

# CHEMICAL INTELLIGENCE

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# report from

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Evan Hepler-Smith received a SHAC subject development award in 2018. This enabled him to support a joint interdisciplinary workshop with the Boston College Institute for the Liberal Arts entitled *Remapping Chemicals, Environments, and Toxicity*. Here, he outlines the background to the workshop and sketches the discussion that took place.

Toxic pollutants are responsible for nearly 10 million premature deaths a year, per a 2017 report of the Lancet Commission on Pollution and Health. The burdens of pollution are also disproportionately borne by the global poor. This comprises not only a major global health issue but a significant human rights concern, as detailed in a 2018 report to the UN Human Rights Council. Furthermore, whether associated with infrastructure (lead pipes and paint dust, cities choked with diesel exhaust, coal-burning power plants) or synthetic chemical emissions and waste (from PCBs to the perfluoroalkyl substances or “PFASs”), a signal feature of chemical pollution is its tendency to accumulate and persist. In the words of one group of environmental toxicologists, environmental toxicity poses an “intractable, potentially never-ending chemicals management issue that challenges the conventional chemical assessment and management paradigm adopted by society since the 1970s.”

At present, scholars and professionals in a wide range of fields are engaged in reconceiving both the causes of chemical pollution and toxicity and potential ways of solving it. Across the disciplines, scholars have grown frustrated with existing approaches to toxic chemicals cleanup and regulation. Molecule-by-molecule, site-by-site, or

sector-by-sector efforts always seem to get bogged down in uncertainty. When action does come, it too often seems to involve simply trading one toxic hazard for another—or increasing global environmental inequality by shifting toxicity toward disadvantaged and neglected communities. For more than a century, scientists, advocates, industries, and regulators have swung back and forth between efforts to mitigate toxic hazard—often provisionally successful, almost always ultimately dissatisfying—at the level of individual chemical substances, individual sources and sinks of emissions, and individual applications of chemical products. Might there be other, potentially more productive ways of conceiving of chemicals, environments, and toxicity? Might we canvas the long-term history of alchemy and chemistry for paths not taken that are worth further exploration?

With the support of the Society for the History of Alchemy and Chemistry and the Boston College Institute for the Liberal Arts, an interdisciplinary group of scholars gathered in Boston in June 2019 for a workshop entitled *Remapping Chemicals, Environments, and Toxicity*. Disciplines represented included history, anthropology, sociology, chemical engineering, geography, library and information science, and industrial ecology. We compared notes on how our communities have sought more promising approaches to the persistent problem of environmental toxicity by rethinking what persistent chemicals are, in the first place. For example, industrial ecologist Jonathan Krones accounts for aggregate flows of materials, and conceives of the hazards that they may pose, within the context of broader cycles of “industrial metabolism.” Similar remappings engage categories from petrochemical refineries to fine particulates to personal care products.

The participants in this meeting—historians Angela Creager, Evan Hepler-Smith, David Jones, Colleen Lanier-Christensen, and Michelle Murphy; anthropologists Ruth Goldstein, Nicholas Shapiro, and Elena Sobrino; engineer Jonathan Krones; geographer Julie Guthman; librarian and information professional Leah McEwen; and sociologist Lauren Richter—would like to thank the Society for the History of Alchemy and Chemistry for helping to support this productive and provocative gathering.