Introduction

From Dangerous Trades to Trade in Dangers: Toward an Industrial Hazard History of the Present

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At the beginning of the twenty-first century, industrial diseases elicit only mild curiosity among most readers in affluent corners of the world. They seem part of a vanishing past, slipping out of modern memory, long since vanquished by previous battles against antiquated processes and brutal working conditions. This impression is misleading at best and, by the light of this book, utterly mistaken. Depending on where you stand at present, industrial dangers can be at once new or old, mostly occupational or mostly environmental, unknown or widely recognized, unregulated or tightly controlled—and all the while, on a global scale, ever more deadly. Health and other ecological hazards long found in factories and mines have reappeared in lethal forms and on epidemic scales, especially in developing nations. Add to this the dangers we keep discovering from toxins beyond the workplace, be they lead poisons passed along via toys or beach-blackening oil spills or discards from the latest digital or pharmaceutical innovation, and another conclusion beckons. Industrial hazards remain a major, arguably still growing, threat to the global community.

Asbestos offers a primary, sinister example of how industrial hazards may continue to afflict a citizenry worldwide, although in ways that differ dramatically between countries with contrasting histories of development. Exposure to what used to be known as a "magic mineral" has long produced lethal yields: asbestosis, lung cancers, and mesothelioma (a cancer of the lung lining). As these began to be recorded over the middle of the twentieth century in developed nations such as

Britain and the United States, heavy regulation ensued. Use of asbestos then tumbled, first in these nations and then worldwide, halving from a peak in the 1990s. At the same time, human contacts with asbestos continued to rise in developing countries such as India. Indian output of and exposure to asbestos had developed on a significant scale only during the latter half of the twentieth century, as industries like ship breaking drew in asbestos-laden walls and wastes of vessels constructed decades earlier in developed nations. The Indian government did draft protective regulations, almost as rigorous as those in Europe and North America. But enforcement remained severely hindered. Nine-tenths of India's occupational contacts with asbestos now occur in "unorganized" sectors, beyond the reach of government regulators. Within an informal economy, the low cost of this toxic fiber has fueled a continuing thirst for products laced with asbestos among Indian consumers, as a building material, a fire retardant, and an insulator. In today's India, far more people are inhaling more asbestos fibers than in 1990, making current Indian campaigns to ban it not just fresh but urgent.[1] One conclusion seems unmistakable: knowledge of the hazard in Indian public health and medical circles has not provided a sufficient spur to controlling the risks.

Meanwhile, though current exposures to asbestos are now much less in both Britain and the United States, past use in these countries still asserts its deadly legacy. The half-century of reliance on asbestos in American and British construction of all sorts has bestowed a fearful inheritance of lethal threads, in clouds that continue to seethe. Intensive and worrisome exposures still arise when schools or tenements are renovated, or when terrorists or hurricanes decimate downtown blocks. Asbestos fibers from earlier exposures, still lurking in the lungs of hundreds of thousands, touch off deadly tumors, and so mortality from asbestos-related disease quietly continues to rise.[2]

In the starkly dissimilar threats it poses to different parts of the world, and in its widening arc of damage, asbestos is not alone. Today across the globe, annual deaths from work-related disease and injury amount to two million, roughly twice those from malaria and equaling tuberculosis as a killer. These figures do not include the additional millions who sicken and die from toxic pollution beyond the workplace. Projections suggest that over the next half-century, these tolls will continue to mount.[3]

Practitioners, activists, policy makers, and citizens who tackle such dangers today must confront the long-standing dynamics that have propelled their spread and resurgence and, also, the limitations of earlier efforts to combat them. How well we understand this present, in other words, hinges on how well we have fathomed the past that made it. This volume, the outcome of an international conference of scholars and practitioners in 2007 at Stony Brook University, seeks to establish the historical groundwork that is necessary for a better understanding of how and why industrial hazards like asbestos have continued to trouble today's world. Our historical vision, contributors agreed, had to take a long view, across decades and centuries rather than just the past few years. We concurred as well on the need to better comprehend the transnational dimensions of this history, those

cross-border circulations so integral to the geographic variations in industrial hazards across the world, not just today but yesterday. From the movement of firms, industries, and goods bearing dangers, to those passages of politics, knowledge, and regulatory strategy that seek to tame them, the history of these perils is one that keeps escaping the confines of nation-states.

