

THOMAS R. HANLEY
ENGINEERING CONSULTANT
7504 Chestnut Hill Drive
Prospect, Kentucky 40059-9484
(502)228-0161

August 31, 2006

Dan Parker
IRST
11760 Commonwealth Drive
Louisville, Kentucky 40299

Dear Dan:

As requested, I have developed an opinion regarding the shelf life and expected life in boom application for CIAgent. I have reviewed the composition of CIAgent, the conditions prevailing during long-term storage of CIAgent and the typical conditions under which CIAgent is employed as a part of a barrier boom. I have also reviewed a variety of documents related to the approval for the use of CIAgent in U. S. moving waters.

In Storage. CIAgent is typically stored in sealed plastic containers at or near room temperature. The plastic container excludes both oxygen and ultraviolet radiation that could have a negative impact on CIAgent. Under normal storage conditions in sealed plastic containers the shelf life of CIAgent is effectively unlimited.

Employed in Barrier Booms. CIAgent, in combination with a woven material, is employed as a barrier boom in a variety of applications involving hydrocarbon liquids. As the CIAgent is encapsulated in the woven material and the barrier boom is buried, exposure to oxygen and ultraviolet radiation would be minimal. Under normal use conditions as part of a barrier boom the life of CIAgent is effectively unlimited.

I have attached a resume for your information. Please contact me if I can provide any additional information.

Sincerely,



Thomas R. Hanley

THOMAS RICHARD HANLEY

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(502)228-0161

- Present Position** Professor of Chemical Engineering, Auburn University, Auburn, Alabama 36849-5108. (334)844-7773; hanley@auburn.edu
- Education** B. S., Chemical Engineering, 1967, Virginia Polytechnic Institute, Blacksburg, Virginia
M. S., Chemical Engineering, 1971, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
Ph. D., Chemical Engineering, 1972, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
M. B. A., Management, 1975, Wright State University, Dayton, Ohio
- Other Training** *Major Gift Fund Raising for Deans*, Council for Advancement and Support of Education, Washington, D. C., 1995.
Development for Academic Deans, Council for Advancement and Support of Education, Washington, D. C., 1992.
Bioprocess Equipment Design, American Society of Mechanical Engineers, Charlottesville, Virginia, 1990.
ChE Laboratory Module Workshop, Purdue University, West Lafayette, Indiana, 1990
Introduction to Microprocessors, Intel Corporation, Dallas, Texas, 1985.
- Research** Contracts and grants totaling over \$3.1 million have been funded by the National Science Foundation, the National Renewable Energy Laboratory, General Electric, Colgate-Palmolive, United Catalysts, Stone & Webster, Swan Biomass, IKA Works, Toro, U. S. Bioreactor, Olin Corporation, the Semiconductor Research Corporation, the Florida High Technology and Industry Council, the Florida Department of Environmental Regulation, the Louisiana Department of Natural Resources, the National Institutes of Health, Morton-Thiokol, IMC Corporation, the U. S. Department of Energy, the U. S. Department of Agriculture, and Union Carbide. He has directed 70 student research projects, including 11 Ph. D. dissertations and 27 Masters theses. He is the author of over 65 papers and 220 presentations. He edited *The AIChE Pocket Handbook*.
- Courses Taught** Introduction to Chemical Engineering, Introduction to Engineering, Material and Energy Balances, Transport Phenomena, Thermodynamics, Chemical Kinetics, Physical Chemistry, Unit Operations, Engineering Economics, Unit Operations Laboratory, Reactor Design, Plant Design, Microelectronic Materials, Polymer Engineering, Biochemical Engineering, Industrial Mixing, Corrosion Engineering, Polymer Processing, Advanced Engineering Mathematics, Process Dynamics, and Computational Fluid Dynamics

Board Positions and Consulting Dr. Hanley is a member of the Board of Directors of Plasticolors, Inc. and the American Institute of Chemical Engineers. He is a member of the Michigan Tech University Engineering Industrial Advisory Board and Virginia Tech College of Engineering Committee of 100. He served as a board member of the Louisville/Jefferson County Redevelopment Authority, the Kentucky State Board of Registration for Professional Engineers and Land Surveyors and the Kentucky Partners Pollution Prevention Center. He served the National Science Foundation on the Divisional Advisory Committee for Biological and Critical Systems and the Divisional Advisory Committee for Chemical, Biochemical, and Thermal Engineering. He was a board member of the Louisville Advanced Technology Council for five years, serving as Board President in 1996. He has consulted for Swan Biomass, Louisville Gas and Electric, Brown and Williamson, KFC, Olin, Kraft, IMC Corporation, El Paso Polyolefins, Chevron Chemical, and Edgewood Arsenal.

Honors & Awards Phi Kappa Phi (1967), Tau Beta Pi (1967), Phi Lambda Upsilon (1967), Distinguished Military Graduate (1967), Society of American Military Engineers Award (1966 and 1967), American Legion Academic Award (1967), Sigma Xi (1977), Omega Chi Epsilon (1977), Outstanding AIChE Student Chapter Advisor (1979), SAE Ralph R. Teetor Educational Award (1989), KSPE Outstanding Engineer in Education Award (1994), AIChE Fellow (1995), ASEE/CIEC College Industry Partnership Division Best Presentation Award (1996)

Societies American Institute of Chemical Engineers, American Society of Engineering Education, Leadership Louisville, Leadership Kentucky, National Association of State Universities and Land-Grant Colleges

Past Positions Provost and Vice President for Academic Affairs, Auburn University (2003-05).

Dean, Speed School of Engineering, University of Louisville (1991-2003).

Professor and Chair of Chemical Engineering, FAMU/FSU College of Engineering (1985-1991)

Professor and Head of Chemical Engineering, Louisiana Tech University (1983-1985)

Associate Professor of Chemical Engineering, Rose-Hulman Institute of Technology (1979-1983)

Assistant Professor of Chemical Engineering, Tulane University (1975-1979)

Development Engineer, U. S. Air Force Materials Laboratory (1972-1975)