

Hazardous Chemicals: Agents of Risk and Change (1800–2000)

Rachel
Carson
Center

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Sponsors: Rachel Carson Center for Environment and Society

Conveners: Paul Erker (RCC), Ernst Homburg (University of Maastricht), Elisabeth Vaupel (Deutsches Museum)

Presenters: Kevin Armitage (Miami University, Ohio, USA), Stefan Böschen (Augsburg University, Germany), Fritz Davis (Florida State University, USA), Michael Eagan (McMaster University, Canada), Paul Erker (RCC/Deutsches Museum, Germany), Bob Flanagan (King's College Hospital, UK), Leif Fredrickson (University of Virginia, USA), Hugh Gorman (Michigan Technological University, USA), Amy M. Hay (University of Texas, USA), Ernst Homburg (University of Maastricht, the Netherlands), Kai Hünemörder (Kompetenzzentrum Handwerkskammer Hamburg, Germany), Masanori Kaji (Tokyo Institute of Technology, Japan), Nancy Langston (University of Wisconsin–Madison, USA), Pierre Laszlo (University of Liege, Belgium), Laurence Lestel (CNRS, France), Joost Mertens (The Hague, The Netherlands), Evelyn Krache Morris (Georgetown University, USA), Peter Morris (Science Museum London, UK), Christopher Sellers (State University of New York, USA), Christine Shearer (University of California, Santa Barbara, USA), John K. Smith (Lehigh University, USA), Heiko Stoff (Technische Universität Braunschweig, Germany), Tony Travis (Sydney M. Edelstein Center, Israel), Helmuth Trischler (RCC/Deutsches Museum, Germany), Nasir Tyabji (Independent Researcher, India), Elisabeth Vaupel (Deutsches Museum, Germany), Alexander von Schwerin (Technische Universität Braunschweig, Germany), Christian Warren (Brooklyn College, USA)

During the past two centuries millions of new substances have been discovered, and thousands of them have become novel industrial products. In several cases, the scale of production, together with by-products and waste, has led to previously unknown effects on human health and the environment. Growing awareness of the impacts of hazardous substances on the economy, society, and the environment has stimulated new scientific insights, discussions of risk perception, and new

legislation. Advances in the analysis and detection of chemicals have played a large role in this respect. Since the 1960s, industrialized countries have adopted frameworks for assessing and regulating toxic chemicals, which remain enforced today.

From April 27 to 29, 2012, more than 30 international experts in the history of hazardous chemicals from various disciplines and countries (the United States, France, Germany, Israel, Great Britain, India, Japan, Canada, and the Netherlands) met at the Kerschenstein Kolleg of the Deutsches Museum in Munich to discuss these issues.

After Dr. Helmuth Trischler, a director of the RCC, opened the conference, Ernst Homburg (the Netherlands) explained the intention of the workshop and gave a short overview of the historical problems (*Problemgeschichte*) of “hazardous chemicals.” One aim of the workshop was to focus on the interaction between the growing presence of hazardous substances in the economy and the environment, as well as modern society’s subsequent cultural, scientific, regulatory, and legal responses to these hazards. This required bringing together insights from multiple historical perspectives, including environmental, public health, labor and occupational hazards, technology, science and medicine, and global.

The first day focused on inorganic substances, especially heavy metals. In the first half of the day, the following people presented papers: Michael Egan (USA) on “Mercury’s Modern Alchemy,” Christian Warren (USA) on “Old Situations, New Complications: Lead and Lead Poisoning in a Changing World,” and Laurence Lestel (France) on “White Lead in France and its international Context.” The day’s second half featured Joost Mertens (the Netherlands) and his paper “Scheele, Schweinfurt, and the Sanitary Police: The Fight Against Copper Arsenite Green,” Elisabeth Vaupel’s (Germany) and her paper “Between Economical Interests and The Need to Protect Consumers and Workman: The Handling of Arsenicals in The 19th and 20th Century,” and Masanori Kaji (Japan) and his paper “The Cadmium Poisoning and Other Heavy Metal Poisoning in Japan: The Case of Itai-Itai-Disease and Beyond.”

