stability		

Emissions Committee

Co- Chair:
Mike Viola, GM

- Define effects that changes in automotive hardware, fuel compositions, and their interactions have on automotive emissions related to air quality and air-borne toxics
- Address current and future regulatory needs
- Determine the contribution of vehicle/fuel source emissions to the environment and how current computer models reflect these contributions (RWG)

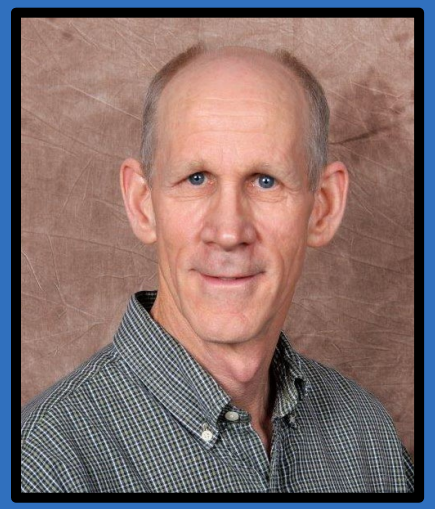


Co- Chair:
Paul Loeper, Chevron

Emissions Committee

Real World Emissions & Emissions Modeling Working Group

Real World Vehicle Emissions & Emissions Modeling Working Group



Co- Chair:
Scott Mason,
Phillips 66

- Determine the contribution of vehicle/fuel source emissions to the environment and how current computer models reflect these contributions
- Open Working Group allowing interactions and collaborative projects with agencies & other industry partners

Co- Chair:
Mike Viola, GM

Emissions Committee

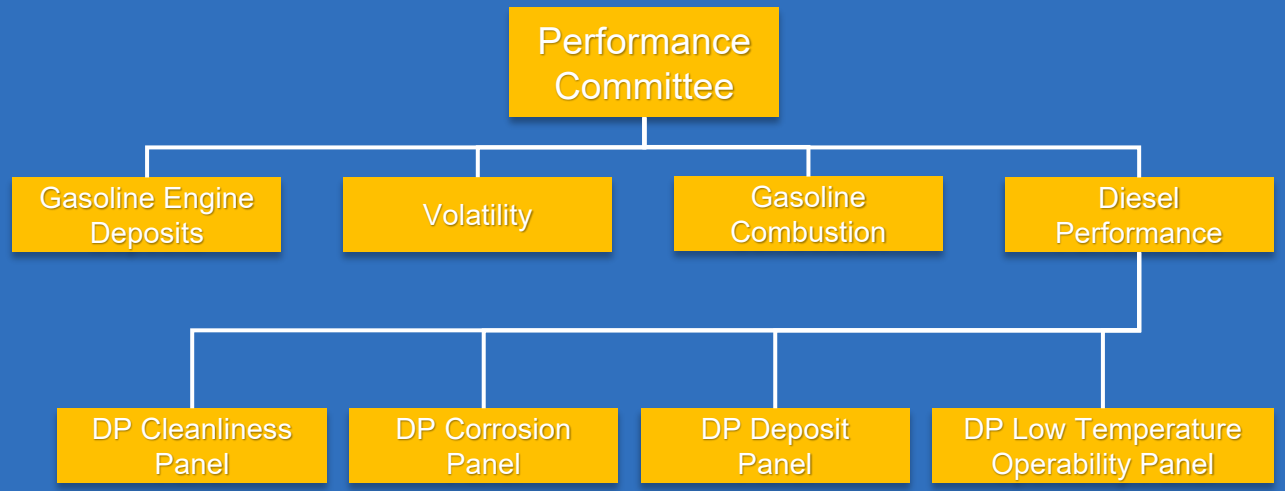
Real World Emissions & Emissions Modeling Working Group

Performance Committee

Co- Chair:
Asim Iqbal,
Stellantis

- Relate physical and chemical properties of gasoline to vehicle performance
  - Driveability/ Volatility Relationship
  - Octane Response
- Develop engine and vehicle test procedures to use in commerce and regulations and use these procedures to monitor vehicle/ fuel performance.
  - Deposits
  - Driveability Index

Co- Chair:
Russ Lewis,
Marathon



New!

Sustainable Mobility Committee

Co- Chair:
Heather Hamje,
ExxonMobil

A multi-stakeholder forum for collaborative scientific research studies focused on pathways toward carbon neutral future through significant greenhouse gas reductions from mobility while seeking to understand tangential impacts.

Co- Chair:
Coleman Jones,
GM

Sustainable Mobility Steering Committee

Working Groups

Electrification SMC-E	**Fuels** SMC-F	**Novel Carbon Reduction Strategies** SMC-CR	**Life Cycle Analysis** SMC-LCA
Investigate challenges in the transition to electric propulsion	Support research in carbon reduction by liquid and gaseous fuels	Explore systematic approaches to mobility carbon reduction	Provide a forum for review of LCA Models and Methods

CRC Staff

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Joined CRC: 2016

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Joined CRC: 2009

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Joined CRC: 2017

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Joined CRC: 2005

Jan Tucker
Senior Committee Coordinator

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P:678-400-4244 #100

Joined CRC: 1988

CRC Workshops & Open Technical Meetings

Mobile Source Air Toxics

10th Event: February 2022

Virtual

Real World Emissions

32nd Event: March 2022

Long Beach, CA

Special Events

Southern California Ozone Research Symposium (2018)
Driveability (2019)

Stochastic Pre-Ignition (2020)

Air Quality Modeling Research Needs (2016, 2022)

Aviation Committee Annual Meeting

1st Week of May

2022: Alexandria, VA

2023: Lake Washington, WA

Life Cycle Analysis of Transportation Fuels

6th Event: October 2021

Virtual

Fuels and Engines: The Road Ahead / Advanced Fuels and Engine Efficiency

3rd Event: October 2020

Virtual

CRC Member Groups

Auto/Oil Program Committees

Sustaining Members / Board of Directors

Oil Companies

bp, MARATHON, PHILLIPS 66, ExxonMobil, Shell, aramco, Chevron

Auto Companies

Ford, gm, Volkswagen, HONDA, STELLANTIS, NISSAN, TOYOTA, Mercedes-Benz, MITSUBISHI MOTORS

Aviation Committee

Steering Committee Members

bp, PHILLIPS 66, Airlines for America, ROLLS ROYCE, ExxonMobil, TotalEnergies, NASA, API American Petroleum Institute, innospec, Facet Filtration Group, Chevron, BOEING, FEDERAL AVIATION ADMINISTRATION, GAMMON, MARATHON, Honeywell, U.S. AIR FORCE, AMERICA'S NAVY, Defense Logistics Agency — The Nation's Combat Logistics Support Agency, University of Dayton Research Institute, Shell, CITGO, FLINT HILLS resources, PRATT & WHITNEY

Sustainable Mobility Committee

Steering Committee Members

bp, HONDA, Ford, Chevron, innospec, MARATHON, gm, STELLANTIS, MECA, aramco, TOYOTA, Mercedes-Benz, Shell, PHILLIPS 66, NISSAN, Volkswagen, MITSUBISHI MOTORS, ExxonMobil, NESTE, Cummins, Wabtec CORPORATION

Expansion in progress

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