Lawrence Berkeley National Laboratory
Recent Work

Title
E&E Newsletter (May 1994)

Permalink
https://escholarship.org/uc/item/4xp1m9tc

Author
Schwartz, Lila

Publication Date
1994-05-09
DISCLAIMER

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor the Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or the Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof or the Regents of the University of California.
Joan Daisey has been a Staff Scientist in the Indoor Environment Program since last October. She received a Ph.D. in Physical Chemistry from Seton Hall University in South Orange, New Jersey. After five years of teaching at Mt. St. Mary College in Newburgh, New York, she joined the staff of the New York University Medical Center where she was an Associate Professor in the Department of Environmental Medicine and eventually became Associate Director of the Laboratory of Environmental Studies. The following is from a conversation with Joan.

ASD: How did you become interested in environmental chemistry?

Daisey: Studying science just gives you a more formal framework for looking at the world around you, and environmental chemistry is attractive to me because it has practical consequences. Applied science is really a way of tackling complex scientific problems that usually require expertise in a number of different fields; it usually involves collaboration among people from different areas of science. I like that aspect of environmental chemistry very much. At the Department of Environmental Medicine, the emphasis was on exposure to substances in the environment that would have health consequences.

ASD: How does your interest in environmental health effects apply to your current work in the Indoor Environment Program?
In recent years it has become apparent that concentrations of many pollutants are much higher in indoor environments, and people typically spend 60-80% of their time indoors. Consequently, exposures to toxic pollutants can be considerably higher indoors than outdoors, with potentially more serious consequences because of the higher dose. Being aware of this, I wanted to “come indoors” so to speak. There had been relatively little research done on indoor air pollution. We’ve been looking at outdoor air pollution for thirty years, and we’ve learned a tremendous amount about photochemical smog, transformation and transport of pollutants, and the health effects of those pollutants. Of course some of the health effects data—that which is based on epidemiological studies—raises a lot of questions now, because the studies frequently involved getting health data on people and relating it to measurements that were made outdoors. However, that isn’t where the exposures were occurring as people were much more likely to be indoors. We are only beginning to relate exposure and health effects in indoor environments. We don’t even have a good understanding of everything that’s found indoors, as the science is very much in its infancy.

So, on indoor studies we’re still at the level of monitoring, seeing what’s there?

Yes, for many pollutants, we’re at the stage where we are trying to find out what’s there, how high the levels are, and where it’s coming from. We haven’t done any experimental work on possible chemical interactions among the pollutants that are there. We certainly have higher levels of many of the volatile organic compounds indoors than outdoors, and there are higher levels of NO₂. You don’t have sunlight indoors, so you probably don’t have a photochemical driving force; however, you have free radicals and heat sources indoors. Radon can interact with gases like water vapor to produce a hydroxyl radical, which is a key reactant in outdoor chemistry. It’s likely then, that some of the chemistry that goes on outdoors will take place indoors. The products may be different because the gases may be a little bit different, the sources are different, and so forth.

But there are similar processes taking place indoors and outdoors?

I think there are, but nobody has looked at them. Just as the Indoor Environment group has been a pioneer in some of the radon work, so we hope it will be a pioneer in indoor atmospheric chemistry. What we don’t know is the extent of the reactions that occur and what the products are. There’s reason to suspect that some of the products may be irritants or mutagens, based upon what we know about what is found indoors and what we know about outdoor chemistry, but we haven’t identified the products, nor do we know what their possible effects are. Nobody has looked at secondary pollutants. What has been measured indoors is primary pollutants—substances that have been emitted directly from the surroundings. John Girman and Al Hodgson, for example, have done a lot of work on emissions of volatile organic compounds from adhesives used for carpets and baseboards indoors. But to date there has simply been no exploration of the chemical products that might result.
Do you plan to work in this area and explore what products might result from emissions of volatile organic compounds?

We are hoping to perform experiments in a model system, which is an approach that has been used in outdoor chemistry. Because the environment is so complex and you’re not exactly sure what to look at, the idea is to use a simplified system, with a mixture of one or two compounds that you know are present indoors, combine them with radon as a free radical source, or emissions from hairdryers (hairdryers are a source of free radicals), and then follow the course of the reaction. We want to focus especially on substances that may have health effects, such as mutagenic compounds, by using the Ames Test, which identifies mutagens by exposing bacteria cultures to various chemical compounds and comparing the rates at which they cause mutations. Many of the compounds that are mutagens in the Ames Test are carcinogens in mammals, so it’s a convenient test because you can’t use human subjects in your work.

To follow up on the modeling studies would you also work on a larger scale or on-site in houses and office buildings?

Yes, eventually. We would do these first experiments in the environmental chamber in Building 70, where things can be controlled. Once we have identified certain kinds of compounds, we would want to know if they are actually present in the “real world”. So we would have to do some monitoring in homes and office buildings to find out if they are there.

As a transplanted New Yorker, how are you adjusting to the environment in California?

Well, I love California! I miss the Hudson Valley, which is a very pretty part of the country, but I don’t miss the snow in New York, especially driving in it. The East Coast is closed down with snow today, and I’m glad I’m out here. I also like the amenities of Berkeley, in particular the little restaurants and the bookstores.

