

SCIENCE ADVISORY PANEL OF THE TORRANCE REFINERY ACTION ALLIANCE



Dr. Sally Hayati, Chair of the Science Advisory Panel

Dr. Sally Hayati is a founding member and President of the Torrance Refinery Action Alliance. She holds Bachelor and Master of Science degrees from UC Berkeley and a Master of Science and Ph.D. in Computer Engineering from the Electrical Engineering Department at the University of Southern California. She is retired from the Aerospace Corporation in El Segundo, where she was the lead technical consultant for Aerospace on the ICO and Thuraya Communication Satellite programs and later the Director of the Computer Science Research Department. She resides in Torrance.



Dr. Charles Clendening

Dr. Charles Clendening completed his undergraduate work at the Case Institute of Technology in 1968, and earned his doctorate in physics from Cornell University in 1974. He has worked in high energy laser development for over thirty years, first for the United States Air Force and then for TRW, which later became Northrop Grumman. He is a past recipient of two TRW Chairman Awards for Innovation, and a TRW Distinguished Patent award. Dr. Clendening served as Chief Scientist at Northrop Grumman for the Air Force's Airborne Laser Program and won the 2009 AIAA Plasmadynamics and Lasers Award. Charles resides in Torrance.



Dr. James Eninger

Dr. James Eninger retired in 2005 after a 33-year career at TRW in Redondo Beach. At TRW, he was a Senior Staff Engineer and Project Manager of programs that included safely dealing with hydrogen fluoride in the exhaust of high-energy chemical lasers. He holds a B.S.M.E., M.S. and Ph.D. in Aeronautics and Astronautics from Stanford University, specializing in Fluid Mechanics and Physical Gasdynamics. He resides in Torrance and is a member of the newly formed Torrance Refining Company Community Advisory Panel.



Dr. Nahum Gat

Dr. Nahum Gat is Founder and President at Opto-Knowledge Systems, Inc. (OKSI), located in Torrance two miles directly east of the Torrance Refinery. Previously, he was a Section Head of Combustion Research at TRW in Redondo Beach (1978–1991). He served as an Army Officer (Captain) in the Israel Defense Force (1969–1974) and was a tank Battalion Commander and combat veteran of the Yom Kippur War as well as other conflicts. Dr. Gat earned his M.S. & Ph.D. in Aerospace Engineering at University of Cincinnati (1973–1978) and his B.Sc. in Aeronautical Engineering at the Technion — Israel Institute of Technology (1965–1969). Nahum runs marathons in his spare time.



Dr. David Hannum

Dr. David Hannum completed his undergraduate studies at New College of Florida in 2000 and earned his doctorate in physics at the University of Wisconsin in 2010. David's primary field of expertise is plasma physics, and his specialty is design and construction of scientific experimental hardware. He currently serves as a Test Engineer at OSI Optoelectronics in Hawthorne. David resides in Torrance.



Dr. George Harpole

Dr. George Harpole holds a Ph.D. in Engineering from the U.C.L.A. School of Engineering, Chemical, Nuclear, and Thermal Engineering Department. He has been Chief Engineer of two chemical laser systems at Northrop Grumman Corporation. His current assignment is thermal analysis for the James Webb Space Telescope. He is the inventor, or co-inventor, of 14 U.S. Patents. He received two TRW Chairman's Awards. George Harpole resides in Torrance.



Judith Scott is a Chemist who spent 18 years of her career at TRW in Redondo Beach. For the eight years before retirement, she was Manager of the Chemistry Technology Department, a corporate-wide resource for chemical process development, materials and chemical characterization, contamination and failure analysis, and methods development for safety and environmental assessment. The Department also supported pilot-scale testing of rocket propellants, airbag technologies, and coal-cleaning processes. She was Program Manager for seven years for an Electric Power Research Institute contract for the sampling and analysis of utility pollutants. She previously worked for Shell Chemical Company and Arthur D. Little. She holds a B.A. in Chemistry from the College of Wooster (Phi Beta Kappa) and an M.S. in Chemistry from Boston University. Judith resides in Torrance.



Dr. Christopher Shih

Dr. Christopher Shih is a retired Chemical Engineer who worked at TRW in Redondo Beach from 1968 to 2002. Among numerous projects, he worked on EPA contracts that dealt with disposal of hazardous waste materials, including incineration of Agent Orange that contained traces of dioxin. He was one of the principal designers of the Sodium Azide Recovery Process at TRW's airbag propellant manufacturing plant in Mesa, AZ, and retired as Director of Chemical and Materials Technology at TRW's Center for Automotive Technology. Christopher earned his B.S. Chemical Engineering at UC Berkeley, and his Ph.D. Chemical Engineering at Stanford University. He resides in Torrance.