In the evening, Nancy Langston, a professor in the Department of Forest and Wildlife Ecology and the Nelson Institute for Environmental Studies at the University of Wisconsin–Madison, gave a keynote speech about risk, exposure, and equity. She talked about the toxic legacies and inequities of exposure, especially in regards to the post-WWII boom in synthetic chemicals and the accompanying regulatory measures and conceptual frameworks. She examined several examples, including the Canadian Aamjiwnaang First Nation reserve, whose residents have been heavily exposed to the insecticide toxaphene, and the toxaphene contamination of North America’s Lake Superior.

The next day focused on organic substances, starting with a group of papers on aromatic hydrocarbons. Tony Travis (Israel) gave his paper "Aromatic Amines;" Christopher Sellers (USA) presented "Benzene's Passage from Poison to Carcinogen: How Uneven a Progression;" and Heiko Stoff (Germany) presented "Butter Yellow and The Fear of Contaminants in Germany and Western Europe (1930-1950)." The second part of the day was devoted to papers on organic pesticides. Fritz Davis (USA) spoke on "Organophosphate Insecticides: From Nerve Gases to the Most Prolific Insecticides in the World;" Amy M. Hay (USA) gave a paper entitled "War and Peace: The Phenoxy Herbicides and Chemical Defoliation;" and Leif Frederickson (USA) presented the case study "Picloram: From Ecocide to Eco-ally." The day concluded with a group of papers about the roles of government. Hugh Gorman spoke on "Learning to Govern Human Interactions with the Nitrogen Cycle;" Kevin C. Armitage (USA) gave his paper "From Death Gases to a Hole in the Sky: Refrigerants in the Chemical Century;" and Nasir Tyabji (India) presented "Horizontal Reverberations of Hazard Concerns: The Bhopal Industrial Accident and the Indian Nuclear Liability Act." The third and last day focused on a few notorious organic compounds, especially chlorinated hydrocarbons. Peter Morris (Great Britain) spoke about DDT; Stefan Böschen (Germany) discussed dioxines; John K. Smith (USA) gave a paper entitled "The Short Happy Life of MTBE;" and Alexander v. Schwerin (Germany) talked about cyclamate.

During the final discussion, four main issues were raised as important for further exploration. First was a question of methods, approaches, and concepts; that is, while the participants had very different approaches—from the biographical approach to using the models of the biogeochemical cycle and the life cycle, and from a local or regional approach to a global one—a gender approach seemed to be lacking, as women appeared again and again in various roles in the stories about precarious substances. Second, government, politics, and regulatory institutions seemed to exercise very different functions and roles. For example, the function and role of the state is not only regulation and legislation, but also setting the agenda for the learning and reflection processes. In addition, the state controls the negotiation process (e.g., balance of interests, social consensus, alignment with public welfare objectives, etc.). Another function seems to be the creation of expertise and knowledge, either on its own or through external experts. At any stage, the story of a substance is a story of politics!

Third, the group wrestled with a question of knowledge: when and by whom does knowledge about specific substances emerge? (Here, the phenomenon of agnotology, or the production of ignorance or doubt, should be kept in mind). After all, it is knowledge that allows humans to transform a useful chemical or a miracle compound into a hazardous substance or a precarious chemical. Finally, it was clear that even though many hazardous materials have been properly disposed of, forbidden,

and banned in most developed countries, problems have not vanished—they've only shifted to emerging countries, namely Russia and China. Thus, through the back door, the problem returns, and we are confronted with a new challenge: whether methyl isocyanate or asbestos, the production of toxic substances is continuing and often increasing in Russia and China. And additional significant setbacks exacerbate the predicament: there is no linearity in the mastery of the risks of disposal, the legal and regulatory boundaries, and the compensation and mitigation of the hazards of specific chemicals.

An anthology of the conference papers is in preparation and will be published as an issue of *RCC Perspectives*.