In completing these studies, our contributors have built on that oldest way of writing about the history of "dangerous trades": as a succession of individual, pioneering practitioners. Still prevalent in the literature of occupational and environmental medicine today, this vein of history writing has origins among early-twentieth-century pioneers in industrial health such as Thomas Oliver, the British medical factory inspector and editor of a landmark volume, *Dangerous Trades* in 1902. Oliver and his compatriots made historical sense of their own work by noting its continuities with that of the Italian physician Bernardino Ramazzini some two centuries before.[4] Ever since, practitioner-historians have continued to situate their own work-a-day present within this lengthy clinical tradition, often wedded to broad if vague narratives of industrialization. In these accounts, industrial "progress," conceived as fundamentally Western and modern in nature, gives rise not only to new workplace hazards but also to the technocratic instruments of their alleviation: heroic experts and the controls they espouse.[5] This style of history still has its uses—among others in the inspiration it furnishes contemporary practitioners.[6] Nonetheless, a starting point for the present volume is that the key suppositions of this historiography have not held up well. The continuing plague of asbestos is just one example of how expert knowledge, professionalism, and workplace-centered laws, long celebrated by this tradition as solutions, have resulted, at best, in only partial victories over the industrial hazards of today's world.

While including contemporary experts and practitioners among its contributors, this volume also marshals the skills and insights of an array of specialists in history and the social sciences. In particular, works written by social historians mainly in the United States, Britain, and Europe during the past two or three decades have brought out groups, themes, and conflicts often ignored in an heroic history of industrial health practitioners.[7] They have stressed the importance of workers' and other laypeople's agency and advocacy, which is also affirmed by many of the essays in this volume. Additionally, both in our conference and in the follow-up discussions leading to this book, the economic historians among us have highlighted the importance of corporate forms and labor migration; the environmental historians, the material history and ecology of those settings where industries emerge, thrive, and pollute.[8] Together, often in alliance with our geographers, the conference participants nudged us toward a greater appreciation of the influential, often pivotal, roles played by extra-workplace participants in industrial hazard history, from ecologists or geologists to farmers and to those living in the vicinity of factories or waste dumps.[9] Our conferees drew on other intellectual lineages as well, from feminist critiques of the scientific enterprise to the study of public understanding and uses of science and

technology.[10] Especially influential were two veins of sociological scholarship: environmental justice and contested diseases and a new political sociology of science, which plumbs the political, institutional, and power dynamics that have shaped policy-relevant knowledge.[11] We were joined, as well, by a political scientist studying how certain issues become framed as "public" problems, and an anthropologist looking at "cultures of control" in high-hazard organizations.[12]

Such convergences have made the history of industrial hazards a topical "contact zone"—the anthropologists' term for a shared ground between cultures—where historians of health, medicine, and environment have met up with other social scientists and contemporary practitioners. For all the intellectual divides among us, some powerful common threads aided our interweaving of perspectives and emphases. All participants agreed about the serious, burning relevance of that past we were studying to today, to a tenacious problem faced by the modern global economy. A major inspiration for many at the conference had been the movement for "environmental justice." First forged among minority and working-class mobilizations against hazardous wastes in the United States, this label has since been applied to parallel struggles against industrial hazards across the developing world.[13] Several participants had been motivated by witnessing the modern ravages of industrial hazards close up, whether on a Malayan plantation, in a French metallurgical factory, or at a North Carolina quarry. In the meeting's aftermath, the activist interests and commitments of many of us led to a collective endorsement and publication of a corporate "Code of Sustainable Practice in Occupational and Environmental Health and Safety."[14] From our discussions of each others' work, we also arrived at a modest but valuable beachhead of agreement about a more comprehensive and interdisciplinary framework for understanding the history of industrial hazards.