The Applied Science Division Safety Committee was established in 1985 to strengthen our commitment to employee health and safety by examining Division activities and assisting line management in maintaining a safe and healthful work environment. The new members of the Committee are as follows:

Ted Chang (Chair)
Alex Quintanilha
Lara Gundel
Robert Cheng
Al Robb
NEW PERFORMANCE APPRAISAL
AND COMPENSATION SYSTEMS

In July, 1985 the Laboratory Director appointed a Performance Appraisal Task Force to study the employee performance appraisal process and recommend change, if necessary. A lengthy series of meetings, opportunities for employee input, draft documents, revisions, and the like culminated in a report to the Director in December, 1986. [Copies of the report are available from Don Grether — the ASD representative on the Task Force — or Jan Smith in the Division Office, or from Roy Kerth's office in Building 50B.] Very briefly, the Task Force recommended that for non-represented employees:

1. the Performance Appraisal system be replaced with a new system called the Performance/Progress Review ($P^2R$) which a) has quite different guidelines and forms than the old system, and b) eliminates the EMIF rating and does otherwise have a grade or rating.

2. the Divisions develop compensation systems that a) emphasize salary management, and b) remove the dependence on the EMIF rating as a driving force for salary increases.

The Director accepted the recommendations, discharged the Task Force, and appointed an Overview Committee to oversee the new system. [ASD has two people on the Committee: Don Grether “at large” and Nancy Brown “ex officio” in her capacity as Chair of the Equal Employment Opportunity Council.]

Implementing $P^2R$ is considered relatively straightforward, since the Task Force report includes essentially final versions of the new forms and guidelines. However, compensation is another matter. Each Division, with the help of the Personnel Department, was to have developed and documented a process or processes that met the needs of the Division. Unfortunately, the Director of the Personnel Department (Nort Croft) recently went on leave for an extended period for medical reasons. The Personnel Department feels that it does not currently have the resources to undertake such an effort Lab-wide. Thus, the Committee is recommending to the Director that the new system be phased in over a two year period, with a few Divisions introducing the system this year. The lessons learned will be available to the rest of the Lab in 1988.

The Committee suggested, and Elton agreed, that Applied Science convert to the new system this year. A principal reason for selecting ASD is that our compensation process has always included elements of salary management. Thus, for ASD, the major change is that the process will be documented.

The Division is planning to hold workshops in early April for each of the three categories of involved employees: scientists and engineers, non-represented administrative/clerical, and non-represented technical. Both supervisors and employees will be invited to the workshops. The primary purpose will be to introduce $P^2R$, although the compensation process and its relationship to $P^2R$ will also be covered.

A couple of final comments. The Lab is committed to the new system and plans to implement it for the entire Lab next year. Thus we (and the other Divisions introducing it this year) will not be testing the new system for acceptance, but rather helping to fine tune it. The other comment concerns the represented employees. Performance appraisal
and compensation management are conditions of employment, and changes can apply to represented employees only after successful negotiations with the appropriate labor organizations. Thus, the Lab will continue to use the Performance Appraisal form and EMIF system for represented employees until such negotiations have taken place.

**DO YOU NEED PASSPORT PHOTOS?**

If you would like to have the negative from the pictures that were taken for the ASD photo board located on the 3rd floor of Building 90, Susan Petersen has them in her office. We have received many requests from people to use these for passport photos, or other needs.

**DIVISION NEWS**

— **Elton Cairns** has been named North American Regional Editor for Electrochimica Acta, which is published by Pergamon Journals Ltd. for the International Society of Electrochemistry (ISE).

— **Tica Novakov** has been named an honorary member of the Boris Kidrick Institute of Chemistry, Ljubljana, Yugoslavia, in recognition of his contributions to the Institute.

— David Shirley has appointed **Nancy Brown** as a member of the Laboratory Staff Committee.

— A Lawrence Berkeley Laboratory Life Sciences Task Force has been established by David Shirley, Chancellor Heyman of the U.C. Berkeley campus, and Chancellor Krevans of the U.C. San Francisco campus. The Task Force is to assess current strengths and future scientific opportunities for the LBL life sciences program. **Alex Quintanilha** has been appointed as a member of this Task Force.

**RECENT REFEREED JOURNAL ARTICLES**


INVITED TALKS AND FOREIGN TRAVEL

December
- Elton Cairns presented an invited talk at a local section meeting of the Electrochemical Society in Washington, D.C. The title of his talk was “Oxygen Reduction in Hydroxide and Carbonate Electrolytes.”
- Tica Novakov was an invited participant in the DOE/OHER-sponsored Workshop on Basic Atmospheric Chemistry at the Environmental Measurements Lab in New York City.
- Elton Cairns was an invited participant at a special seminar on “Kinetics of Oxygen Reduction on Platinum in Hydroxide and Carbonate Electrolytes” at the Case Center for Electrochemical Sciences, Case Western Reserve University in Cleveland, Ohio. Also in Cleveland, he spoke at a local section meeting of the Electrochemical Society. His topic was “The Status of Advanced Batteries.”

January
- Hashem Akbari and Jeff Harris traveled to Toronto, Canada for joint research meetings at the Ontario hydroelectric power facility. Harris also traveled to Winnipeg for a meeting on least cost planning at the Department of Energy and Mines.
- Steve Selkowitz was an invited speaker at the ASHRAE 1987 Winter Meeting in New York City. He spoke on “New Approaches to the Determination of Solar Heat Gain through Fenestration.”
- Elton Cairns presented a talk on “Trends and Directions of Future R&D in Battery Systems” at the 2nd Annual Battery Conference on Applications and Advances at California State University in Long Beach.

CONGRATULATIONS!

To Cindy Polansky and Ron Kammerud, who will be celebrating their 15th wedding anniversary on February 21, 2002.