THOMAS B. COCHRAN, Ph.D.

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PROFESSIONAL ACTIVITIES

2016 - Present: **Retired**

July 2011-2016: N**atural Resources Defense Council, Inc. (NRDC)**, 1152 15th Street, N.W., Washington D.C. 20005

Consultant to NRDC's Nuclear Program.

11 Apr. 1973-July 2011: **Natural Resources Defense Council, Inc.,** various office locations in Washington, D.C.

Senior Scientist; held the Wade Greene Chair for Nuclear Policy; director of the Nuclear Program from late-1970s until 2007.

Directed NRDC's nuclear program activities, which including:

- Litigation related to the operation of U.S. nuclear weapon facilities, U.S. nuclear energy policy, nuclear waste disposal, environmental impacts and radiation protection standards. Served as an expert witness in some of the litigation.
- Public policy advocacy related to U.S. energy policy; nonproliferation and arms control; nuclear power safety, environmental impacts, and waste disposal; safeguarding nuclear weapons material; and smuggling of nuclear materials.
- Exchanges with Russian, Ukrainian, Chinese and other foreign experts on nonproliferation, arms control, verification of nuclear weapon testing and nuclear warhead elimination.

Highlights:

- Initiated and directed the American participation in the US/USSR Nuclear Test Ban Verification Project (1986-1988), a joint project with the Soviet Academy of Sciences. The Soviet side of the project was led by Academician Evgeniy P. Velikhov. This project demonstrated the feasibility of utilizing seismic monitoring to verify a zero, or low threshold, yield nuclear weapon test ban. Established in 1986, the first seismic stations in the Soviet Union operated by American and Soviet seismologists for monitoring nuclear testing. The NRDC seismic monitoring program was taken over and funded by the U.S. Air Force in 1988 and operated by the Incorporated Research Institutes for Seismology (IRIS). For his leadership Dr. Cochran received the American Physical Society's Szilard Award (1987) and the Federation of American Scientists' Public Service Award (1987); shared with Adrian DeWind the Lawyers Alliance for World Security (LAWS) second annual W. Averell Harriman Award (1992); and NRDC received the AAAS Award for Scientific Freedom and Responsibility.

- Initiated and directed the American participation in the Black Sea Experiment (1989), a joint project with the Soviet Academy of Sciences, the Kurchatov Institute of Atomic Energy and the Soviet Navy, which examined the utility of passive radiation detectors for detecting the presence or absence of nuclear weapons on surface ships. During the Blank Sea Experiment the American scientific team, led by Dr. Cochran, measured the gamma-ray spectrum of a Soviet nuclear warhead aboard the cruiser SLAVA, the flag ship of the Black Sea Fleet. The SLAVA was later renamed the MOSKVA and subsequently sunk on April 22, 2022, during the Russian invasion of Ukraine.

- Organized, and with Academician Evgeny P. Velikhov, hosted two Congressional delegations on visit sensitive Soviet military installations: the Krasnoyarsk early warning radar under construction in central Siberia, in violation of the ABM Treaty (1987); Chelybinsk-65 (now Ozersk), the first Soviet plutonium production complex (1989); and an anti-satellite laser research facility at Sary-Shagan, the Soviet ABM test site in Kazakhstan. Participating in General Secretary Mikhail Gorbachev's glasnost efforts, these delegations were among the first foreign visitors to these sites.

- Co-organized (with NRDC Senior Research Associate Christopher Paine and Princeton Physicist Frank von Hippel) of a series of six pathbreaking international workshops on nuclear testing, nuclear warhead elimination, verified storage and ultimate disposition of highly enriched uranium and plutonium from nuclear weapons (Nov. 1990-Dec. 1993). These technical workshops, held in Washington, D.C., Moscow and Kiev, were co-sponsored by NRDC, the Federation of American Scientists, the Soviet/Russian Foreign Ministry and Ministry of Atomic Energy.

- Worked with ABC News Investigative Team (led by journalist Brian E. Ross and producer Rhonda Schwartz) in 2002 and 2003, to demonstrate that the passive radiation detectors installed and operated by the U.S. Department of Homeland Security at shipping ports and border crossings were incapable of reliably detecting highly enriched uranium. In 2005, ABC News and Primetime Thursday won an Alfred I. duPont-Columbia University Award for its Nuclear Smuggling Project.

- Initiated and directed NRDC's Nuclear Weapons Databook Project; co-editor and co-author of four of the five *Nuclear Weapons Databoo*k volumes dealing with U.S. and Soviet nuclear weapons production and deployment.

- Co-author of the "Nuclear Weapons" and "The Development of Fusion Weapons" sections under "Technology of War" in the 1990 edition of *The New Encyclopædia Britannica*.