Industrial Hazard Regimes

In situating such different perspectives on industrial hazards alongside one another, and in scrutinizing cases from such a wide array of places and times, conference participants had, by the end of our meeting, settled on a shared definition of our subject: the *industrial hazard regime*. Industrial hazard regimes are those arrangements, formal as well as informal, by which public bodies, private interests, and civic mobilizations handle the danger and damage associated with an industry.[15] Especially in its breadth, this notion draws more or less directly on what we know about industrial hazards today: that they may extend from afflictions of workers caused by factory emissions to those imposed via consumer uses and ecological chains of consequence. Yet it also opens the door to reflection on a narrower versus a wider conception of hazards. Indeed, the concept of an industrial hazard regime demands that we take seriously the conceptions of industry-related hazards active in the time and place under study. We mean this notion of "regime" to encompass the sociocultural side of hazards: the variety of perceptions, institutions,

groups, and dynamics through which these hazards may be produced, recognized, and controlled. In the making of these regimes, as depicted in chapter after chapter, private actors—companies, workers, professionals, other local residents—figure notably, as do grassroots movements and other communal initiatives. So, too, do state laws and agencies, from the local to the national. In particular, our contributors attend to larger transnational scales of action, those arenas outstretching any single national experience, which help to explain and elucidate important trends.

One key challenge for our authors has been to articulate the interaction between this overarching scale and other, "lower" scales of analysis. The people and processes in these pages, the knowledge and strategies, the products and institutions, circulate between locales, regions, and nations. At the same time, portable and reputedly universal technologies, areas of expertise, or legal prescriptions must be effectively attuned to local interests and contingencies in order to work. Many of our chapters therefore offer variations on what anthropologists studying the modern international economy have styled "global assemblage." They frame events and outcomes as evolving, integrative mixtures of the global with the national or local.[16]

For these reasons, the studies herein unpack the importance, to a given country's industrial hazard history, of markets, people, events, and other influences beyond that nation's boundaries. Not just in our own era of globalizing but also in the early twentieth century, foremost among these influences were the demands of finance and capital, projecting out from metropolitan centers to remote corners of the globe. On this front, Wallerstein's celebrated, if somewhat dated, arguments about the mutual growth of core and peripheral regions in the world economy may still yield explanatory insights into the resulting distribution of industrial hazards.[17] Both labor and hazardous processes continued to migrate, the one in search of higher wages; the other, lower costs. The result was often intense exploitation of vulnerable populations, either because hazards arrived anew or because people themselves were moved. What David Harvey has called the "spatial fix" abounds in these essays: from Kaur's paper on the engineered migration of Indians to Malayan plantations, to Santiago's on the shift of multinational oil companies into Veracruz, Mexico, and to Zalik's on the shift of liquefied natural gas processing, a hazardous new technology, to the Mexican Gulf Coast.[18]

Another way these essays show how the industrial hazard regime in one corner of the world could become engaged with places elsewhere is through danger-bearing trade in commodities. Carter and Melling show how, from the late nineteenth century, anthrax came to be recognized as a hazard in Britain thanks to contaminated wools that circulated into English weaving centers from the Near East. So, too, Bohme explores how, in the late twentieth century, toxic pesticides banned in the United States found their way to Central American banana plantations, to cause sterility in workers. In such instances, when hazardous processes commence in a given place, local ignorance of or indifference to the risks has long bolstered the balance sheets of employers as a consistent, if untallied, asset.

