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Born in 1963 in Texas City, Tex., USA

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PROJECT

Mutations in Testing: Cancer Biology and Chemicals Regulation in the Age of Environmentalism

From the 1960s to the 1980s, many scientists and government agencies regarded cancer as an environmental disease, one that could be controlled by regulating exposure to carcinogenic chemicals. My book examines these ideas and ambitions from the lab bench up, by following the trajectory of an influential Petri dish test that was used to identify potential cancer-causing substances. The history of the Ames test, as it was called, provides a prism for viewing both the changing landscape of cancer biology and the struggle between environmentalists and industry over US chemicals regulation, in which testing requirements became a political battleground. While the Ames test became widely adopted in toxicology, its role in the regulatory oversight of chemicals was patchy and contested.

Pharmaceutical companies readily utilized the Ames test to identify potentially carcinogenic drugs. Since 1962, the FDA had required strict pre-market testing for all new drugs, and being able to identify possible carcinogens before conducting expensive animal tests was advantageous to industry. For a time, both scientists and government officials expected that the widespread use of the Ames test would enable comprehensive screening and regulation of chemicals (there were already 60,000 on the market), in order to decrease or even eliminate the incidence of cancer from exposure to toxic substances. This hope was not fulfilled. More chemicals tested positive as mutagens than initially expected, including many natural substances. In addition, lobbying by chemical companies prevented the inclusion of requirements for premarket mutagenicity testing in the US Toxic Substances Control Act of 1976. The outcome of this statute was actually to disincentivize the use of the Ames test by chemical companies, so they would not have to report results, even as mutagenicity testing became ubiquitous in the pharmaceutical industry.

My project thus examines how scientific knowledge did and did not inform post-World War II environmental laws governing chemicals by following how the Ames test was standardized, disseminated, used, and challenged. In doing so, I intend to expand our understanding of the politics of regulatory decision-making to include materials and scientific practices.

Recommended Reading

Creager, Angela N. H. Life Atomic: A History of Radioisotopes in Science and Medicine. Chicago: University of Chicago Press, 2013.

-. "Human Bodies as Chemical Sensors: A History of Biomonitoring." Studies in History and Philosophy of Science 70 (2018): 70-81.

-. "A Chemical Reaction to the Historiography of Biology." Ambix 64, 4 (2017): 343-359

COLLOQUIUM, 09.03.2021

To Test or Not to Test? Tools, Rules, and Corporate Data in U.S. Chemicals Regulation

From the 1960s to the 1980s, cancer was regarded by many scientists and government agencies as an environmental disease, one that could be controlled by regulating exposure to carcinogenic chemicals. My book examines these ideas and ambitions from the lab bench up, by following the trajectory of an influential Petri dish test that was used to identify potential cancer-causing substances. The history of the Ames test, as it was called, provides a prism for viewing both the changing landscape of cancer biology and the struggle between environmentalists and industry over US chemicals regulation, in which testing requirements became a political battleground. While the Ames test became widely adopted in toxicology, its role in regulatory oversight of chemicals was patchy and contested.

My colloquium will focus on a prime example of this contestation, by looking at the Toxic Substances Control Act in the US. When this law was passed by the US Congress in 1976, its advocates pointed to the Ames test as a way to systematically screen chemicals for carcinogenicity. However, in the end TSCA did not require any new testing of commercial chemicals, even though the new methods were rapid and inexpensive. In addition, although the Environmental Protection Agency (EPA) was to make public data about the health effects of industrial chemicals, companies routinely used the agency's obligation to protect confidential business information to prevent such disclosures. The paucity of publicly available health and environmental data concerning chemicals, I argue, was a by-product of the law and its execution, leading to a situation of institutionalized ignorance, the underside of regulatory knowledge.

PUBLICATIONS FROM THE FELLOW LIBRARY

Creager, Angela N. H. (2021)

"Eat. Die." : The domestication of carcinogens in the 1980s

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Creager, Angela N. H. (London,2021)

To test or not to test

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1763773515

Creager, Angela N. H. (New York,2021)

Risk on the table : food production, health, and the environment

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The environment in history: international perspectives ; volume 21

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1738371417

Creager, Angela N. H. (Princeton, NJ,2019)

"Let's have at it" : the Shelby Cullom Davis Center for Historical Studies at fifty

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1763051021

Creager, Angela N. H. (Dordrecht,2018)

Human bodies as chemical sensors : a history of biomonitoring for environmental health and regulation

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1724382888

Creager, Angela N. H. (London,2018)

A chemical reaction to the historiography of biology

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1724382330

Creager, Angela N. H. (Chicago,2013)

Life atomic : a history of radioisotopes in science and medicine

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=737636378

Synthesis

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=737636378

Creager, Angela N. H. (Chicago, Ill. [u.a.],2002)

The life of a virus : tobacco mosaic virus as an experimental model, 1930 - 1965

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=334740827

Creager, Angela N. H. (Princeton, NJ,1)

Out of the stone age : perspectives on the Shelby Cullom Davis Center for Historical Studies at fifty

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