- Provided policy assistance and technical support with respect to successful litigation and advocacy activities designed to force the U.S. AEC/ERDA/DOE to comply with the environmental laws at its weapon facilities, and to halt the construction or operation of facilities that were dangerous or not needed, including: NEPA compliance prior to the restart of the Savannah River L-Reactor; unlawful operation of the Y-12 facility at Oak Ridge; construction of the plutonium isotope separation plant at INEL; unsafe operation of the N-Reactor at Hanford; compliance by the Savannah River K-Reactor with Clean Water Act thermal discharge requirements; and construction of a new production reactor at the Savannah River for tritium production.

- In the 1970s and early-1980s, Dr. Cochran played a leadership role in the successful effort to terminate the Clinch River Breeder Reactor Project, and halt commercial nuclear fuel reprocessing and recycling of plutonium in nuclear power reactors.

July 1971- April 1973: **Resources for the Future**, Washington, D.C.
Senior Research Associate in the Environment Program

Wrote *The Liquid Metal Fast Breeder Reactor: An Economic and Environmental Critique* (Washington, D.C.: Resources for the Future, 1974)

1969- 1971: **Litton Industries, Mellonics Division, Scientific Support Laboratory,**
Fort Ord, California
Modeling and Simulation Group Supervisor

Supervised the activities of ten research analysts engaged in military research

pertinent to the evaluation of proposed U.S. Army concepts and materials by the U.S. Army's Combat Developments Command Experimental Command (CDCEC).

July 1967- July 1969: **U.S. Naval Postgraduate School (USNPG)**, Monterey, California. Lieutenant-United States Naval Reserve (Lt.-USNR), active duty; Assistant Professor of Physics, Department of Physics

Taught undergraduate and graduate physics and mathematics; served as the head of the Radiation Safety Committee; part-time research involving computer studies of synchrotron radiation production in beam transport systems at the Stanford Linear Accelerator (SLAC), Stanford University, Palo Alto, California.

MILITARY SERVICE

30 June 1971 **Honorable Discharge** (File #657214)
24 June 1967- **Active Duty** - Naval Postgraduate School, Monterey, California.
10 July1969: Rank/Branch: Lieutenant, United States Naval Reserve (USNR).

June 1962- June 1967: **Inactive duty** – United States Naval Reserves (USNR), Nashville, Tennessee, Ranks: Ensign and Lieutenant Junior Grade

HIGHER EDUCATION

Summer 1969: **University of Colorado**, Boulder. Colorado
Post-doctorate, Summer Institute of Theoretical Physics.

1962- 1967: **Vanderbilt University**, Nashville, Tennessee
Physics Department, graduate student

Sept. 1967 **Ph.D. in physics**; dissertation: "Antiisobar Production in Antiproton-Deuteron Interactions at 2.8 GeV/C," Vanderbilt University.

1964-1967 NASA Fellowship; part-time employment as campus health physics officer, Vanderbilt University.

1966 Bubble chamber physics training at Brookhaven National Laboratory (BNL), Upton, Long Island, New York. Part-time employment as health physicist at BNL's Alternating Gradient Synchrotron (AGS).

June 1965 **M.S. in physics**; thesis: "Soft X-Ray Irradiations of Acetylene Methyl-acetylene, and Ethyl-acetylene in the Gas Phase with and without Admixtures of Noble Gases," Vanderbilt University.

1963 Health physics applied training at Oak Ridge National Laboratory (ORNL).

1962-1964 AEC Health Physics Fellowship. Health physics courses at Vanderbilt University.

UNDERGRADUATE EDUCATION

1958-1962:	**Vanderbilt University**, Nashville, Tennessee Department of Electrical Engineering
June 1962	B.E. in Electrical Engineering, cum laude.
1959	Applied surveying and courses in surveying at summer camp as part of engineering curriculum of Vanderbilt University.

HIGH SCHOOL EDUCATION

1957-1958:	**Saint Martin's Protestant Episcopal School**, Metairie, Louisiana. High school diploma; Southern Bell Science Award for Outstanding Achievement in Science.
1954-1957:	**Hillsboro High School**, Nashville, Tennessee

PROFESSIONAL HONORS

2025	Star of Peace Award-Arms Control, The America-Eurasia Center's International Security Program
2006	Ploughshares Hero, Ploughshares Fund
1992	Lawyers Alliance for World Security (LAWS), second annual W. Averell Harriman Award (shared with NRDC Chairman, Adrian W. DeWind)
1989	Elected Fellow of the American Association for the Advancement of Science (AAAS). As a consequence of his work, NRDC received the 1989 Scientific Freedom and Responsibility Award by the AAAS.
1987	Recipient of the American Physical Society's Szilard Award Elected Fellow of the American Physical Society
1987	Recipient of the Federation of American Scientists' (FAS) Public Service Award
1985-1988	Elected National Council Member, FAS

PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science (AAAS)
American Physical Society (APS)
Health Physics Society (HPS)
Sigma Xi
Pugwash Conferences on Science and World Affairs (Pugwash}
Federation of American Scientists (FAS)

ADVISORY ROLES

U.S Department of Energy (DOE)

1998-2014 Member, **Nuclear Energy Research Advisory Committee**, reported to the Director, Office of Nuclear Energy, Science and Technology
1994-1997 Member, **Environmental Management Advisory Board**
Member, **Fusion Energy Sciences Advisory Committee**
1978-1982 Member, **Energy Research Advisory Board** (ERAB), reported to the Secretary of Energy. Member ERAB's Technical Panel on Magnetic Fusion Energy (1983-84)

U.S. Nuclear Regulatory Commission (NRC)

Mar. 6, 2002 Panelist, Waste Issues, Regulatory Information Conference
1980-1986 Advisory Committee on the Cleanup of Three Mile Island
1982 Peer Panel on Nuclear Reactor Operation Qualification
1981 Safety Goals Workshop

1981-1998 **Three Mile Island Public Health Fund**, Philadelphia, Pennsylvania
Member, Advisory Board

Energy Research and Development Program (ERDA)

1977 member, of the LMFBR Review Steering Committee

U.S. Comptroller General (GAO)

1975- consultant on (a) U.S. and international controls over the peaceful uses of nuclear energy; (b) Advanced Nuclear Technologies; and (c) U.S. Liquid Metal Fast Breeder Reactor Program

Office of Technology Assessment (OTA)

Panel on Policy Options for Nuclear Power
1975 The Nuclear Task Group of OTA's Analysis of the ERDA Plan and Programs
Gas Curtailment Study Review Panel

National Academy of Sciences

1973-74 Member, Panel on the Strategy for Developing Nuclear Merchant Ships
Member, Task force on Energy Conversion Research and Development of the Federal Power Survey

American Nuclear Society

1979-80 Member, ANSI Working Group to Develop Criteria for Radioactive Waste Disposal

United Nations Environmental Program (UNDP)

1980 Member, International Panel of Experts on Energy and the Environment

Governor of Lower Saxony

1978-79 serves as an International Expert for the Review of the Gorleben Nuclear Fuel Cycle Center

World Council of Churches

1983 Member, delegation to the Marshall Islands

1977-78 Member, Consultation on Ecumenical Concerns in Relation to Nuclear Energy

United States Catholic Conference

1980 Consultant on its Policy Statement on Energy

National Council of Churches

1977 Member, Energy Study Panel

COMMERCIAL ANSD BUSINESS-RELATED INTERESTS

2016-Present Partner and Chief Scientist of **ACUX Energy**, LLC
ACUX is a commercial start-up effort; its mission is assisting the U.S. government in a) addressing issues related to international security and nuclear non-proliferation, and b) accelerating efforts to mitigate climate change.

SOCIAL ORGANIZATIONS

1996-present **Cosmos Club**, Washington D.C.
Member, Board of Management, 2023-present; Chair, Climate Change Mitigation and Adaptation Group, 2019-2023; Member, Admissions Committee, 2016-2017; Chair, Admissions Committee, 2018; Member, House Committee, 2019-2021; Member, International Affairs Committee, 2013-2015, 2022; member, Reciprocity Committee, 2010-2012, advisor 2013-2014.

1992-Present **Gibson Island Club**, Gibson, Island, Maryland

SECURITY CLEARANCES

DOE "Q" (inactive); DOD SECRET (inactive)

PERSONAL

Birth Date: November 18, 1940
Birth Place: Washington, D.C.
Wife: Carol J. Cochran
Adult Children: Jaquelin M. Cochran and Carolyn C. Vaughn
Grandchildren: three

HOBBIES

1950-present	sailing; currently a member of the Gibson Island Yacht Squadron
1967-1987	skiing
1969-1987	member, National Ski Patrol
1965-1971	flying
1970	Commercial pilot's license (single engine, land)
1965	Private pilot's licence (single engine, land)
1967-1969	gliding
1965-1969	skydiving, 124 jumps
1963-1971	scuba diving
1950s	spelunking
1957-present	member, National Speleological Society, #3494
1950s-present	hiking and camping
1956	Eagle Scout
2025	National Eagle Scout Association Outstanding Eagle Scout Award