One point seems clear in regard to industrial hazard regimes over the period of these essays: that even if the scientific, political, and regulatory focus of our historical actors often falls on hazards inside the workplace, historians as well as activists must also consider attendant environmental damage outside. As with asbestos, the hazards of industrial activity can threaten not only workers but surrounding residents, and even the consumers of toxic products. Moreover, the threats are often not confined to human bodies. They may also extend to untrammeled despoliation of a surrounding nature and its resources. Those clouds that spilled across continents from the disasters of Bhopal and Chernobyl offer only the most massive and most remembered instances of the suffering that mismanaged technologies have inflicted on regional food chains of flora and fauna as well as on human livelihoods. These essays point to many other such episodes, all the more tragic for having remained so unknown. From the jungles of Malaysia and Mexico to the industrial cities and towns of France, to the fields of rural England, that more far-flung damage may go little noticed beyond the circle of its victims. Yet, in the right time and place, it can also provoke more outrage and mobilize greater political energies than any workplace struggle can, as Henry's research on the French asbestos scandal suggests.

Perpetually useful in clarifying questions about the costs of industrial hazard—just how they are incurred as well as just who bears them—is economists' theories of "externalities."[19] The earliest operators of hazardous processes often found it easy to externalize the full bodily and ecological costs of their activities: to make others pay while reaping greater profits for themselves. The overall history suggested by our essays is one in which these externalized costs came to be, if not fully absorbed into producer costs through regulation, at least more widely recognized and contested. Over the last century and a half, our contributors suggest, the global patterns by which hazardous producers have externalized these costs have also evolved.

A Globalizing World: Two Periods of Industrial Growth

Lax talk about "globalization" often obscures more than it explains about the growth of international trade and its associated divisions of labor by country, yet more rigorous definitions are now available. Economic historians have usefully suggested that two waves of widely shared growth since the nineteenth century both have roots in new step-ups in global economic integration.[20] Industrial hazards have nevertheless received little attention from these historians, or from those historians of business and labor who have also turned to illuminating this extended history of globalizing.[21] Similarly, medical and public health historians recently taking up transnational and global dynamics have been more concerned with infectious and epidemic rather than industrial diseases, even when they consider illnesses like tuberculosis that may have workplace or environmental causes.[22] To this day, the book-length studies we have of the links between global economic integration and industrial hazards center on the past couple of decades, by jour-

nalists like William Greider as well as activist scholars like David Pellow.[23] Our essays, read alongside the emergent scholarship on globalization's longer history, suggest the value of distinguishing between this more recent period in the history of industrial hazard regimes and an earlier one, starting in the nineteenth century.

In the mid- to late-nineteenth century, new regimes of hazard enabled the making of what would become known as the "developed" parts of the world via the huge expansion of markets via railroads and steamships and the growth of intensive manufacturing and extractive industries. European and North American economies exploited these innovations most effectively. Catalyzing new demands for labor, powering the great migrations of the period, they also spawned organized movements of workers across the industrializing world. Over the later nineteenth century, those who sought to bolster oversight of factory and workshop "nuisances" in Europe and America confronted legal systems that heavily favored industrial development. As for the large corporations that suddenly took over great shares of the economic activity in these same nations, their innovations could intensify long-standing risks, as they did in the Almaden mercury mines described by Menéndez-Navarro. Or they could introduce technologies and processes that brought new dangers altogether, as happened in the making of artificial silk described by Blanc. As suggested by Carter and Melling's chapter on anthrax, and confirmed by the chapters by Menendez-Navarro and Blanc, those campaigns that arose in response, starting in Britain and other forerunning European nations during this period, were often spearheaded by workers' groups. They centered largely on compensation laws for "occupational" disease and injury. By comparison, the dangers imposed on surrounding residents and land could be slighted.

