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**Fact Sheet**

**Education Programs – Roy Eddleman Institute for Interpretation and Education  
Chemical Heritage Foundation**

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CHF's educational mission is embedded in all aspects of outreach as part of the organizational mission of treasuring the past, educating the present, and inspiring the future. Education programs in the Roy Eddleman Institute for Interpretation and Education target teachers, students, and the educated general public interested in the chemical and molecular sciences and their heritage.

CHF education programs provide reliable information about and a framework for understanding the molecular sciences and technology and their history which encourage recognition and thoughtful discussion of the contributions and importance of chemical science industries in society. CHF creates unique high-quality classroom materials and other resources, designed to inspire young people to become interested in a career in science in general and the molecular sciences in particular. It also provides a forum through events and initiatives for fruitful connections between teachers, the general public, industry representatives, academics, and public policy specialists. CHF education programming strives to help the science education community incorporate innovative applications of the history and heritage of the chemical sciences into curricula, providing resources both in print and on the web. Educational resources produced by CHF combine rigorous *science*, exciting *history* and current best practices in *education*.

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### **Content Development**

From its inception, CHF has been an authoritative source for information about the history of chemical and molecular sciences, initially in print publications and, beginning in 2000, online. The first online publications were adaptations of traveling exhibit catalogs, *Spinning the Elements: Wallace Carothers and the Nylon Legacy* and *Polymers and People* and our premier general interest publication, *Chemical Achievers*. Since then, we have added two free-standing modules, *Faces in Polymers* and *Faces in the Environment*, general information about key topics in the history of chemistry under the title *Explore Chemical History*, and materials related to our most recent traveling exhibit, *Her Lab in Your Life: Women in Chemistry*. *Chemical Achievers* was recently updated to conform to current graphics standards for online content. In 2006, we launched a new initiative, *Science Alive! The Life and Science of Percy Julian*, which fully integrates our tradition of authoritative information with materials for use in science classrooms. A key theme linking our web-based content is lives in science as illustrations of scientific practice. Telling stories from the history of science brings science concepts alive for students. The education team will continue producing and adapting authoritative resources for the web, including a new module celebrating the centennial of the founding of the American Institute of Chemical Engineers.

### **Web-based Teaching Materials**

In addition to providing authoritative reference information, CHF develops materials for classroom use relating to that information. By combining the stories with engaging classroom activities we provide teachers with multiple methods of creating student interest and teaching important concepts. All of our resources are developed with current best practices and prevailing national professional standards in mind. *Faces in Polymers* and *Faces in the Environment*, both offered under the rubric *Faces in Molecular Sciences*, were the first two of our online resources that explicitly linked student activities to general informational text. We followed that with *Aspirin Adventures*, *Magic Bullets*, and *Antibiotics*, which offered activities associated with the print publication *Pharmaceutical Achievers*. *Pharmaceutical*

*Achievers* itself has not yet been adapted to the web. We also developed six “Web Quests.” Web Quests encourage students to research key chemical concepts online with guided inquiry. Most recently, CHF has introduced *Science Alive! The Life and Science of Percy Julian*, which offers fifteen guided activities and lesson plans to accompany an informative narrative of the life of Percy Julian. All teaching resources are accompanied by teacher’s versions that link the content to specific science standards. The integrated approach to narrative and activities in *Science Alive!* will serve as a template for future web modules.

### **Teacher Workshops and Professional Development**

To support our web-based content and activities, CHF has offered a variety of workshops and professional development sessions which explore and explain how to use our materials in a classroom setting. The education team regularly attends national, regional, and state conventions, with an eye towards increasing CHF’s visibility in all parts of the country. In 2006, we attended nine conferences. We also offer professional development for teachers. For example, in 2006 we offered a weekend long workshop for the entire Loudoun County, Virginia, School District. When our gallery and conference space at CHF is completed, we will inaugurate a two-week long summer institute for teachers demonstrating from our collections how to incorporate history of chemistry into classroom teaching.

### **Leadership Initiative in Science Education (LISE)**

The Chemical Heritage Foundation organized and hosted the first Leadership Initiative in Science Education (LISE) conference in 2000. The objective of the LISE conferences is to bring together stakeholders in science-based industries, academia, government, and schools to discuss common themes and issues pertaining to science education and education policy. The thematic focus of the conference changes annually. From its inception, LISE has been a neutral forum for all stakeholders in science education. Speakers have included nationally and internationally prominent heads of professional organizations, academics, museum professionals, foundation officers, and leaders in business and industry. CHF’s distinctive place within the science education community has facilitated the exchange of ideas. CHF produced a published collection of papers for LISE 4 proceedings and began a series of white papers covering the main results of the conference beginning with LISE 5. The theme for LISE 7 was “21<sup>st</sup> Century Science Education: Preparing Teachers and Students for the Future.” The theme for LISE 8 in 2008 will be “New Media and Technology in Science Education.”

### **Mystery of Matter**

CHF’s outreach efforts are not limited to print and online media. We are currently developing in partnership with Steve Lyons of Moreno/Lyons productions and Oregon Public Broadcasting, a six-hour television series, *The Mystery of Matter*, to be aired on PBS. The series will use re-enactments, narrative, and animations to relate the quest to understand the nature and composition of matter. It will capture CHF’s commitment to lives in science as illustration of scientific practice in a dramatic medium and reach a broad audience in the general public. The television series will be supported by a complementary outreach program that builds on resources already at CHF. Our targeted air date for the series is 2010.

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## CHF Education Programs and IUPAC

In accordance with its mission and holdings, the Chemical Heritage Foundation's education programs try to demonstrate the relevance of the history of the chemical and molecular sciences for understanding chemistry today.

CHF education programs emphasize the following themes:

- Using lives in science as a means of connecting to the experiences of today's students, allowing them to envision themselves in the roles of scientific discoverer.
- Illustrating the nature of scientific discovery as a template for today's discoveries.
- Explaining how we have achieved the tremendous range of new knowledge and products as a process of intellectual achievement.

What CHF has that might be of interest to IUPAC's Education Division:

- Online content in the history of chemistry, some of which is accompanied by laboratories and activities illustrating principles taught in the K-12 classroom.
- In house experts in chemical history and education who can create new materials for a general audience of the K-12 classroom.
- A major research collection that can be accessed by scholars from around the world.
- A forum where stakeholders in science education meet to address the key issues in the field.

What IUPAC has that might be of interest to CHF's Education Division:

- An established network of international experts in chemistry education.
- Journals that reach a wide range of stakeholders in chemistry education.
- A significant history shaping the development of chemistry in the twentieth century.
- A roster of special projects that have an historical dimension.

Areas of potential co-operation:

- Input from IUPAC national experts to expand CHF's *Chemical Achievers* to show achievements from all around the world.
- CHF support for International Year of Chemistry.
- CHF contributions to *Chemistry International* and *Chemical Education International*.
- History of chemical nomenclature with educational support materials.
- Mutual participation in education conferences (ICCE, LISE)

Next steps:

- Initiate direct discussions between John Theibault and Peter Mahaffy about which areas of mutual interest show greatest promise for cooperation.
- Determine how best to maintain contact for longer-term mutual support.