This same period was also one of imperial dominance and colonial expansion in Africa and Asia and one of economic neocolonialism across less developed regions of the Americas. The essay by Kaur on Malayan plantations explores the hazard-bearing ways that colonization opened up new extractive frontiers. Uprooting local peoples and land uses, it forced an importation of labor from elsewhere. Here, with other remote plantations or mines, not just the work involved but attendant imperatives, such as those for housing, affected workers as well as surrounding residents, with implications not just for health but for livelihoods. Santiago's piece tells of another, more exclusively private effort in Mexico: as American firms set up oil fields across the border, their workers confronted a similar array of problems. There, however, as in our British and European examples, it was a workers' movement that sought to address the perils of this industry more thoroughly, via a succession of new labor laws that culminated in nationalization.

A second wave of globalization gained momentum from the booming conditions of the international economy during the middle and later decades of the twentieth century. Throughout much of the developing world, the confrontations of the Cold War set the climate, as did fresh economies of speed, scale, and scope. As innovations in transport and communications enabled

production to be dispersed to unfamiliar regions, competitive pressures on older economies resulted in large-scale dismantling of heavy industries such as coal, steel, shipbuilding, textiles, and potteries. In Europe and North America, these older sectors came to be replaced by newer ones involving lighter chemicals, synthetic materials, assembly work, and soft skills linked to knowledge creation and transfer (including financial transactions, customer call centers, and so on). Though meeting with abrupt downturns in the early 1970s, 1980s, and 1990s, these transformations have steadily reconfigured the economies of the developed world, at least up until the great financial crisis of 2008–2010. Over this same period, the older and heavier industries shed by these nations, ever more associated with health and environmental problems, have set up shop in former colonies and other countries where, prior to 1950, modern versions of manufacturing had been rare.

In those very nations from which these dangerous trades were departing, our papers for this period point to a new environmental and ecological oversight of industrial hazards, adding to the workplace-centered concerns of earlier times. One avenue of scholarship has characterized the associated institutional and legal achievements of these nations as "ecological modernization."[24] Our contributors raise questions about just how ecologically modern many developed nations became, and about what modernization in one nation might mean in those other places where ecologically damaging industries gravitate. As factory and extractive (and, more recently, office) work has fled developed-world sites, a so-called "race to the bottom" has not just sought out the lowest labor costs. What Thomas Friedman has termed the "flat world" of global competition is also a world in which industrial risks have been ever more effectively redistributed, with developing-world nations acquiring an ever greater share.[25]

Across period as well as place, our essays suggest a fundamental distinction between two types of industrial hazard regime. There are those regimes that prevail as a risk-laden industry is born in, or relocated to, a particular place. Then there are those that arise in response to controversies over established production, via a dawning or widening recognition of its impacts. A pivotal question threading through this history then becomes just how and why industrial hazard regimes have shifted from tolerating imposed risks to protecting against them.

Exposed Bodies, Voice, and Resistance

The question just posed, more than any other, is what makes industrial hazard history of such compelling interest, not just to historians but to social scientists, practitioners, and activists. This book, in keeping with much scholarship over the last few decades, locates the roots of change not so much in a smooth progression directed by rational investigation as in social conflict. If such a conflict has proven transformative, our essays suggest the importance of starting with those physical and material changes that grounded it—particularly what has or might have happened in the bodies of those

exposed to a given hazard. It is their experience of damage, after all, that is at stake in all the other questions raised by this history, whether the interests be local or transnational, whether the actors be workers or WHO officials. In highlighting this bodily engagement of the exposed, many of our essays respond to recent calls by labor historians to "follow the bodies," to attend more closely to historical variations in the bodily experiences of a working class. As similar-minded environmental historians might add, fleshing out these experiences often requires similar attention to the physical environments in which they unfold.[26] Although historians do well to come to their conclusions about the damage involved, one other step is indispensable: To understand how an industry's physical impacts have translated into resistance against an existing industrial hazard regime, we also need to study how existing bodily as well as environmental damage was given a contemporary voice. Only with this voice could the dangers become a basis for mobilization and for the wielding of political force.

A key starting point here, as labor historians have long insisted, is with the voices of the victims. An industry's employees as well as those living near the industry bore the early brunt of so many of the hazards explored in these pages: workers shipped from India to Malaya, those living in the vicinity of Nigerian oil fields or along the lead-smoked streets of Montevideo. Communities of the exposed, though often without access to the tools and know-how of modern science, encountered industrial risks in ways that were often local, direct, and immediate. They could develop their own acute awareness as well as a working knowledge of the hazards involved. The purest example in this volume is Santiago's study of a 1930s rebellion in the Mexican oil fields. But other chapters confirm the import of a similarly local and lay knowledge in mobilizations, from Barca's of 1970s labor environmentalism in Italian industrial towns, to Allen's of a popular epidemiology challenging the Louisiana Delta oil industry, to Renfrew's of the anti-lead movement in Uruguay, and to Castleman and Tweedale's of the late-twentieth-century asbestos wars.

At the same time, these and other essays suggest the limitations of attributing resistance movements solely to the voices and agency of workers or other lay victims. Lay knowledge about production hazards did not inevitably yield a more collective resistance against threats to health, land, or livelihood. It could just as well propel local residents to change jobs or living quarters, or to push for higher wages. Moreover, in Allen's and Barca's stories, workers and communities activists themselves acquired voice and agency, not just by organizing among themselves but by recruiting—or being recruited by—medical or scientific allies. Evidently, not just appropriations of "elite" knowledge but elite knowers can aid lay mobilizing. Just as the knowledge around which lay groups mustered could be produced or facilitated by scientists or doctors, so scientific and medical innovation could come as experts lent more of an ear to aggrieved laypeople. In Melling and Sellers' essay, for instance, a group of experts coalesced not just around a new methodology but around a new industrial health association. By

including union representatives, this group opened doors to more worker input into their field.

A related question runs through many of these papers: Just whose interests and ends are being voiced in expert accounts of an industry's impact on bodies and environments, beyond the experts' own? Expertise may indeed work to ameliorate the impacts of industry on workers' and others' bodies, even in the absence of much lay input; the essays of Carter, Melling, Sellers, and Blanc serve as cases in point. At least in some times and places, expert-endorsed, objective claims about the environmental and health impacts of an industry undoubtedly bolstered lay resistance to a reigning industrial hazard regime. Yet other essays make clear how easily experts' objectifications of workers or other victims' bodies and terrains may downplay important dangers or damages. From the laboratory science of 1920s Spain to the dismissals of cancer clusters in Louisiana's "Cancer Alley," claims to greater scientific accuracy and objectivity have often served either as prelude or postlude to a far-ranging imposition of industrial risks. Consequences claimed, at a given time, to be all-too uncertain may then turn provable, but too late, because the arc of damage has already widened. Through much of the twentieth century, whenever lay as well as scientific dissents have challenged an existing industrial hazard regime, they have come face to face with the voices of established experts, whose insistence on objectivity or certainty serves existing arrangements of power.

Many other aspects of industrial hazard regimes emerge in the essays that follow: dilemmas of the state and its officials, of supranational organizations, of firms and their managers, as well as of a host of other private actors. One further point consistently stands out. Throughout the history of industrial hazard regimes, voices for change, be they lay or expert, have proven vulnerable. In our modern world, hazardous industries and commodities have often traveled and taken root with greater ease than has knowledge about their dangers, much less about any corrective action. Those of us relieved of the worst threats nevertheless remain connected to those who still face them. We share a common humanity, and those who are protected most—the likely readers of this volume—continue to consume the production of those whose bodies and communities are protected the least. The editors of this volume dedicate it to the hope that, through a dawning sense of obligation, through innovative actions over the coming decades, the history recounted here may cease to repeat itself.

NOTES

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13. For an overview, see note 11; also see Mei Mei Evans and Joni Adamson, *The Environmental Justice Reader: Politics, Poetics, and Pedagogy* (Tucson: University of Arizona Press, 2002).

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